EMS PROTOCOLS, PATIENT CARE GUIDELINES, AND PROCEDURES

for

SKAGIT COUNTY EMERGENCY MEDICAL SERVICES

Matthew F. Russell, M.D.

Medical Program Director

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DOH Approval Date:	02/05/2024

STATE OF WASHINGTON

DEPARTMENT OF HEALTH

PO Box 47853 ● Olympia, Washington 98504-7853

February 5, 2024

Matthew Russell, MPD
mfrussell@mac.com

Dear Dr. Russell:

The Skagit County MPD Protocols, dated March 1, 2024, are approved. We will place an electronic copy on the MPD SharePoint site and a hard copy in our archives for reference.

Prehospital patient care protocols are defined in WAC 246-976-010 as "department-approved, written orders adopted by the MPD under RCW 18.73.030(15) and 70.168.015(27) which direct the out-of-hospital care of patients. These protocols are related only to delivery and documentation of direct patient treatment. The protocols meet or exceed statewide minimum standards developed by the department in rule as authorized in chapter 70.168 RCW."

Thank you for the hard work and collaboration demonstrated in completing this project. Please let me know if you have any questions or concerns.

Sincerely,

Dawn Felt
Acting EMS Director
Emergency Care System Section
Office of Community Health Systems
Health Services Quality Assurance Division

Acknowledgements

A special thank you to the following agencies and personnel for their valuable time spent reviewing and providing feedback on the content of these protocols. We recognize that the input of the skilled field clinicians within the Skagit County EMS system is critical to providing the highest level of out-of-hospital clinical care and expedient transport of critically ill and injured patients to definitive medical care.

Mannix McDonnell	Assistant Chief/Paramedic	Anacortes Fire Department
Joel Pratt	Firefighter/Paramedic	Anacortes Fire Department
Dan Laine	EMS Division Chief/Paramedic	Burlington Fire Department
Adam Wunsch	Firefighter/Paramedic	Burlington Fire Department
Mike Lanker	EMS Physician	Skagit County EMS
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Jason Norris	Pre-Hospital EMS Liaison	Washington State Department of Health
Dawn Felt	EMS Education & Training Consultant	Washington State Department of Health

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SECTION 1:

GENERAL & ADMINISTRATIVE PROTOCOLS

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Addendum and Revision Log

G1

Date	Summary of Revisions
February 1, 2024	Updated protocols; ALS & BLS combined, new format, content consistent with NASEMSO National Model EMS Clinical Guidelines Version 3.0 March 2022.

Introduction

G2

The following prehospital care guidelines, protocols and procedures are intended to serve as a baseline for the management of pre-hospital emergency medical care in Skagit County, Washington. Medical review and EMS physician oversight of prehospital care guidelines, protocols and procedures is required.

The Skagit County Medical Program Director is a physician appointed by the Washington State Department of Health who approves the certification of EMS personnel and authorizes EMS medical care. Personnel with inactive or inoperable credentials may not utilize these protocols without first being approved by an affiliated, licensed Skagit County EMS agency, the Medical Program Director, and the Washington State Department of Health. Day-to-day situational patient consultation is delegated by the Medical Program Director to the on-line medical control physician in the Emergency Department(s) (base hospital(s)).

NON EMS-CERTIFIED LICENSED MEDICAL PERSONNEL

Includes Registered Nurses and other allied healthcare personnel (other than licensed physicians authorized by DOH to function as MPD Delegates). The Skagit County MPD does not recognize nor utilize persons in this category within the EMS system. All personnel performing direct patient care with a Skagit County EMS agency and within the Skagit County EMS system must possess valid DOH EMS certification and function under these EMS Patient Care Guidelines.

All EMS providers are expected to use the guidelines, protocols, and procedures appropriate to their certification and level of training. This document is subject to change as new information becomes available and EMS best practices are identified and adopted.

This document is intended to:

- Standardize as much as possible, prehospital care provided in Skagit County
- Provide prehospital personnel with a framework for care and an anticipation of supportive orders from Medical Control
- Provide base hospital physicians and nurses with an understanding of the treatment capabilities of prehospital personnel
- Provide the basic framework on which EMS system quality improvement activities can be conducted at the agency and county level
- Be carried out in the appropriate clinical setting prior to contacting Medical Control, except when approval from Medical Control is specified
- Expedite patient delivery to institutions best equipped to handle their specific problems

This document is NOT intended to:

- Be absolute treatment doctrines, but rather guidelines with sufficient flexibility to meet the needs of complex cases
- Be a teaching manual for EMS personnel. It is expected that each prehospital care provider is trained to his/her level of certification and that they will continue to meet the requirements of the DOH for continuing education. It is further assumed that Medical Control will provide continuing education based on the results of patient care audit and review
- Interfere with the wishes of the patient or family, or the wishes of the patient's physician
- Dictate details of care to advising physicians or warrant prehospital providers as an independent field practitioner

Any deviation from prehospital care guidelines, protocols and procedures must have prior consultation and approval from Medical Control, when possible, and justification documented appropriately in the patient care report.

No set of prehospital care guidelines, protocols and procedures can completely address every potential situation that EMS personnel may encounter during the course of their duties.

Despite that fact, there are guiding principles that are meant to apply throughout. These principles include an expectation that EMS personnel:

⇒ **BEHAVE PROFESSIONALLY**

⇒ **SERVE AS A COMPASSIONATE PATIENT ADVOCATE, USING CLINICAL JUDGEMENT TO OPTIMIZE THE PROVISION OF MEDICAL CARE AND/OR TRANSPORT**

⇒ **EXERCISE DILIGENCE TO ESTABLISH, MAINTAIN AND PROTECT PROVIDER, PATIENT, AND CITIZEN SAFETY**

Error Recovery Protocol

G4

Humans make mistakes.

Skagit County EMS Principles for Error Recovery:

1. Own It

- The nature and the magnitude of the error will dictate the specifics of how to own the error. At a minimum, errors should be reported through the Skagit EMS QA/QI system, using the relevant Cognito Forms link.
- In many cases, errors occur as a result of an underlying system process, so reporting allows systems issues to be identified and addressed to prevent future occurrences.

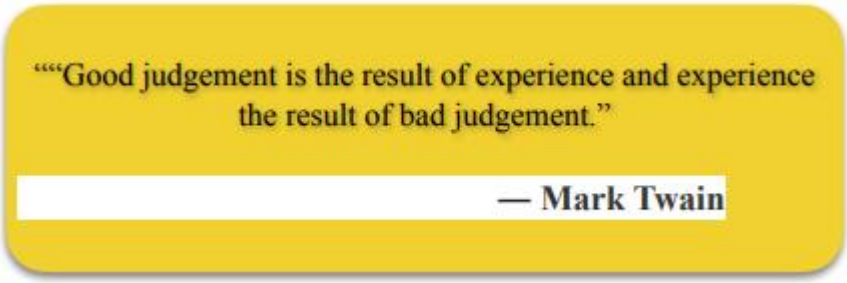
2. Fix It (Where Possible)

- Do what can be done, where and when possible.

3. Learn From It

- Many lessons can be learned from errors
- Help others learn those lessons (e.g. report them) so that future errors can hopefully be reduced

4. Move On



MPD Approval

G5

The following prehospital care guidelines, protocols and procedures are the official Basic and Advanced Life Support prehospital care guidelines, protocols, and procedures for Skagit County EMS and are approved for such use by Emergency Medical Responders, Emergency Medical Technicians, and Paramedics affiliated with licensed Skagit County EMS provider agencies, approved by the Skagit County EMS Medical Program Director and Washington State Department of Health to care for the sick and injured.

Matthew F. Russell, M.D.
Medical Program Director

This document shall supersede all previous EMS protocol versions used in Skagit County.

Approved by:

Matthew F. Russell, M.D.
Medical Program Director

02/01/2024
Date

Requests for changes, updates, and revisions to this document should be submitted in writing:

Skagit County EMS
Attn: Medical Program Director
2911 East College Way, Suite C
Mount Vernon, WA 98273
or
emedservices@co.skagit.wa.us

Patient Advocacy & Treatment Rights

G6

Our patients are our primary focus. Their requests must be heard and should be honored whenever possible. Patients deserve to be fully informed of all decisions affecting their care, outcome and potential complications, whenever possible. Competent, rational adults have a right to accept or refuse treatment recommendations.

The patient's immediate family should be considered an extension of the patient in notification and scene management. Whenever possible, and appropriate, family members should be included and informed of events, encouraged to remain present during transport (consistent with agency policy and EMS crew discretion), and supported in their role as patient advocates.

These guidelines are intended for use with a conscious, consenting patient, or an unconscious (implied consent) patient. Refer to the appropriate protocol.

In general, a rational patient has the right to select a medical facility to which to be transported, consistent with agency policy, EMS crew discretion, and any need for specialty services (e.g. Trauma, Stroke, STEMI).

When in doubt, contact Medical Control for guidance and fully document all of your actions.

If a patient is a minor (under age 18), no consenting adult is available and the minor refuses treatment, the provider should contact Medical Control.

Patient Care Responsibility

G7

The authorized individual with the requested level of certification as recognized by the Washington State Department of Health, who is duly dispatched, is in charge of patient care.

These protocols shall take effect:

- Upon arrival on a scene by a certified EMS provider who is duly dispatched or requested within the EMS system standard operating guidelines and with affiliation to a licensed EMS agency/service participating in these protocols.

- The appropriately trained and dispatched provider first on scene shall be in charge of patient care, unless and until that provider requests a higher trained, EMS system participating provider who has arrived on scene. If that provider is off-duty or out of their home jurisdiction he/she may be relieved upon the arrival of another responder with equal or higher training.

- Attendance of the patient during transport will be appropriate to the degree of injury or illness. EMS personnel qualified and certified by the WAC to provide the appropriate level of care will attend all transports. The only exceptions may occur during mass casualty incidents, declared disasters, Search and Rescue or other special operations circumstances.

EMS Medical Program Director

The EMS Medical Program Director (MPD) for Skagit County is Matthew F. Russell, M.D.

The MPD is a physician appointed by the Washington State Department of Health. The MPD has the ultimate responsibility for all activities in the EMS system including "off-line" and "on-line" medical control, developing written guidelines, directing patient care, and being a conduit of information from local EMS and Trauma systems to state staff for purposes of training, certification, audit, and discipline of EMS providers.

MPD duties are required by statute RCW 18.71.212 and are described in WAC 246-976-920.

EMS Medical Control

Medical control by local physicians for the purposes of "on-line" medical control is authorized in writing by the Skagit County MPD and filed with the Department of Health [WAC 246-976-920(2)].

Medical control may be contacted by EMS personnel at any point during EMS patient care, and if a patient's condition is unusual and is not covered by a specific guideline. When a patient's presentation is atypical and the guideline treatment may not be the best treatment for the patient or in any situation where the EMS provider is not sure about the best treatment for the patient, Medical Control contact is indicated.

If genuinely unable to contact Medical Control, proceed with standing orders only, **DO NOT** initiate Medical Control options. In the event of a communications failure, notify the receiving Emergency Department upon arrival.

Purpose of Medical Control contact:

- EMS personnel will provide care within their scope of practice and follow Department of Health approved guidelines or Medical Control orders when delivering EMS care.
- Medical Control must order any ALS or BLS treatment (medication or procedure) that EMS provides when that treatment is not included or is a deviation from the approved guidelines.
- In certain circumstances, as defined by the guidelines, Medical Control shall be contacted by EMS (ALS or BLS) personnel.
- Guidelines cannot adequately address every possible patient scenario. EMS personnel can contact Medical Control when confronted with a situation that is not addressed by the guidelines or when EMS personnel have any doubt about the appropriate care for a patient.

Contact with Medical Control may be particularly helpful in the following situations:

- Patients who are refusing treatment and/or transport against medical advice
- Patients with time-dependent illnesses or injuries who may benefit from transport to a specific facility with special capabilities.
- Patients with conditions that have not responded to the usual guideline treatments
- Patients with unusual presentations that are not addressed in guidelines
- Patients with rare illnesses or injuries that are not frequently encountered by EMS personnel
- Patients who may benefit from uncommon treatments

Medical Professionals at the Scene

G9

Medical professionals at the scene of an emergency call may provide assistance to the responding EMS personnel and should be treated with professional courtesy. Medical professionals who offer assistance should identify themselves. If on scene physicians wish to assume or retain responsibility for direction of patient care, they should provide proof of identification, follow the guidelines below, and accompany the patient to the receiving hospital.

When the patient's private physician is in attendance and has identified him/herself, the responding EMS personnel will comply with the private physician's instructions for the patient. Medical Control will be contacted for reporting. If orders are given by the private physician which are in conflict with Skagit County EMS Patient Care Protocols Guidelines, approval for any deviation must be obtained through Medical Control.

In such cases, the physician at the scene may:

1. Request to talk directly to the Medical Control physician to offer advice and assistance,

2. Offer assistance to EMS personnel with another pair of eyes, hands and/or suggestions, yet leave the EMS personnel under Medical Control and established patient care protocols guidelines,

3. Take total responsibility for the patient with the concurrence of the Medical Control Physician. (Remember: If the on scene/private physician wishes to take total responsibility for patient care, they will accompany the patient to the receiving hospital. If, during transport, the patient's condition should warrant treatment other than that requested by the private physician, then Medical Control must be contacted for information and for concurrence with the requested treatment.)

These guidelines will also apply to cases where a physician may happen upon the scene of ongoing EMS care and chooses to interact/assist the responding EMS personnel. Medical professionals, other than physicians, may offer assistance to the EMS providers but are not authorized to give orders to EMS personnel except in preapproved circumstances (e.g. a critical care RN accompanying the patient and EMS crew on an inter-facility transport, or arrival of Air Transport/Helicopter flight crew).

Thank you for offering assistance card. These cards are available from Skagit County EMS and should be carried in each ambulance.

(Front of Card)

THANK YOU FOR YOUR OFFER OF ASSISTANCE

This EMS crew is operating under Washington State Law and EMS protocols approved by the Department of Health. They are functioning under standing orders from the Medical Program Director of Skagit County and are in direct radio or telephone contact with an authorized Medical Control Physician at their base hospital. If you wish to assist, please see the other side for options.

Matthew F. Russell, M.D.
Medical Program Director
Skagit County EMS
MPDs@co.skagit.wa.us

(Back of Card)

In general, the physician who has the most expertise in management of the emergency should take control. This is usually the base hospital physician (Medical Control Physician).

You May:

1. Request to talk directly to the base hospital physician to offer your advice and assistance;

2. Offer your assistance to the EMS crew with another pair of eyes, hands, or suggestion, but allow the EMS crew to remain under Medical Control of the base hospital physician;

3. If you have an area of special expertise for the patient's problem, you may take total responsibility, if delegated by the base hospital physician, and accompany the patient to the hospital.

Transport Guidelines & Considerations

G10

This guideline is to allow responders to consistently apply standards to decisions regarding basic life support vs. advanced life support ambulance transportation.

Vital Sign Parameters for BLS Transport
- Systolic BP greater than 90mmHg
- Heart rate between 60-115
- Respiratory rate less than 30 and without distress
- Oxygen saturation greater than 95% after oxygen administration
- Blood glucose greater than 50mg/dl

Considerations for upgrade to Advanced Life Support
- Are there ALS clinical indicators present?
- Is rendezvous with ALS unit or transport to definitive care appropriate? (if BLS transport available)
- Do you feel patient would benefit from paramedic history and physical exam?
- Does patient have complex medical history that may contribute to current illness?
- Does the patient require IV access or medications (including pain management)?

Standard Criteria for Transport Decisions

Leave At Scene
- Minor illness or injury with little or no potential for patients to worsen
- BLS indicators
- EMT feels confident that patient is responsible for self-care or that another responsible party is present
- EMT urges patient to call back if further concerns or problems arise
- EMT recommends patient to follow-up with private physician
- Patient receives appropriate after-care instruction sheet
- Patient refusal signed ONLY if all of the following are true:
  - -EMT believes patient should go to medical facility
  - -Patient refuses treatment/transportation
  - -Paramedic/Medical Control has been contacted

Privately Owned Vehicle (POV)
- Minor illness or injury with little or no potential for patient to worsen
- Clearly a minor BLS patient with BLS indicators
- Further evaluation or treatment needed, but does not require stretcher for transport
- Responsible and capable driver and transportation is available

BLS Ambulance
- BLS indicators (no anticipation of ALS care needed)
- Further evaluation or treatment needed
- Continued BLS assessment, oxygen or other treatment needed en route
- No other responsible transport available
- Patient requires stretcher for transport
- IV access or with crystalloid fluids running only— if EMT w/ IV Therapy Endorsement attending and approved after ALS or Medical Control consult

ALS Ambulance
- ALS indicators (IV meds, cardiac monitoring, pain management or indications that the patient may worsen)
- Continued ALS assessment or treatment needed during transport

Receiving Medical Facilities

G11

In general, EMS should attempt to deliver patients with non-life-threatening injuries or medical conditions to the nearest Emergency Department in Skagit County or the Skagit County ED of their or their family's choice, subject to crew discretion and the status of the EMS system. In cases of life-threatening injury or medical condition, the patient will be delivered to the closest Skagit County hospital with the capability to deal with the problem, or to provide stabilization prior to transfer for definitive care. Additionally, and in general, if a patient was recently discharged from, or had a procedure at a Skagit County Hospital, transport to that hospital may be appropriate. At times, patients may be diverted to other area hospitals depending on availability of hospitals' facilities or because patient guidelines mandate diversion to a Specific Center (Trauma, Cardiac, and/or Stroke). In cases where there is a question about the appropriate destination medical facility, Online Medical Control should be consulted.

Appropriate facilities to receive Skagit County 911 system EMS patients (by ground or air transport) include:

HOSPITAL	TRAUMA	STROKE	ICU	PEDIATRICS	OB	INFECTIOUS DISEASE	ORTHO	GENERAL SURGERY	VASCULAR SURGERY	RENAL DIALYSIS
Skagit Valley Hospital 300 Hospital Parkway Mount Vernon, WA 98273 Skagit County ***EMS Phone: 360-428-2214***	LEVEL III	X	X	X	X	X	X	X		X
PeaceHealth United General Hospital 2000 Hospital Dr Sedro-Woolley, WA 98283 Skagit County ***EMS Phone: 360-856-7606***	LEVEL IV	X								
Island Hospital 1211 24th St Anacortes, WA 98221 Skagit County ***EMS Phone: 360-299-1311***	LEVEL III	X	X	X	X		X	X		
PeaceHealth St. Joseph Medical Center 2901 Squalicum Parkway Bellingham, WA 98225 Whatcom County ***EMS Phone: 360-738-6765***	LEVEL II	X	X	X	X	X	X	X	X	X
Providence Regional Medical Center Everett 1321 Colby Ave Everett, WA 98201 Snohomish County ***EMS Phone: 425-404-5601***	LEVEL II	X	X	X	X	X	X	X	X	X
Harborview Medical Center 325 9th Ave Seattle, WA 98104 King County ***EMS Phone: 206-744-4074***	LEVEL I	X	X	X	X	X	X	X	X	X

If a patient is suspected or known to have a condition requiring hospital specialty capabilities, transport to that facility within Skagit county is authorized. Transport to St. Joseph's hospital in Whatcom County is also authorized at the discretion of the EMS provider as an option where geographically appropriate.

Airway/Critical Instability Emergency

While a condition may warrant an intended destination to a specific facility with specialized capability, transport to the nearest emergency department (regardless of its specialty capabilities) is authorized should a clinical condition occur where, in the judgement of the EMS provider, additional assistance with emergent management/stabilization is thought to be of more benefit to the patient than continued transport to a more distant facility with specialized capability.

Stroke:

Island, Skagit Valley, and United General hospitals all accept stroke patients. These facilities all accept stroke patients and can treat identified candidates with thrombolytics.

- Patients identified as having a Large Vessel Occlusion (LVO) stroke who are candidates for mechanical thrombectomy are transferred to Seattle, but are appropriate for initial management at Island, Skagit, or United General.
- No Skagit county hospital has neurosurgical capabilities, and patients requiring neurosurgery are transferred out of county. St. Joseph's hospital has limited neurosurgical capabilities.
- Although not a common destination, from certain geographic locations within Skagit County, **St. Joseph's** hospital may be close enough to be used as a destination facility for stroke. Transport to St. Joseph's is authorized at the discretion of the EMS provider.

Trauma: Red Patients (as defined by 2023 WA Trauma Triage Tool)

- There are no Level II Trauma or burn unit facilities within Skagit County.
- I**sland and Skagit Valley** accept red trauma patients for initial stabilization.
- Although not a common destination, from certain geographic locations within Skagit County, **St. Joseph's** hospital (Level II trauma) may be an appropriate destination with <30 minutes estimated transport time. In such cases transport to St. Joseph's is authorized at the discretion of the EMS provider.
- Aeromedical transport activation (either for direct scene transport, helipad , or hospital rendezvous) is appropriate at the discretion of the EMS Provider.

Yellow Patients (as defined by 2023 WA Trauma Triage Tool)

- **Island, Skagit Valley, and United General** all accept Yellow trauma patients for initial stabilization.

High Risk Cardiac (e.g. - STEMI, ROSC post cardiac arrest)

Skagit Valley Hospital is the only Skagit county destination with cardiology speciality services (e.g, - cardiac catheterization, pacemaker/AICD insertion, etc…)

- Although not a common destination, from certain geographic locations within Skagit county, St. Joseph's hospital may be close enough to be used as a destination facility for high risk cardiac patients. Transport to St. Joseph's is authorized at the discretion of the EMS provider.

Labor and Delivery

Island and Skagit Valley are the only Skagit county destinations with labor and delivery services.

• Although not a common destination, from certain geographic locations within Skagit county, St. Joseph's hospital may be close enough to be used as a destination facility for labor and delivery. Transport to St. Joseph's is authorized at the discretion of the EMS provider.

Pediatric

Skagit Valley is the only Skagit county destination with inpatient pediatric capabilities. Pediatric patients suspected of needing admission or specialty services may be transported to Skagit Valley.

Renal Failure

Patients Requiring Dialysis: **Skagit Valley** is the only hospital in Skagit county with inpatient nephrology services and the capability to perform dialysis.

• Patients with renal failure and *w*ho are on dialysis or who are suspected of needing dialysis *regardless of initial presenting complaint or condition*, are in general at very high risk of need for admission from the emergency department. For this reason, it is recommended that patients who are dialysis dependent or who are anticipated to need dialysis, be transported to Skagit Valley.

• If in the provider judgement, the clinical situation is such that there is a confidence that admission is unlikely to be required, contact the potential receiving facility to discuss alternate destination.

SCUBA Diving Injury requiring Hyperbaric Therapy

There are no facilities with hyperbaric therapy capability within Skagit county. For this rare condition, see guidance in [E10: SCUBA Diving Emergencies] for determination of destination.

• Aeromedical transport to Virginia Mason is authorized

Additional notes: United General Hospital is a critical access hospital with limited services/capabilities. Please also see [G12: United General Hospital Bypass Criteria] for additional guidance

United General Hospital Bypass Criteria

G12

This guidance was created with the support and collaboration of PeaceHealth United General and the purpose is to assist in triaging patients to destinations in a manner that is most likely to benefit the patient.

General indicators for bypassing UGH include:

- ST Segment Elevation Myocardial Infarctions (STEMI) or dynamic EKG ischemia (ST depression)
- 3rd Degree heart block
- Patients with multi-system trauma (Red Criteria per [T2: State Trauma Triage Tool])
- Suspected anemia with hemodynamic instability (potential need for massive transfusion)
- Cardiac arrest patients who experience return of spontaneous circulation (ROSC)
- Pregnant patients >20 weeks pregnant or <6 weeks post-partum with a suspected pregnancy related complaint/presentation
- Morbidly Obese bariatric patients with a Body Mass Index (BMI) > 50. (Consider contacting medical control with assistance in BMI estimation, a BMI Table is included in appendix)
- Suspected hip fractures
- Dialysis patients
- Critically ill pediatric patients (at discretion of EMS provider)

If there is an inability to establish either an adequate airway or achieve adequate ventilation the patient should be taken to the nearest facility, including UGH.

If the patient is unstable and EMS personnel are concerned that bypass of UGH may be detrimental to the patient rather than beneficial, the patient should be taken to the nearest facility, including UGH.

This guidance is designed to help triage patients in a manner that is most likely to best serve the patient. Decisions on transport destination should be made with the best interest of the patient as the guiding principle. It is recognized that decisions will be made on the limited information available in a pre-hospital evaluation. These recommendations are for guidance only. If there are questions regarding most appropriate destination and the situation permits, contact medical control. (⚠ **NOTE:** If a patient is identified as desiring limited interventions only, (e.g. COMFORT MEASURES ONLY) please identify this information to facilitate determination of destination.)

EMS Communication to Receiving Hospital

G13

A phone call to the receiving hospital prior to transport is recommended for all EMS patients. Transport should not be delayed for patients with:

- Major trauma
- Acute coronary syndrome
- Acute stroke
- Sepsis
- Vascular emergencies

In these cases, if phone contact is not possible, consider notifying dispatch via radio to request hospital notification.

When report is called to the receiving hospital, please include:

TRAUMA

- Age
- Gender
- Mechanism of injury
- Obvious anatomic injuries
- Vital signs (to include lowest systolic BP)
- Whether patient takes blood thinners

ACUTE CORONARY SYNDROME (ACS)

- Patient name
- DOB
- Code status
- Cardiologist name
- ST abnormalities
- If ROSC, include initial rhythm and duration of CPR

STROKE

- Age
- Gender
- Symptoms
- Vital signs
- F.A.S.T. exam results
- If positive FAST exam, LAMS score
- Blood glucose

VASCULAR EMERGENCIES

- Age
- Gender
- Vital signs
- Focal anatomy affected
- Time of onset

EMS Offload to ED Waiting Room

G14

This guidance was created in an effort to reduce ambulance patient offload times and to support hospitals in managing patient surge. EMS personnel may offload patients directly to the ED waiting room with notification of the triage RN when ALL of the below criteria are met:

1. Ambulance patient offload time to an ED room/bed estimate is ≥ 15 minutes
2. Age ≥ 18 years; or pediatric patient if accompanied by an adult
3. Normal mental status (GCS 15)
4. Normal vital signs for adults:
    - SBP ≥ 100mmHg
    - HR 60-115
    - RR 12-30
    - O2 ≥ 94% on room air
    - Or per [G27: Universal Patient Care Guideline] normal vital signs for pediatric patients
5. Ambulatory with steady gait without assistance (as appropriate for age)
6. Not suicidal and not on involuntary hold (ITA)
7. No chest pain, syncope, or acute neurologic symptoms (e.g. focal weakness, dizziness/vertigo)
8. Did not receive any parenteral medications during EMS transport (Exception: Ondansetron)

EMS personnel will initially present to ambulance triage. If the estimated ambulance patient offload time to an ED room/bed is ≥ 15 minutes and the patient meets all criteria as above, EMS personnel may transport the patient to the ED waiting room for offload. EMS personnel should attempt to notify the triage RN of the patient's arrival and provide an appropriate verbal transfer of care report, if possible. If triage RN is not available to accept verbal report, EMS personnel will provide report to the ED Charge RN.

If neither the Triage RN or Charge RN are available or willing to accept verbal report due to Emergency Department census, EMS personnel will submit a copy of the completed electronic patient care report to the destination facility as soon as possible and may return to service if necessary to respond to another incident. In these cases, EMS personnel should also notify the MPD through their agency chain of command for review and follow-up.

Skagit County Emergency Departments should inform staff of this procedure so they are prepared to receive ambulance patients directly to triage when appropriate.

EMS personnel should document in the electronic patient care report (ePCR):

1) The offload to ED waiting room criteria met
2) The time of transfer of patient care
3) The name of the person whom notification and transfer of care report was provided or the surrounding circumstances if unable to provide a verbal report to staff

Transfer of Care Responsibility and Delegation

G15

An EMS provider will remain with the patient and remain responsible for patient care until another certified EMS provider of equal or higher training and capability receives a verbal report and assumes responsibility for patient care or the patient care encounter is appropriately terminated and documented (i.e. refusal obtained).

Paramedics are not required to remain with a patient if ALS care is not warranted. Following an appropriate patient assessment and examination, a Paramedic or Advanced EMT may transfer a patient to an EMT level of care, if there is no reasonable expectation that the patient will require a higher level of care. The assessment and decision for transfer of care shall be documented in the patient care report.

In the event of a transfer from ALS to a lower level of care, the Paramedic will be responsible for the appropriateness of care provided. Transfer to a lower level of care is acceptable in an MCI to ensure the greatest benefit for the greatest number of patients.

Law enforcement has **no authority** in transport decisions unless a law enforcement officer elects to take a patient into protective custody. The law enforcement officer is then responsible for ALL actions and decisions occurring as a result of his/her direct orders. Liability and system consequences should be clearly relayed to law enforcement officers. Whenever a conflict exists, contact Medical Control and advise EMS agency supervisor.

Legal Transfer of Care: Legal transfer of care occurs the moment a patient arrives on hospital property in accordance with Federal Law (EMTALA). The hospital has a legal duty to the patient upon legal transfer of care.

Physical Transfer of Care: Occurs when a hospital clinician assumes direct monitoring or care of a patient. The hospital does not avoid the imposition of its legal duty of care by delaying the physical transfer of care.

Upon arrival at the Emergency Department, EMS personnel should attempt to notify the assigned RN of the patient's arrival and provide a verbal report to facilitate a physical transfer of care, if possible. If an RN is not assigned or available to accept verbal report, EMS personnel will attempt to provide report directly to the ED Charge RN.

If neither the assigned RN or Charge RN are available or willing to accept verbal report due to Emergency Department census, EMS providers will attempt to find appropriate placement (i.e. waiting room, wheelchair, ER stretcher, disaster cot) for stable patients (completing the physical transfer of care) and then may return to service. EMS personnel will remain with unstable patients or those requiring continuous care or monitoring until physical transfer of care can be facilitated. In these cases, EMS personnel should also notify the MPD through their agency chain of command for review and follow-up.

The transporting agency shall complete and deliver to the Emergency Department the completed electronic patient care report as soon as possible, but no later than 24 hours of arrival at the Emergency Department.

Transporting agencies, at their discretion, may defer the completion of an electronic patient care report if needed to respond to a subsequent emergency incident.

Utilization of Private Ambulance

G16

Private Ambulance Services typically provide non-emergency BLS and Specialty/Critical Care level transport services between hospitals, clinics, skilled nursing, long term care, and other medical facilities utilizing EMT and RN personnel. Private ambulance services in Skagit County shall not normally respond to emergency incidents (911 dispatches) as first responder units, except in the following instances:

- When specifically requested by the EMS agency having jurisdiction in response to a mass casualty incident, declared disaster, or other resource emergency.

- When the private service receives a direct request for service from a person or facility in which the patient is experiencing an acute illness or injury and may require transport to an Emergency Department. In these instances, the service may respond but shall advise Skagit 911 to generate an appropriate 911 response. The agency contracted with Skagit County for 911 EMS response having jurisdiction may elect to transport or utilize the private ambulance service at their discretion.

Transfer of care by paramedics of an ALS patient to a private Specialty/Critical Care (RN) level ground ambulance service for transport to a specialty care or out-of-county facility shall only occur with direct online Medical Control approval. This does not apply to DOH licensed air ambulance (helicopter) providers.

Licensed private ambulance agencies operating in Skagit County include:

Northwest Ambulance
(Trauma Verified, Licensed, BLS Ambulance)
8115 Broadway
Everett, WA 98203
Dispatch: 425-328-7651

Trans-West Ambulance
(Trauma Verified, Licensed, BLS Ambulance)
526 N. West Ave PMB112
Arlington, WA 98223
Dispatch: 1-888-596-7538

Cascade Ambulance
(Trauma Verified, Licensed, BLS Ambulance)
1482 Slater Rd, Suite A
Ferndale, WA 98248
Dispatch: 360-312-0911

Emergency Medical Responder (EMR)

Certified Emergency Medical Responders approved by the MPD and affiliated with a licensed EMS agency in Skagit County may perform the following skills and procedures:

- Airway/Breathing Management
  - -Oropharyngeal airway adjuncts
  - -Oxygen administration by nasal cannula and non-rebreather mask
  - -Ventilation via bag valve mask
  - -Foreign body airway obstruction (all ages)
  - -Suction (upper airway only)
- Circulation Management
  - -CPR (all ages)
  - -Automated external defibrillation (AED)
  - -Bleeding control including:
    - *Dressings/bandages
    - *Hemostatic gauze/dressing
    - *Commercial tourniquet device
- Medication Administration
  - -Aspirin ⚠ **NOTE:** MPD approval—specialized training required
  - -Oral glucose ⚠ **NOTE:** MPD approval—specialized training required
  - -Oxygen
  - -Naloxone intranasal
  - -Epinephrine 1mg/1mL IM by auto-injector
  - -Epinephrine 1mg/1mL IM by syringe/needle ⚠ **NOTE:** MPD approval—specialized training required)
- Splinting
  - -Traction ⚠ **NOTE:** MPD approval—specialized training required)
  - -Rigid
  - -Non-rigid
- Spinal Motion Restriction
  - -Long backboard
  - -Vacuum Spine Board
  - -Helmet/sports equipment removal
  - -Log roll
- Blood glucose monitoring ⚠ **NOTE:** MPD approval—specialized training required
- Childbirth (without complication) and newborn care

Emergency Medical Technician (EMT)

In addition to Emergency Medical Responder scope of practice, a certified Emergency Medical Technician approved by the MPD and affiliated with a licensed EMS agency in Skagit County may perform the following skills and procedures:

- Airway/Breathing Management
  - -Pulse oximetry monitoring
  - -Carbon monoxide monitoring
  - -End-tidal carbon dioxide monitoring (qualitative e.g. Colorimetric)
  - -End-tidal carbon dioxide monitoring (quantitative e.g. digital waveform)
    ⚠ **NOTE:** MPD approval—specialized training required
  - -Supraglottic airway placement ⚠ **NOTE:** MPD approval—specialized training & DOH endorsement required

- Circulation Management
  - -4-lead ECG monitor lead placement
  - -12-lead ECG monitor lead placement ⚠ **NOTE:** MPD approval—specialized training required.

- Administer IV/IO fluids ⚠ **NOTE:** MPD approval—specialized training & DOH endorsement required.
  - -Peripheral IV insertion
  - -IO insertion
  - -Crystalloid fluids (e.g. Normal Saline, Lactated Ringers, D5W, 1/2 NS, and D5 1/2 NS)
  - -Obtain venous samples

- Medication Administration
  - -Acetaminophen
  - -Aspirin
  - -Epinephrine 1mg/1mL IM by auto-injector
  - -Epinephrine 1mg/1mL IM by syringe/needle ⚠ **NOTE:** MPD approval—specialized training required
  - -Ibuprofen
  - -Oral glucose
  - -Oxygen
  - -Naloxone intranasal
  - -May assist with:
    - *Nitroglycerin
    - *Metered dose inhaler (MDI)

- Patient restraint device (mechanical, e.g. Posey wrist, ankle)

Paramedic

In addition to Emergency Medical Responder and Emergency Medical Technician scope of practice, a certified Paramedic approved by the MPD and affiliated with a licensed EMS agency in Skagit County may perform the following skills and procedures:

- Airway/Breathing Management
  - -Supraglottic airway placement
  - -Endotracheal intubation (direct and video)
  - -Needle cricothyrotomy
  - -Surgical cricothyrotomy
  - -Nebulizer therapy
  - -Tracheobronchial suctioning
  - -Needle thoracostomy
  - -Chest tube monitoring
  - -Automatic Transport Ventilators (ATV) – adjust beyond rate and tidal volume

    ⚠ **NOTE:** MPD approval– specialized training required

- Circulation Management
  - -Manual defibrillation
  - -Cardioversion
  - -Transcutaneous pacing
  - -ECG monitoring/diagnostic (multi-lead) ECG
  - -Carotid massage
  - -Pericardiocentesis ⚠ **NOTE:** MPD approval– specialized training required

- Administer IV/IO fluids
  - -Peripheral IV insertion (including external jugular)
  - -IO insertion
  - -Central line monitoring
  - -Access existing central lines, indwelling catheters and central IV ports
  - -Operate/manage controlled delivery device for IV infusion (IV pump)

    ⚠ **NOTE:** MPD approval– specialized training required
  - -Maintain an infusion of blood or blood products

- Medication Administration
  - -Routes: SQ, transdermal, topical, aerosolized, PR, NG, IV/IO, ET, central venous line
  - -May administer: See medication formulary list

- Nasogastric/Orogastric tube insertion ⚠ **NOTE:** MPD approval– specialized training required
- Obtain venous samples
  - -Fill blood tubes for Emergency Department use
  - -Fill blood tubes for Law Enforcement use (e.g. blood alcohol)

Protocol Format

G18

Skagit County EMS Prehospital Patient Care Guidelines are progressive developing in stages and advancing step by step. Each provider is expected to perform to his/her level of certification and training, encompassing all care that precedes that level. At no time should a provider perform procedures that he/she has not been trained to perform, even if it falls within their level of certification and scope of practice.

Definitions:

ALL EMS PROVIDERS
Includes certified Emergency Medical Responders (unless noted otherwise), EMT, EMT with IV Therapy and/or Supraglottic Airway Endorsement, and Paramedics.
EMT AND ABOVE PROVIDERS
Includes certified Emergency Medical Technicians, EMT with IV Therapy and/or Supraglottic Airway Endorsement (as noted), and Paramedics.
PARAMEDIC PROVIDERS
Includes certified Paramedics.

Legend of symbols:

	**On-Line Medical Control Contact Required**
	**Important Note**
	**Medication Dosing Information** <u>Notes on medication dosing nomenclature used in protocols</u> 1) The term "Up to" is used to indicate the maximum dose allowed by protocol 2) Cautionary Threshold Dose ("CTD") is a threshold for provider to re-assess clinical situation and examine both the dosing and patient monitoring parameters
	**Pediatric Specific Information**
AGENCY OPTIONAL	**Protocol is optional and may require additional training and/or MPD approval for individual agencies to implement**

Restriction of Protocol Agreements

G19

Occasionally, EMS personnel who are certified at a higher level (i.e. Paramedic) in Skagit County or another county in Washington State wish to affiliate with a secondary non-ALS licensed agency in Skagit County and therefore to function at a lower EMS certification level (i.e. EMT).

EMS personnel who wish to work for an EMS agency in Skagit County at a lower level than their primary EMS certification may do so only with written approval of the Medical Program Director in accordance with applicable Washington Administrative Code (WAC 246-976-144 (4)).

EMS personnel who are approved to function at a lower level of care are still required to complete appropriate continuing education for their primary level of certification with their primary agency and may also be required to participate in the approved continuing education program for the lower level of care and/or other Skagit County-specific EMS training requirements at the discretion of the Skagit County MPD.

All requests for restriction of protocol should be submitted in writing to:

Skagit County EMS
Attn: Medical Program Director
2911 E College Way, Suite C
Mount Vernon, WA 98273

Or

emedservices@co.skagit.wa.us

Emergency Medical Dispatch, Response Modes, Field Feedback

G20

Emergency medical care begins when the first call is received by the Public Safety Answering Point (PSAP) or 911 communications center. Telecommunicators at Skagit County 911 that are certified in Emergency Medical Dispatch (EMD) serve as the "First, first responders" and play an integral role in the EMS system. They are an important link in the cardiac arrest chain of survival and provide critical post-dispatch and pre-arrival instructions to emergency callers awaiting EMS resources. Skagit 911 uses the Medical Priority Dispatch System (MPDS®).

It is recognized that it is in the best interest of public safety and patient care to respond to all incidents in a safe and prudent manner at all times. To accomplish this, units should be judicious when responding with lights and sirens, reserving these responses for when a clear threat to life, limb, or eyesight exists. Responding units may be lowered to a non-lights & sirens response by the first EMS unit on the scene that determines the patient does not require IMMEDIATE Emergency Medical Services for life, limb, or eyesight threatening conditions. First arriving EMS personnel may lower/cancel response of responding units when the patient does not require IMMEDIATE PATIENT CARE (BLS/ALS) INTERVENTIONS. (i.e.: non-injury accident) First responders (fire or police) may cancel responding EMS units when there is no patient found.

EMS personnel should follow their agency policies and procedures related to response mode and at all times exercise due regard for the safety of all persons while responding to EMS calls in accordance with applicable Washington State Law.

Baseline Response Configuration

Type	Service Level	
ECHO	ALS w/ BLS	HIGHEST ACUITY
DELTA	ALS w/ BLS	
CHARLIE	ALS	
BRAVO	BLS	
ALPHA	BLS	
OMEGA	BLS	LOWEST ACUITY

Field responders including fire, EMS, and law enforcement are encouraged to submit questions, comments, concerns, and general feedback regarding EMD protocols and dispatched call natures for review by the Dispatch Steering Committee (DSC) using the Skagit 911 EMD Field Responder Feedback Report.

A responding EMS unit may be diverted from one 911 call to a second call when ALL conditions below are met:

- The EMS unit has not yet arrived on scene at the first call
- It is obvious by nature or call notes that the second call is of a greater life-threatening emergency than the first call
- The first EMS unit is decidedly closer to the second call
- A second EMS unit is immediately dispatched to the first call
- The diversion and response of the first unit to the second call may be vital to the patient's outcome
- Once arrived on scene, the EMS unit may not leave the patient to respond to a second call without first transferring care to an appropriate level of care or appropriately terminating the patient encounter (e.g. signed refusal obtained)

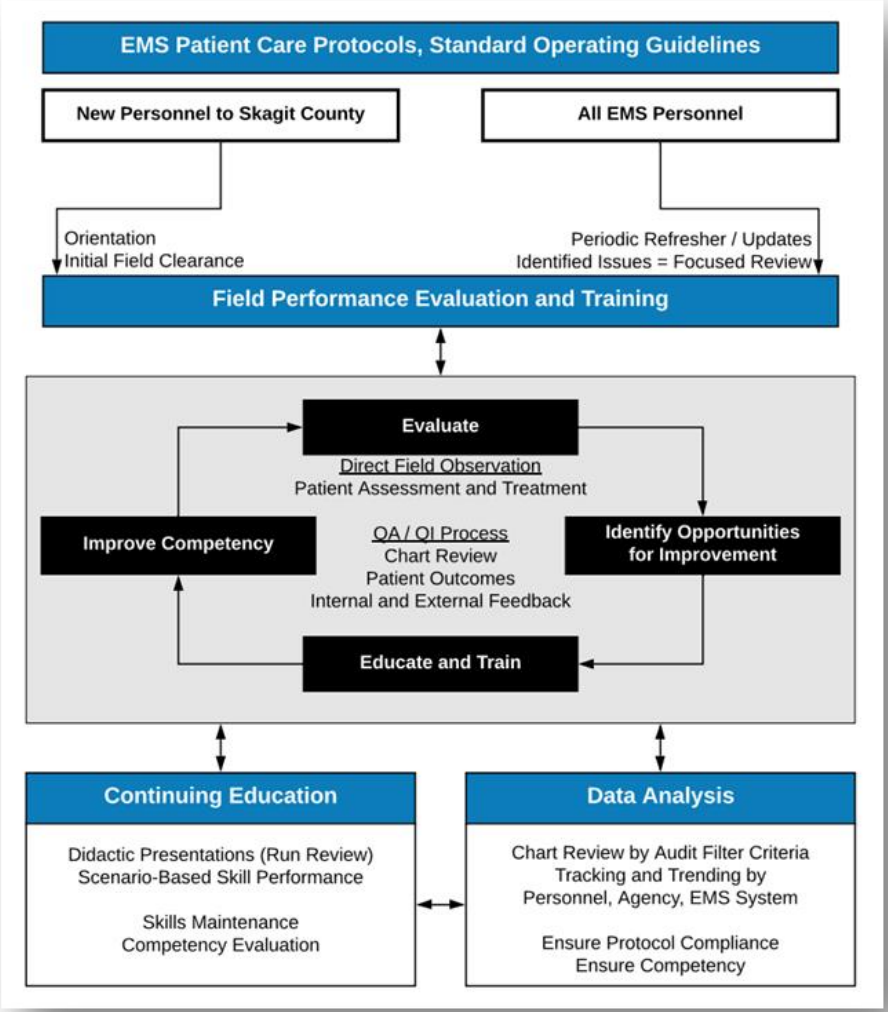
Quality Assurance / Quality Improvement

G21

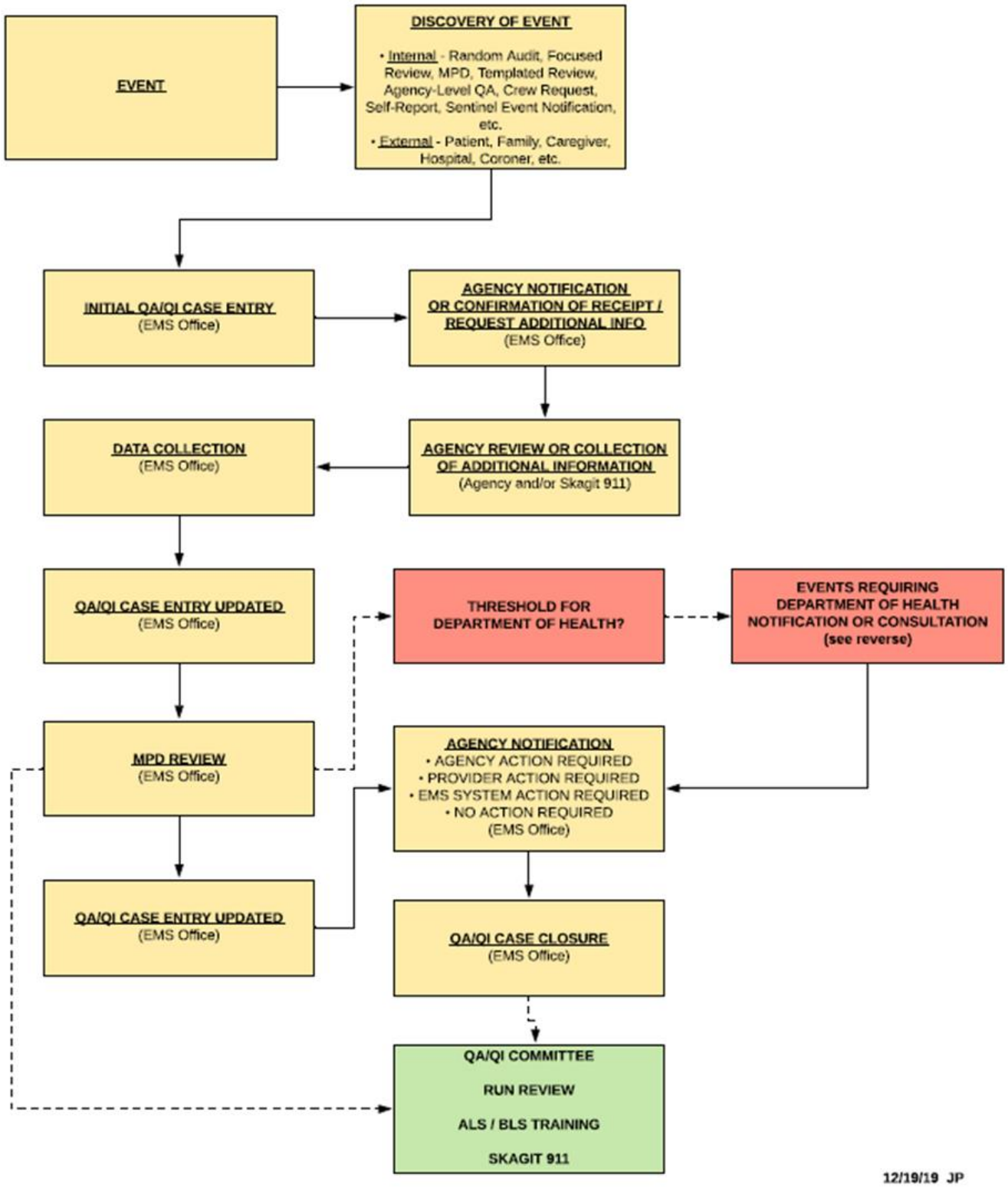
To maximize the quality of prehospital EMS care, it is necessary to continually review all EMS activity in order to identify areas of excellence and potential room for improvement both in clinical care and in system oversight and operational guidance. This method allows optimal and continuous improvement. QA/QI is defined as a proactive involvement in issues and applications to constantly assess the value and direction of the EMS system. Components of QA/QI include: active communication, documentation, case presentations, guideline review and refinement, medical direction involvement, medical community involvement, continuing education and reassessment of expected goals and outcomes. EMS agency participation in the QA/QI process is mandatory to function within the system.

The primary focus of QA/QI is on "system performance." Specifically, QA/QI focuses on the bigger picture of our system, including protocols, guidelines, equipment, training and standard operating guidelines.

The EMS Medical Director may request additional documentation, typically an incident report, for the purposes of gathering information about a call, event or procedure in question. Failure to cooperate with the QA/QI process may result in withdrawal of Medical Direction and DOH notification, as required.



The following algorithm is used to track QA/QI events within the EMS system, ensure root-cause analysis and loop closure.



Events Requiring MPD Consultation with Department of Health

- Repeated failure to follow MPD protocols and/or standing orders
- Repeated failure to maintain patient confidentiality
- Has engaged in the use of alcohol or a controlled substance that affects the certified EMS person's ability to render care according to procedures or protocols
- Represents that he/she is qualified at any level other than his/her current certification
- Repeated abandonment of a patient to a lesser level of care
- Alters any Department certificate or possesses any such altered certificate
- Violates probation
- Cheats and/or assists another to cheat on a Department examination
- Assists another to obtain certification by fraud, forgery, deception, misrepresentation or subterfuge
- Illegally dispenses, administers, or distributes any controlled substance
- Has been convicted of a gross misdemeanor that affects his/her ability to function under certification
- Falsifies any patient record
- Failure to provide the Department with true information pertinent to certification, recertification, etc., upon request
- Falsifies any application for certification or recertification
- Has demonstrated incompetence or has shown himself/herself otherwise unable to provide adequate service
- Has been convicted of a felony
- Has failed to complete continuing education requirements and/or any MPD remedial training
- Violates any rule or regulation that would jeopardize the health and safety of a patient, or has a potential negative affect on the health or safety of a patient
- Performs any medical procedure beyond those permitted by the MPD
- Performs any medical procedure beyond those provided in approved training

Sentinel Event Reporting

G22

A " Sentinel Event" is defined as one of the following potentially high-risk events or occurrences related to either patient safety or care or EMS provider safety and merits expedited review, reporting, tracking, and/ or trending.

Reporting a Sentinel Event is NOT a part of a patient' s medical record or ePCR. Sentinel Event reporting is part of the recognized QA/ QI components and should be clearly marked as such. This is a separate, legally protected process.

1. Level A—Needs to be reported ASAP

a. **Unanticipated patient death/injury**
- Unanticipated Patient Death - presents initially in stable condition, then experiences an unexpected or unexplained death.
- Unanticipated Potential patient harm, injury or adverse event: Includes dropped patient, adverse medication reaction, procedural complication, etc.

b. **Delayed Recognition of Esophageal Intubation**

c. **Suspected or Potential Controlled Substance Diversion**

d. **EMS Personnel Exposure Incident**

When reporting of Level A Sentinel Events, MPD and County QA/ QI ASAP notification is required
Email: emedservices@co.skagit.wa.us **OR** use the Online Sentinel Event Report Form **AND** call (360) 416- 1837.

2. Level B—Needs to be reported within 72 hours of Sentinel Event

a. **Critical Diagnostic or Therapeutic Error:** Any case for which an individual has a concern for a critical error in problem identification or treatment that resulted in a potential adverse patient outcome.

b. **Medication Administration or Dosing Error**

c. **Failed Airway:** Any patient for which an airway was attempted and not ultimately successful. Includes patients for which an alternate airway ultimately was established. For ALS personnel a failed airway includes any patient on whom a laryngoscopy was attempted, but not ultimately successful. A laryngoscopy attempt is defined as anytime any part of the laryngoscope touches part of the oropharynx. For both ALS and BLS personnel anytime a supraglottic airway is attempted and considered unsuccessful for any reason is also a failed airway.

d. **Surgical Airway:** Anytime a surgical airway is performed.

e. **EMS Personnel Injury:** Any time an EMS Responder is injured, if a patient is involved or causes a delay in response for patient care.

f. **EMS Motor Vehicle Crash:** With patient injuries or while responding to a call and the accident caused a delay in patient care.

g. **EMS Safety Concern/ Event:** Any issue for which a safety event or concern not identified in the above categories and for which expedited County level review is warranted. This includes any violation of RCW 18. 130 or the Uniform Disciplinary Act (UDA), laws governing the licensure and discipline procedures for health and health- related professionals and businesses.

h. **Major Equipment Failure:** Any major equipment failure (ex. Vehicle, monitor) if a patient is involved or causes a delay in response for patient care.

i. **Battery on EMS Personnel:** Any act of violence perpetuated against EMS Personnel.

When reporting of Level B Sentinel Events, MPD and County QA/QI notification is required within 72 hours.
Email emedservices@co.skagit.wa.us **OR** use the Online Sentinel Event Report Form

Clinical Indicators for ALS Evaluation

G23

The following are indicators that an Advanced Life Support (ALS) evaluation should be performed. The following list is a guideline only and is not comprehensive. Always take in to account the Index of Suspicion and the Mechanism of Injury and have a lower threshold for requesting ALS at extremes of age (< 2 and > 75 years of age) If in doubt, always default on the side of safety and request an ALS evaluation.

Primary ALS Indicators	Notes
Any Patient considered "Sick" by BLS Provider	Per "Sick/Not Sick" Training Module
Decreased Level of Consciousness (LOC)	Abnormal LOC for patient, includes acute intoxication
Airway Problems	All patients with airway problems should receive an ALS evaluation
Respiratory Distress	RR > 25 in adults, O2 Sats <91%, patient in tripod position, asthmatic with history of prior intubation, or concern for respiratory failure
Signs and/or symptoms of shock	Pale, diaphoretic, sustained tachycardia >115 in adults, and/or hypotension (BP <90 in adults)
Extremes of Age: Age less than 2 or greater than 75	All patients age less than 2 or age greater than 75 should receive an ALS evaluation
*****Condition Specific**	**Indicators are listed below this line*****
Abdominal Pain/Vomiting	Severe, unrelenting pain or vomiting
Asthma	Any patient with clinically evident increased work of breathing, or SOB unrelieved with use of asthma inhaler, history of intubation from prior asthma exacerbation
Burns, involving airway or severe	Burns with possible airway involvement, 2nd or 3rd degree burns >5% TBSA, Electrical Shock
Chest Pain/Discomfort (suspected Acute Coronary Syndrome)	All Chest Pain patients should receive an ALS evaluation
CVA/TIA (Suspected Stroke)	All patients with suspected stroke should receive an ALS evaluation
Diabetic Emergency	Hypoglycemia with failure to respond to oral glucose, involves patient unable to swallow, Hyperglycemia with suspected ketoacidosis or respiratory rate >25
Hypertension	Blood Pressure >200 systolic or >110 diastolic
Hypothermia/Hyperthermia	Temp <95 degrees F or low temperature with comorbidity (elderly, trauma, drugs, etc…), or high temperature >104 degrees F
Orthopedic	Suspected hip fracture, severe pain, suspected neuromuscular compromise
Severe Pain	Severe pain for which BLS provider indicates emergent pain management evaluation is warranted
Suspected OB/GYN Emergency	Severe pelvic pain, severe vaginal bleeding, suspected ectopic, suspected imminent birth or complications of birth, Pregnant w/BP >190 or <90.
Seizures	All patients with seizure or suspected seizure should receive an ALS evaluation

(Continued on next page)

Primary ALS Indicators	Notes
Syncope	All patients with syncope or suspected syncope should receive an ALS evaluation
Trauma	Any patients who meet Full or Modified/Standby Trauma Criteria, multiple fractures suspected, severe pain, submersion injury, or neurologic symptoms/ suspected spinal injury, Uncontrolled hemorrhage.
Trauma Mechanism	MVC with death in same vehicle, High Speed mechanism, falls >10 feet, penetrating injuries to head, neck, chest or abdomen. Age <6 or greater than 60 (not including ground level falls)
Epinephrine or Naloxone Administration	Regardless of who administered the medication (BLS provider or someone else)
High Risk Refusals	Any patient attempting to refuse for which BLS provider recommends transport to ED
Hyperkalemia (Elevated Potassium)	Patients with laboratories identifying an elevated potassium greater than 5.0 mEq/ L (e.g. patients with recent lab draws or from clinic or nursing home)
Agitation/Combative	Agitated or combative patients, any patient potentially requiring physical or chemical restraints

Notes:

1. Under certain circumstances (e.g., MCI) an ALS Evaluation may not be available in a timely fashion. In setting of a Mass Casualty Incident (MCI), direct transport without ALS evaluation may be reasonable. Outside of an MCI, a report to and discussion with the nearest responding ALS unit is indicated prior to direct transport.
2. Abnormal Vital Signs should prompt a careful assessment and documentation.

Patient Care Documentation

G24

An EMS incident report must be appropriately documented and completed in the MPD-approved electronic patient care reporting system for any call for EMS assistance within Skagit County, regardless of patient transport. This will apply to both basic and advanced life support units and includes lift/public assist calls.

DEFINITION OF A PATIENT

A person who has been encountered by an EMS professional and potentially requires a medical evaluation. This includes requests for determination of death, an auto accident, "non-injury" lift assist, ground level fall, etc.

GUIDELINE

1. **Patient Care Records**—A patient care report will be completed for every patient encounter. An EMS provider from each agency or service seeing a patient will each complete a PCR/ePCR. The PCR/ePCR must be completed by the certified provider(s) directly participating in the patient encounter. Every agency that has patient contact will document their involvement in the patient care provided. Each patient will have an individual record, per agency for provided care.

The PCR/ePCR must accurately and completely document the patient response and care while including the information required by WAC 246-976-330

2. **Record Distribution—**The PCR/ePCR will be distributed in this manner:

   a. In accordance with WAC 246-976-330, each ambulance and aid service must maintain a record of, and submit to the department, current certification of all personnel.

   b. The completed PCR/ePCR from each EMS provider agency involved in a patient's care must be completed and made available to the receiving medical facility prior to the end of the EMS providers shift and no later than 24 hours from the patient's arrival at the receiving medical facility.

   c. Copies of the completed PCR/ePCR will be provided upon request to:

      -The hospital that received the associated patient

      -The hospital that provided on-line medical direction (if applicable) for a specific patient or incident

      -SCEMS/Medical Program Director

3. Required hardware, internet/data access, phone lines, and administration are the responsibility of each agency or service utilizing the PCR/ePCR.

4. Documentation requirements may be deferred when emergency response is required, but must be completed as soon as possible. All attempts to complete ePCR's should be made prior to end of shift for EMS providers.

5. For multiple casualty incident (MCI), agencies will follow the adopted MCI plan for documentation and reporting.

6. **Record Retention**— All Patient care records must be securely retained in compliance with local government common records retention policies. Privacy will be protected by compliance with the Health Insurance Portability and Accountability Act (HIPAA).

7. **Data Collection**—All first response agencies must utilize an MPD-approved ePCR system and comply with state requirements for reporting data to the Washington EMS Information System (WEMSIS) database.

Patient Refusal

G25

STANDING ORDERS

CRITERIA

A person who meets the Skagit County EMS System definition of a patient attempting to decline assessment, treatment, and/or transport.

- Patients with intact decisional capacity retain the right to accept or refuse medical care, even if the consequences of refusal of care may be potentially harmful.
- An assessment of the patient and the clinical situation is required to:
  a) Assess for potential medical emergencies and
  b) Assess the individual's decisional capacity to determine their standing for refusing care

ALL EMS PROVIDERS

1. Perform and document a clinical patient assessment including a complete set of vital signs.
   A. If a patient is refusing assessment, treatment, and/or transport initiate and document an assessment of their **decisional capacity** (see process below).
      i. Document reason, nature, and extent of any limitations on completing an indicated assessment or vital signs.
   B. A patient with intact decisional capacity may decline assessment, treatment, and/or transport.
   C. *A patient without intact decisional capacity can not decline assessment, treatment, and or/transport.*
      i. An individual determined to lack decision-making capacity by EMS providers should not be allowed to refuse care against medical advice or be released at the scene.
      ii. In patients with a suspected emergent medical condition, initiate care to the extent possible as soon as practical for patients without decisional capacity.
      - A confused and/or combative patient attempting to refuse care does not possess decisional capacity and may not be allowed to refuse assessment, treatment, and/or transport. In this setting, See [M8: Behavioral Emergencies: Agitated or Violent]

      iii. EMS providers should not put themselves in danger by attempting to treat and/or transport an individual who refuses care. In a situation where there is a concern for scene safety, request law enforcement assistance as needed.
      - EMS providers may need to explain the nature and their reasoning behind their assessment of a patient's lack of decisional capacity to law enforcement personnel.
      - Law enforcement personnel are not under the direction of EMS personnel and may potentially decline to assist or disagree to assist with a patient refusing care.
      - Document the request for law enforcement assistance (and their refusal should this occur).
   D. For a patient with an indeterminate decisional capacity, contact on-line medical control for guidance.

2. Assess **Decisional Capacity** (also referred to as decision making capacity)
   A. Clinically assess the three components (legal, medical, and mental) to a patient possessing intact decisional capacity and with it the ability to decline assessment, treatment, and/or transport. *If a patient lacks any of the three components, they do not have intact decisional capacity.*

   (1) Legal Capacity - Assess patient for the legal capacity to refuse assessment, treatment, and/or transport.

   In order to have legal capacity, the patient must:
   - Be 18 years of age or older, or
   - Be an emancipated minor, or
   - Have the consent of legal guardian, and/or not be under a court order

STANDING ORDERS

(2) Medical Capacity - Assess patient's judgement and cognition for potential impairment by an acute medical condition (including intoxication)

- Assess for acute medical conditions that may impair the *ability to make an informed decision* to refuse assessment, care or transportation. Patients suspected of having judgement impaired by illness or injury do not have decisional capacity.
- Patients with *clinically evident* intoxication from alcohol and/or drugs evident on assessment do not have decisional capacity. If there is a concern for *possible* intoxication, perform and document a clinical assessment for intoxication. (See Section on **Substance Abuse** below for further guidance.)
- Medical capacity may be re-assessed after treatment of acute reversible conditions (e.g., hypoglycemia) per protocol.
- Patients with an acute medication condition that does *not* impair the ability to make an informed decision retain decisional capacity.

(3) Mental Capacity - Assess patient for awareness of current circumstances and concerns (insight) and demonstration of rational cognition (judgement)

- Patients suspected of suicidal or homicidal ideations do not have decisional capacity.
- Patients suspected of mental illness to the degree of demonstrating a suspected of a potential grave disability (defined as an inability to safely care for themselves) may lack mental capacity and therefore decisional capacity. If the patient passes all other components of the decisional capacity assessment (i.e., no other acute medical issues are suspected or identified) and the patient is still refusing care but there remains a concern for the patient's safety, contact law enforcement and articulate your concerns.
- The patient should be be able to articulate a rational reason for declining EMS care.
- A patient who is alert, oriented, and who rationally demonstrates a) adequate insight to understand the circumstances and b) the potential risk(s) associated with refusing assessment, treatment, or transport has mental capacity.

3. Patients without intact decisional capacity may not refuse assessment, treatment, and/or transport.

4. Risk stratify patients with intact decisional capacity by identifying **high risk patients.**

A. **High Risk patients are defined as:**

- Any time patient refuses transport *against* EMS provider advice
- Patients refusing an assessment
- Patients with abnormal vitals (Adults: HR <45 or >120, SBP <90 or >180, RR <10 or >24, T>38.5)
- Patients with the following higher risk chief complaints: Chest Pain, Shortness of Breath, Potential Head Trauma, Altered Mental Status, Substance Abuse
- High risk clinical condition identified or suspected by the provider (e.g., sepsis, ischemic extremity, carbon monoxide toxicity, etc…)
- Patients with an initially indeterminate decisional capacity

B. For patients identified as **high-risk**:

i. Seek to eliminate barriers to refusals. Attempt to determine what factor(s) are influencing the patient to refuse medical care, and address where possible (e.g., patient does not want IV, transport without IV).

ii. Attempt to communicate to and enlist support from spouse, significant others, family or friends if available.

iii. Seek to understand and address reason (s) for refusals. Document patients stated reason for refusal.

iv. Explain provider concern for risks of refusal and have patient restate these concerns back to you. If the patient is refusing transport against provider advice, document this explicitly.

v. Attempt to identify and document the Primary Care Provider name and clinic location

vi. If decisional capacity is initially indeterminate, contact on-line medical control to review

vii. Consider contacting on-line medical control (e.g., the patient is felt to be potentially persuadable or if in provider judgement medical control contact would be beneficial.)

viii. If refusal persists, inform the patient that they can call back for treatment and transport at any time should they change their mind. Where possible, obtain a 3rd party witness signature of patient refusal.

- The order of preference for additional 3rd party signatures is:
  - -Family Member
  - -Household Member
  - -Bystander
  - -Law Enforcement
  - -EMS/Health Care Personnel

5. Special Considerations - Minors

A. It is preferable for minors to have a parent or legal guardian who can provide consent for treatment on behalf of the child. EMS providers are to provide emergency treatment when a parent is not available to provide consent as minors do not have decisional capacity to decline consent for treatment. This is known as the emergency exception rule or the doctrine of implied consent. For minors, this doctrine means that the prehospital professional can presume consent and proceed with appropriate treatment and transport if the following four conditions are met:

i. The child is suspected to have an emergent condition that places his or her life or health in danger.

ii. The child's legal guardian is unavailable or unable to provide consent for treatment or transport.

iii. Treatment or transport cannot be reasonably delayed until consent can be obtained.

iv. The pre-hospital professional administers only treatment for emergency conditions that pose an immediate threat to the child.

B. As a general rule, if the pre-hospital professional's authority to act is in doubt, EMS providers should always do what they believe to be in the best interest of the minor.

C. For conditions not requiring emergent transport, phone contact with a parent is appropriate to discuss management and disposition. Document phone number and substance of discussion.

6. Special Considerations - Substance Abuse

A. Patient with *clinical* findings of current intoxication at the time of exam do not have decisional capacity. *In general if there is a suspicion for possible clinical intoxication, documentation should include a specific description of mentation, degree of agitation, clarity of speech and gait.*

B. Alcohol - patients with slurred speech, ataxia (lack of coordination/inability to ambulate), confusion, somnolence, and/or altered cognition and a suspected/known ingestion of alcohol do *not* have decisional capacity. Clinical intoxication is defined by history taking and physical exam is separate and distinct from legal intoxication which is defined as a legal/measured alcohol level above which the operation of motor vehicles is considered impaired.

C. Opiates - Patient with clinical opiate toxicity (somnolence, respiratory depression, ± pinpoint pupils) on initial assessment should be encouraged to be transported to the hospital. Patients who receive and respond to reversal naloxone are often difficult to evaluate for decisional capacity.

- There is a clinical concern that naloxone may be shorter duration than the opiate reversed, and clinical intoxication may re-occur. Contact medical control if a patient on slow release opiates (e.g., methadone) is attempting to refuse care.

- Current data on the safety of transport refusal by patients following naloxone is limited. Several studies have demonstrated a low mortality following reversal of IV heroin. However, as newer and more potent synthetic opiates have become increasingly encountered (and the specific substance is often unknown to patient/provider), risk assessment has become more difficult.
- ALS evaluation is warranted for patients requiring naloxone reversal.
- Encourage transport to the ED where referral to resources for chemical dependency can be provided.
- If a patient elopes from the scene following naloxone reversal, contact law enforcement for assistance. Document request and response.

D. Methamphetamines

- Patients with known/suspected clinical methamphetamine or derivative intoxication (e.g., pressured rapid speech, dilated pupils, tachycardia, disorganized thought, psychosis, agitation, paranoia, and/or hyperthermia) do not have decisional capacity.

E. Suspected/Unknown

- Patients with clinical findings of intoxication (any of the above toxidromes, or a combination) do not have decisional capacity.
- Patients with clinically evident but variable intoxication (moments of being alert and awake, followed by moments of somnolence, slurred speech, or respiratory depression) do not have decisional capacity. These patients may have combination of substances (opiate and amphetamines are a commonly encountered combination) and these patients do not have decisional capacity
- Patients requiring repeated stimulation do not have decisional capacity, even if at the height of stimulation they demonstrated adequate alertness and mentation.

7. Special Considerations - Mental Illness

A. Patient with suspected, known, or alleged suicidal or homicidal ideations do not have decisional capacity and may not decline transport. Contact law enforcement as needed.

B. Patient with a known or suspected mental illness and for whom there is a concern that they are a danger to themselves or others may not decline transport. Contact law enforcement as needed.

C. Patients with a mental illness and who are demonstrating a thought disorder (e.g., delusions, psychosis, disorganized thought) and who fail the standard decisional capacity assessment of mental capacity (They do not demonstrate adequate insight, understand the circumstances, the potential risk(s) associated with refusing assessment, treatment, or transport or do not demonstrate the capability for rational decision making) do not have decisional capacity.

8. For patients with intact decisional capacity Skagit EMS personnel shall complete and include a MPD-approved Skagit County EMS refusal form (either electronically or in paper form) with their patient care report

A. Obtain indicated signatures.

B. Document any refusal to sign, and when possible obtain third party signature

C. For high risk refusals where a PCP was identified, within 24 hours of call completion, enter case review request so that a notification to the PCP can occur.

NOTES

- Competency is generally a *legal status* of a person's ability to make decisions and is determined by the legal system. EMS personnel do not determine competence. *Decisional Capacity* is what EMS personnel evaluate and determine.

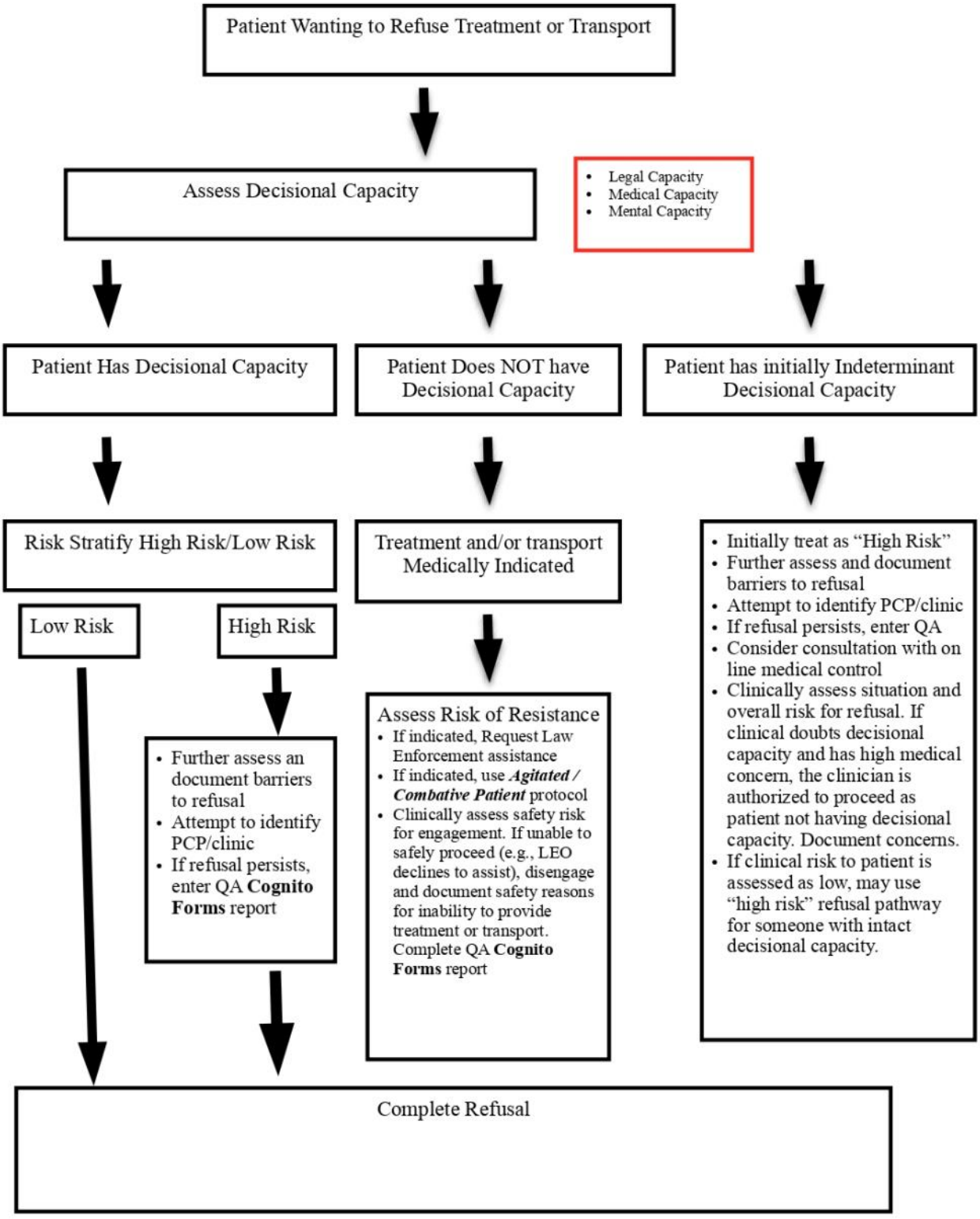
- Identifying that a patient is alert and oriented x4 does not itself constitute an adequate assessment of decisional capacity.

- Identifying Primary Care Provider or Clinic is extremely useful - as the office can be contacted later to try to reach out and follow up with the patient.

Patient Refusal

G25

Summary of Refusal Process



Medication Dosing Guidelines

G26

- **Adult and Pediatric Dosing**

  In general the dosing guidance in these protocol lists both Adult and Pediatric dosing. If there is no pediatric dosing given, then the specific protocol being referenced is intended for adults *only.*

  Example: The **Bradycardia-Adult** protocols lists an initial dose of Atropine of 1mg and no pediatric dosing guidance is provided. The **Bradycardia-Adult** protocol is intended for use with adult patients only.

- **Maximum (MAX) Dose**

  When dosing is specifically listed with either a specific option for a repeat dose, or no option for a repeat dose, the dosing as described represents a maximum dose to be utilized in the field.

  Example: The **Nausea and Vomiting Management** protocol lists droperidol as a third line medication for nausea and lists:

  Adult Dose: 0.625-1.25mg IV, May repeat dose x1 at 10 minutes

  In this setting 2.5mg (1.25mg IV x 2 doses) is the Max Dose.

  ⚠ **NOTE:** MAX doses should not be exceeded in the field, even with Medical Control contact. Should an EMS clinician encounter a situation where they believe a maximum dose threshold should have been exceeded, after the call is complete, the EMS provider should submit a request for QI review to review if protocol guidance should be updated.

- **Cautionary Threshold Dose (CTD)**

  Many medications are given on a titrated basis. Medications with a specific dosing limit for titration have a Max Dose (see above). On discussions with the DOH, there was consideration given for potentially adding a a specific MAX dose for every titrated medication.

  - However, there is no objective or clinically appropriate way to give a reliable MAX dose for many titrated medications such as narcotics and benzodiazepines. This is due to the wide variety of clinical response among patients as well as the range potential transport times encountered in Skagit County. (Giving 20mg of morphine to a patient with a 3 minute transport time is different than given 20mg of morphine over a 90 minute transport time.)
  - Additionally, attempting to give MAX doses for these medication implies a safety in that dosing which may not apply. Adverse effects such a respiratory depression, sedation may potentially occur at *any* dose for opiates and benzodiazepines. Clinical judgment and careful patient monitoring are warranted any time these medications are administered, regardless of dose given.
  - For this reason, MAX doses are *not* included in most protocols involving these medications.
  - Instead of a MAX dose, for some medications an *arbitrary* **Cautionary Threshold Dose (CTD)** is listed. This is intended solely as an *added* cognitive aid to the provider to reinforce the need for careful monitoring, clinical consideration, and documentation with these medications. Pulse oximetry and/or end-tidal CO2 monitoring are appropriate for most patients receiving these medications, however, application and documentation for both are indicated should the CTD be exceeded.

Example: The **ST Segment Elevation Myocardial Infarction (STEMI)** protocols indicates that after initial management, that If ongoing pain, consider additional analgesia:

1. If any hemodynamic instability present, use Fentanyl 25-50mcg IV, titrated cautiously. (CTD 200mcg)
2. If no hemodynamic instability or if hypertensive, use Morphine 2mg, titrated cautiously. (CTD 10mg)

This example is simply to indicate that would be unusual to approach or exceed these doses for the majority of patient encounters in Skagit County. Exceeding these doses merits a moment of cognitive re-assessment for the clinical provider (is there an extended transport time or severe tolerance?). It also means that while pulse oximetry would already be in place, that if not already applied, end-tidal CO2 monitoring would be indicated.

- **Minimum Dosing**

Aside from the exceptions listed below, medication dosing should be administered using the protocol parameters. Should a consideration occur where the EMS clinician believes a lower dosing than outlined is appropriate, contact with medical control is indicate for review prior to administration. Additionally, after the call is complete, the EMS provider should submit a request for QI review to review if protocol guidance should be updated.

Exceptions to minimum dosing:

A number of medications may have a wide clinical therapeutic range, and may require titration. While an initial lower dosing suggestion for these medications is provided, EMS clinicians are authorized to exercise clinical discretion to use an even *lower* dose(s) than outlined in the protocols where the clinical situation suggests added cautionary dosing may be warranted. (Examples: The elderly, medical frail, major comorbidities, etc…)

The following medications may be administered, at EMS clinician discretion, at a *lower* dose than the minimum listed in the protocols:
-Any opiate
-Any benzodiazepine
-Droperidol
-Prochlorperazine
-Promethazine

Example: The **ST Segment Elevation Myocardial Infarction (STEMI)** protocol indicates that after initial management, that If ongoing pain, consider additional analgesia:

1. If any hemodynamic instability present, use Fentanyl 25-50mcg IV, titrated cautiously. (CTD 200mcg)

In this case, at the judgement of the EMS Clinician, the fentanyl dose may be initiated and titrated at a *lower* dose (e.g, 12.5mcg) without contacting medical control.

Universal Patient Care Guideline

G27

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
All encounters with and prehospital care provided to persons meeting the definition of a patient as outlined in [G24: EMS Patient Care Documentation]	• Facilitate appropriate initial assessment and management of any EMS patient and refer to appropriate specific protocol/guidelines for additional actions as indicated

ALL EMS PROVIDERS

- Assess scene safety: evaluate for hazards to EMS personnel, patient, bystanders
- Don appropriate personal protective equipment (PPE)
- Consider limiting initial responder approach (scout method)
- Determine number of patients
- Request additional resources as needed
- Remove patient from hazardous environment
- Initiate cervical spinal immobilization if indicated until full assessment can be conducted
- Consider patient functional needs
- Conduct a complete assessment up to level of training and available resources including the following as appropriate:
  - **Primary Survey**
    - ⇒ Airway– Assess for patency and open airway as needed, suction as needed
    - ⇒ Breathing– Evaluate rate, breath sounds, accessory muscle use, retractions, and patient positioning, consider early oxygen administration if indicated
    - ⇒ Circulation– Evaluate for major external bleeding and initiate hemorrhage control as indicated, assess pulse rate and quality, evaluate perfusion by assessing skin color, temperature, and capillary refill
  - **Secondary Survey**
    - ⇒ Head– Pupils, naso-oropharynx, skull, scalp
    - ⇒ Neck– Jugular venous distention, tracheal position, cervical spine tenderness
    - ⇒ Chest– Retractions, breath sounds, chest wall deformity
    - ⇒ Abdomen/Back– Flank/abdominal tenderness or bruising, distention
    - ⇒ Extremities– Edema, pulse/motor/sensation, deformity
  - **Vital Signs**
    -An initial full set of baseline vital signs is required when possible: pulse, BP, respiratory rate, neurological status
    -Stable patients should have at least two sets of pertinent vital signs
    -Critical patients should have pertinent vital signs frequently monitored
  - **Pertinent Past Medical History** (SAMPLE, OPQRST) and history of chief complaint
- Utilize consultation services as needed: Incoming ALS unit, Medical Control, Poison Control
- Document estimated patient weight
- Determine and document patient's code status
- Periodically re-assess patient
- Monitor pain scale if applicable
- Complete patient care documentation in accordance with [G24: EMS Patient Care Documentation]

EMT AND ABOVE PROVIDERS

- Obtain pulse oximetry, apply oxygen for SpO2 <94%
- Obtain blood glucose, if indicated

IV Therapy Endorsement

- Establish IV access, if indicated, for patients believed to have an emergent or potentially emergent condition requiring administration of intravenous fluids, and/or medications

STANDING ORDERS

PARAMEDIC PROVIDERS

- Consider cardiac monitoring/12-lead EKG, if indicated
- Consider waveform capnography monitoring, if indicated
- Consider carbon monoxide monitoring, if indicated

NOTES

Key Considerations

- Pediatrics: use a weight-based assessment tool (length-based tape or other system) to estimate and document patient weight /color and guide medication therapy and adjunct choice
    a. Although the defined age varies by state, the pediatric population is generally defined by those patients who weigh up to 40 kg or up to 14-years of age, whichever comes first
    b. Consider using the pediatric assessment triangle (appearance, work of breathing, circulation) when first approaching a child to help with assessment
- Geriatrics: although the defined age varies by state, the geriatric population is generally defined as those patients who are 65 years of age or older.
    a. In these patients, as well as all adult patients, reduced medication dosages may apply to patients with renal disease. (i.e. on dialysis or a diagnosis of chronic renal insufficiency) or hepatic disease.
- Co-morbidities: Reduced medication dosages may apply to patients with renal disease (i.e. on dialysis or a diagnosis of chronic renal insufficiency) or hepatic disease (i.e. severe cirrhosis or end-stage liver disease).
- Vital Signs:
    a. Oxygen
        i. Administer oxygen as appropriate with a target of achieving 94-98% saturation
        ii. Supplemental oxygen administration is warranted for patients with oxygen saturation below this level titrated based upon clinical condition, clinical response, and geographic location and altitude.
    b. Normal vital signs (see chart below)
        i. Hypotension is considered a systolic blood pressure less than the lower limit on the chart
        ii. Tachycardia is considered a pulse above the upper limit on the chart
        iii. Bradycardia is considered a pulse below the lower limit on the chart
        iv. Tachypnea is considered a respiratory rate above the upper limit on the chart
        v. Bradypnea is considered a respiratory rate below the lower limit on the chart
    c. Hypertension—Although abnormal, may be an expected finding in many patients
        i. Unless an intervention is specifically suggested based on the patient's complaint or presentation, the hypertension should be documented, but otherwise, no intervention should be taken

ii. The occurrence of symptoms (e.g. chest pain, dyspnea, vision change, headache, focal weakness or change in sensation, altered mental status) in patients with hypertension should be considered concerning, and care should be provided appropriate to the patient's complaint or presentation

d. Temperature

Obtain a temperature under any of the following conditions when possible:

- An infectious process is suspected or being evaluated
- An environmental emergency (cold or heat exposure) is suspected
- Pediatric seizures
- Citizen Assist Calls if age ≥ 60, or if they have co-morbidities/chronic illness requiring assistance with activities of daily living
- Suspected malignant hyperthermia or neuromalignant syndrome (medication induced illness)

- Secondary Survey: may not be completed if patient has critical primary survey problems
- Critical Patients: proactive patient management should occur simultaneously with assessment
    a. Ideally, one provider should be assigned to exclusively monitor and facilitate patient-focused care
    b. Treatment and interventions should be initiated as soon as practical, but should not impede extrication or delay transport to definitive care
- At least two full sets of vital signs should be documented for every transported patient if the transport time is >5 minutes
- All treatment interventions should be documented
- Abnormal vital signs should be addressed and reassessed
- Response to treatment interventions should be documented including pain scale and reassessment when appropriate

⚠ **NOTE:** The MARCH assessment or approach may be used (and documented), see [A4: MARCH]

REFERENCE TABLES ON NORMAL PEDIATRIC VITAL SIGNS
AS WELL AS ADULT AND PEDIATRIC GLASGOW COMA SCALES
ARE PRESENTED ON THE FOLLOWING PAGE

Normal Pediatric Vital Signs

Age	Pulse	Respiratory Rate	Systolic BP
Preterm < 1 kg	120-160	30-60	36-58
Preterm 1 kg	120-160	30-60	42-66
Preterm 2 kg	120-160	30-60	50-72
Newborn	126-160	30-60	60-70
Up to 1 year	100-140	30-60	70-80
1-3 years	100-140	20-40	76-90
4-6 years	80-120	20-30	80-100
7-9 years	80-120	16-24	84-110
10-12 years	60-100	16-20	90-120
13-14 years	60-90	16-20	90-120
15 years and older	60-90	14-20	90-130

Adult and Pediatric Glasgow Coma Scale (GCS)

ADULT GLASGOW COMA SCALE		PEDIATRIC GLASGOW COMA SCALE	
Eye Opening (4)		Eye Opening (4)	
Spontaneous	4	Spontaneous	4
To Speech	3	To Speech	3
To Pain	2	To Pain	2
None	1	None	1
Best Motor Response (6)		Best Motor Response (6)	
Obeys Commands	6	Spontaneous Movement	6
Localizes Pain	5	Withdraws to Touch	5
Withdraws From Pain	4	Withdraws from Pain	4
Abnormal Flexion	3	Abnormal Flexion	3
Abnormal Extension	2	Abnormal Extension	2
None	1	None	1
Verbal Response (5)		Verbal Response (5)	
Oriented	5	Coos, Babbles	5
Confused	4	Irritable Cry	4
Inappropriate	3	Cries to Pain	3
Incomprehensible	2	Moans to Pain	2
None	1	None	1
Total		Total	

SECTION 2:
CARDIAC EMERGENCIES

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SECTION 11: MEDICATION FORMULARY
SECTION 12: APPENDICES & REFERENCE MATERIAL

Acute Decompensated Heart Failure

C1

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
1. Clinical impression is Congestive Heart Failure 2. SBP is ≥ 190 **AND** 3. RR > 25 **OR** O2 saturation ≤90%	• Assure adequate oxygenation and ventilation • Recognize impending respiratory failure • Intervene for patients who require escalation of therapy

ALL EMS PROVIDERS

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- Apply oxygen as needed to obtain/maintain O2 saturation ≥94%

EMT AND ABOVE PROVIDERS

EMT w/ IV Therapy Endorsement

- Obtain IV access (saline lock or normal saline)

PARAMEDIC PROVIDERS

- Do not delay emergent patient care or resuscitative efforts, but obtain 12-Lead EKG as soon as possible
  - A. If EKG indicates STEMI, initiate STEMI protocol see [C11: STEMI]
  - B. Consider serial EKGs if high index of suspicion and situation permits
- Give ***Aspirin*** (ASA) 324mg (4 x 81mg) if not taken prior to arrival
  - A. If patient has taken a dose lower than 324mg in past 12 hours, adjust dose given to total 324mg
  - B. If patient is on anti-coagulant such as Warfarin, but there is a high index of suspicion for Acute Coronary Syndrome (ACS), administer ASA
- If no contraindications, give ***Nitroglycerin*** (NTG) 0.4mg sublingual up to every 3 minutes if symptoms persist up to a total of 8 doses.
  - A. Prior to nitrate use, ask specifically about erectile dysfunction medications which currently include Viagra (sildenafil citrate), Levitra (vardenafil), and Cialis (tadalafil). For Viagra and Levitra, do not administer nitrates within 24 hours of last dose, for Cialis, do not administer nitrates within 48 hours of last dose.
  - B. Monitor blood pressure frequently (at least every 5 minutes)
  - C. If patient remains hypertensive and in distress following initial 8 NTG doses, **Contact On-Line Medical Control** for authorization of additional NTG use.
- Initiate non-invasive ventilatory support (CPAP or BiPAP)
- If prolonged transport or once CPAP applied, consider application of ***Nitroglycerin*** Paste (1-3")
- If ongoing pain, consider additional analgesia:
  - A. If any hemodynamic instability present, use ***Fentanyl*** 25-50mcg IV titrated cautiously up to every 5 minutes, **CTD**: 200mcg
  - B. If no hemodynamic instability or if hypertensive, use ***Morphine*** 2mg titrated cautiously up to every 5 minutes, **CTD**: 10mg
- Treat nausea per nausea/vomiting protocol see [M17: Nausea & Vomiting Management]
- Follow arrhythmia protocols as needed
- Transport per cardiac triage destination tool
- If patient has ADHF, document CHF in primary or secondary impression in electronic patient care report

⚠ **NOTE:** Nitrates provide both subjective and objective improvement, and might decrease intubation rates, incidence of MIs, and mortality. High-dose nitrates can reduce both preload and afterload and potentially increase cardiac output. Because many CHF patients present with very elevated arterial and venous pressure, frequent doses of nitrates may be required to control blood pressure and afterload. High dose nitrate therapy, nitroglycerin SL, is indicated for patients with Acute Decompensated Heart Failure (ADHF). See that protocol for details. A concern with high doses of nitrates is that some patients are very sensitive to even normal doses and may experience marked hypotension; it is therefore critical to monitor blood pressure during high-dose nitrate therapy.

Atrial Fibrillation/Flutter with Rapid Ventricular Response

C2

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
Atrial fibrillation or flutter with a sustained rapid heart rate >120 **AND** Clinical concern that the dysrhythmia is a major contributor to symptoms/presentation.	• Maintain adequate oxygenation, ventilation, and perfusion • Control ventricular rate • Restore regular sinus rhythm in unstable patient

PARAMEDIC PROVIDERS

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- Evaluate and treat for other conditions (e.g. sepsis or trauma) and if identified use appropriate protocols for management *prior* to utilizing this protocol
  - -It is appropriate not to treat rate or rhythm and/or tolerate higher heart rates if a separate underlying clinical condition is suspected
  - - In such situations **Contact On-Line Medical Control** for guidance is recommended
- Apply cardiac monitor
  - -Obtain 12-lead EKG
- Obtain IV access
- Obtain the following information when possible:
  - A. Evaluate for history of prior or known atrial fibrillation or flutter
  - B. Identify onset and duration of symptoms/dysrhythmia
    - -Some patients can clearly identify symptom onset, and some patients can not identify any symptoms **NOTE:** Risk of stroke is increased with rhythm control (such as cardioversion in the setting of atrial fibrillation/flutter of >48 hours duration
  - C. Evaluate for use of blood thinning medications
    - -Traditional anticoagulation has been with warfarin/coumadin, but multiple newer anticoagulation therapies are now available (see chart at end of protocol).
- If hemodynamically unstable (e.g. shock), consider emergent synchronized electrical cardioversion. [See PR39: Cardioversion]

NOTE: Atrial fibrillation and/or flutter are rarely the cause of hemodynamic instability unless heart rate >200, careful clinical re-evaluation for alternate etiology of the hemodynamic instability is warranted prior to pursuing cardioversion in the setting of atrial fibrillation/flutter with HR <200 in adults.

- Consider rate control with ***Diltiazem*** **Adult Dose**: 0.1-0.25mg/kg up to 25mg IV slow IV/IO push. Can be given in 5-25mg increments.
  - i. Use a reduced dose of ***Diltiazem*** (5-12.5mg) if SBP <110, if clinically frail, or if there is a suspicion of a possible alternate primary etiology but rates are sustained >140-150.
  - ii. Bolus NS if blood pressure is borderline or mildly hypotensive (and dysrhythmia is thought to be primary etiology).
  - iii. Consider ***Calcium Gluconate*** **Adult Dose**: 500mg-1000mg (5-10ml) slow IV after IV bolus if borderline and/or mildly hypotensive and dysrhythmia is thought to be primary etiology.
    - **NOTE:** Pre-treatment with calcium is thought to blunt the hypotension that can sometimes result with diltiazem use. Although commonly used, benefit has not been definitively established in the literature.
  - iv. Repeat Diltiazem up to every 5-10 minutes with goal of a sustained HR <120
    - -A higher HR is tolerated if there is a provocative underlying condition (e.g. sepsis or trauma) suspected.
- Re-evaluate patient
  - A. Consider repeat 12-lead EKG if situation permits

Atrial Fibrillation/Flutter with Rapid Ventricular Response

C2

PARAMEDIC PROVIDERS (CONTINUED)

B. Evaluate for resolution of (potentially rate-related) ischemic changes.

⚠ **NOTE:** Rate related ST depression and/or T wave changes are not typically predictive of underlying coronary artery disease, but if present should be noted, reported, and documented.

Common Anticoagulant Therapies (Drug Names)

Generic Name	Brand Name
Apixaban	Eliquis
Clopidegrel (technically an anti-platelet agent)	Plavix
Dabigatran	Pradaxa
Edoxaban	Savaysa
Rivaroxaban	Xarelto
Warfarin	Coumadin

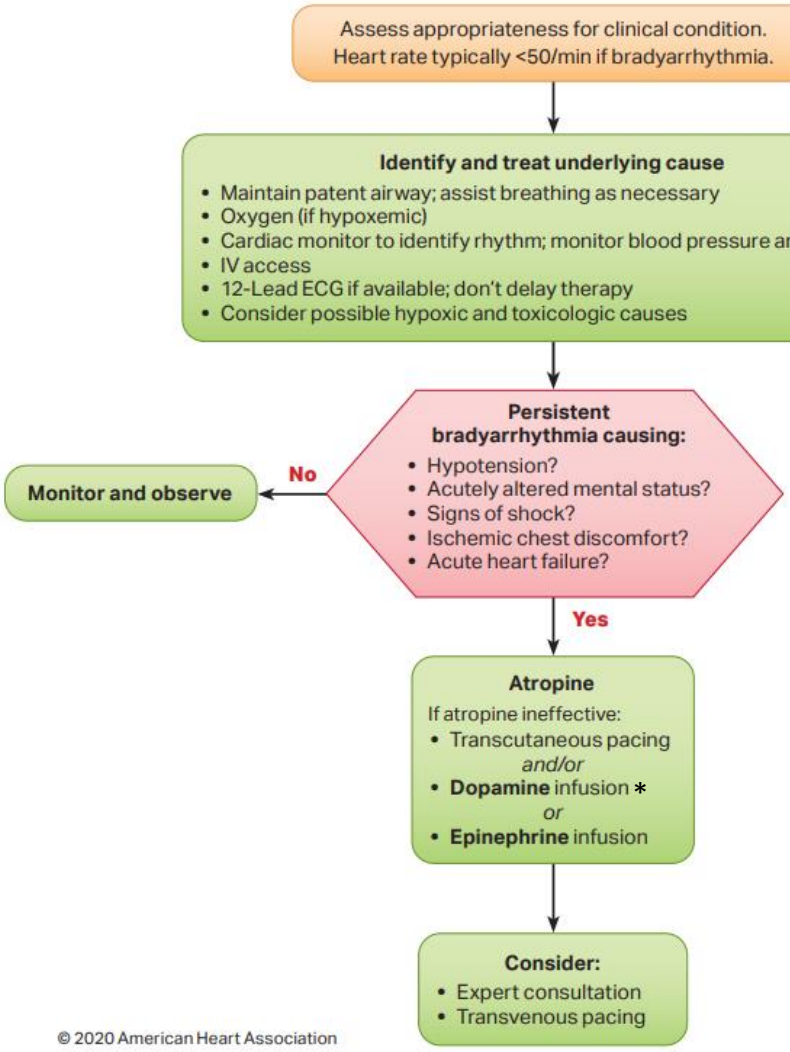
⚠ **NOTE:** This is a partial and incomplete list only of some

Bradycardia –Adult

C3

PARAMEDIC PROVIDERS

Adult Bradycardia Algorithm



Doses/Details

Atropine IV dose:
First dose: 1 mg bolus.
Repeat every 3-5 minutes.
Maximum: 3 mg.

Dopamine IV infusion: *
Usual infusion rate is
5-20 mcg/kg per minute.
Titrate to patient response;
taper slowly.

Epinephrine IV infusion:
2-10 mcg per minute infusion.
Titrate to patient response.

Causes:
- Myocardial ischemia/ infarction
- Drugs/toxicologic (eg, calcium-channel blockers, beta blockers, digoxin)
- Hypoxia
- Electrolyte abnormality (eg, hyperkalemia)

- *Dopamine is not carried pre-hospitally
- ⚠ **NOTE:** To create an Epinephrine drip take 1mg Epinephrine and inject into a 1 L bag of normal saline (label bag!). This creates a concentration of 1mcg/ml. Initiate 1mL/minute IV, and titrate to effect up to 10mcg/minute (10mL/min)
- Notify receiving hospital as soon as practical

Cardiac Arrest-Adult—Non-Traumatic

C4

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
Patient in cardiac arrest from a presumed cardiac/medical (non-traumatic) cause.	• Return of spontaneous circulation (ROSC) • Preservation of neurologic function • High quality chest compressions with minimal interruptions until confirmation of ROSC or termination of resuscitation • Prompt defibrillation when indicated

EXCLUSION CRITERIA

- Cardiac arrest due to traumatic etiology
- Patients with verifiable Do Not Resuscitate Order (POLST, etc.), [See Protocol S5] enrolled on hospice [See Protocol ___] order or who meet criteria for termination of resuscitation [See Protocol S6]
- Patients in cardiac arrest due to severe hypothermia

ALL EMS PROVIDERS

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- Follow current AHA guidelines for Basic Life Support (BLS)
- Initiate chest compressions immediately upon recognition of cardiac arrest unless valid DNR or signs incompatible with life
- Use AED as soon as possible, with minimal interruption of chest compressions
- Place an oral airway when available
- Perform ventilation with Bag Valve Mask

EMT AND ABOVE PROVIDERS

- Place an oral or nasal airway

EMT w/ SGA Endorsement

- Consider Supraglottic Airway placement without interrupting chest compressions, see [PR12: i-Gel® Supraglottic Airway]

EMT w/ IV Therapy Endorsement

- Consider establishing IV/IO access without interrupting chest compressions
- When practical, after addressing initial priorities of cardiac arrest management, obtain blood glucose

PARAMEDIC PROVIDERS

- Consider Endotracheal Intubation if SGA is not effective. An effective SGA should be left in place.
- Administer medications as per current AHA guidelines for Advanced Cardiovascular Life Support (ACLS)
- Consider the use of anti-arrhythmic for recurrent VF or pulseless VT

Amiodarone

Adult Dose: 300mg IV/IO, may be repeated at a dose of 150mg x1

Lidocaine

Adult Dose: 1-1.5mg/kg IV/IO, may be repeated at 0.5mg/kg IV/IO up to a maximum of 3mg/kg

- For Torsades de Pointes

Magnesium

Adult Dose: 2 grams IV/IO

Cardiac Arrest-Adult—Non-Traumatic (cont.)

PARAMEDIC PROVIDERS (CONTINUED)

- Consider reversible causes of cardiac arrest which include the following:
  - -Severe hypothermia
  - -Known or suspected Hyperkalemia
  - -Known or suspected Tricyclic antidepressant overdose (Administer ℞ ***Sodium Bicarbonate***: **Adult Dose**: 1-2mEq/kg up to 100 mEq IV/IO, may be repeated x1).
  - -Known or suspected hypovolemia (Administer NS bolus - **Adult dose**: up to 2 liters
- If the patient is intubated at the time of arrest, re-assess tube placement and evaluate for tension pneumothorax
- Defibrillation should be at the maximum output of the defibrillator, based on the manufacturers recommendations, up to 360 Joules (or 4 Joules/kg for pediatric patients), for initial and subsequent defibrillation attempts.
- Chest compressions should resume immediately after defibrillation attempts with no pauses for pulse checks for 2 minutes regardless of the rhythm displayed on the cardiac monitor.
- If ROSC occurs, see Protocol S9: Post-ROSC Care
- If resuscitation remains ineffective, consider termination of resuscitation. See Protocol S6: Termination of Resuscitation

NOTES

Special Circumstances

A. Pregnancy (for patients in advanced state of pregnancy with a palpably gravid abdomen)
- The best hope for fetal survival is maternal survival
- Position the patient in the supine position with a second rescuer performing manual uterine displacement to the left in an effort to displace the gravid uterus and increase venous return by avoiding aorto-caval compression.
- If manual displacement is unsuccessful, the patient may be placed in the left lateral tilt position at 30 degrees. This position is less desirable than the manual uterine displacement as compressions are more difficult.
- Chest compressions should be performed slightly higher on the sternum than in the non-pregnant patient to account for elevation of the diaphragm and abdominal contents.
- Defibrillation should be performed as in non-pregnant patients
- Early transport or the gravid late-pregnancy patient in cardiac arrest should be considered

B. Arrests of primary respiratory etiology:
- Consider early and aggressive management of the patients airway as well as the above protocols. Passive ventilation with a non-rebreather is NOT indicated for these patients.

DIFFERENTIAL DIAGNOSIS CONSIDERATIONS

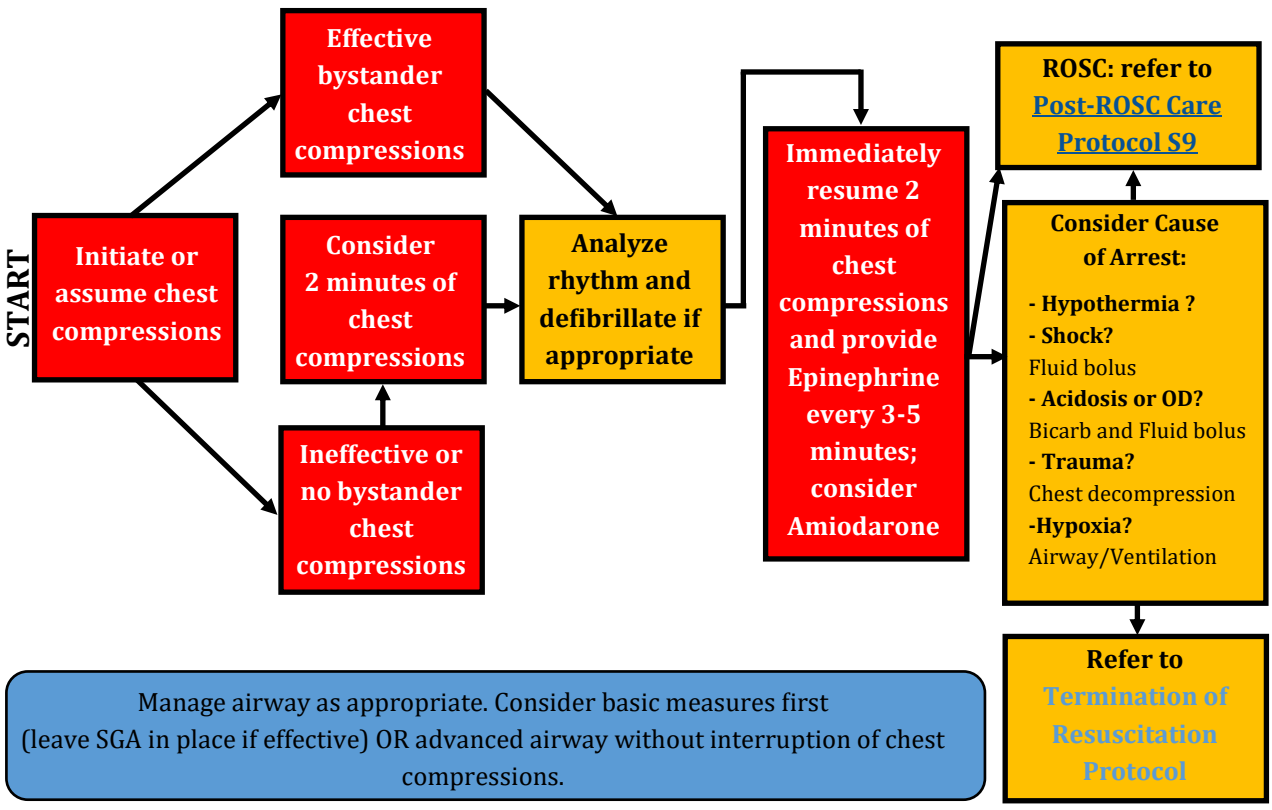
- Myocardial infarction
- Hypovolemia
- Hypoxemia
- Hyperkalemia
- Hypokalemia
- Hypothermia
- Tension Pneumothorax
- Tamponade
- Thrombosis
- Toxins

DOCUMENTATION / KEY PERFORMANCE INDICATORS

- Resuscitation attempted and all interventions performed
- Arrest witnessed
- Location of arrest
- First monitored rhythm
- T-CPR/CPR before EMS arrival
- Any ROSC
- Presumed etiology

STANDING ORDERS

Cardiac Arrest Overview



Manage airway as appropriate. Consider basic measures first (leave SGA in place if effective) OR advanced airway without interruption of chest compressions.

CARDIAC ARREST CHECKLIST	
	Code leader and roles identified (pre-arrival)
	Continuous chest compressions (with advanced airway) with minimal interruption and full recoil
	Turn on CPR feedback device/metronome with goal of 100-120 compressions/minute
	Rotate compressors every 2 minutes
	AED/defibrillator applied and monitored
	O2 flowing and attached to BVM
	ETCO2 waveform present and monitored (SGA or ETT)
	IV/IO established
	Possible causes considered
	Contact On-Line Medical Control early to discuss complex cases
	Gastric insufflation limited and gastric decompression considered
	Family present and ongoing communication/support provided (consider FSO request)

Evaluate for all potential causes of cardiac arrest, including the 5 **H**'s (**H**ypothermia, **H**ypovolemia, **H**ypoxia, **H**ypo/**H**yper kalemia, **H+** ion or acidosis) and the 5 **T**'s (Cardiac **T**amponade, **T**ension Pneumothorax, **T**hromboembolic disease x 2 (i.e. pulmonary embolism/ MI) and Toxins). Prior to termination of cardiac arrest, address potential causes of arrest, including effective management of patient air way, provision of fluid bolus, and consideration of bicarb in possible toxic or acidotic. Also, consider bicarb and calcium in suspected hyperkalemic patients. Please note, patients on dialysis are at risk for electrolyte abnormalities. Finally, consider needle decompression for tension pneumothorax if appropriate.

Additional Notes for Cardiac Arrest:

Effective chest compressions and defibrillation are the most important therapies for the patient in cardiac arrest. Effective chest compressions are defined as:

a. A rate of 100 - 120 compressions/minute
b. Depth of at least 2 inches
c. Allow for complete chest recoil
d. Minimize interruptions in compressions
   -Pre-charge monitor when approaching rhythm checks
   -Safely dump energy if shock not indicated
e. Rotate rescuers every 2 minutes, where available
f. Avoid respiratory rate greater than 10/min
g. Quantitative end-tidal CO2 should be used to monitor effectiveness of chest compressions. If ETCO2 is < 10 mmHg, attempt to improve chest compression quality
h. Consider additional monitoring with biometric feedback, where available.

Resuscitate on scene as the effectiveness of chest compressions decreases during any patient movement. Resuscitation on scene should be the goal, with the only exceptions being safety concerns for the responding crew OR inability to effectively resuscitate in the patient's current location.

All EMS services must have an organized and structured response to the care of patients in cardiac arrest and a copy of their plan provided to the EMS Office and updated as needed. Use capnography when available during resuscitation for confirmation and monitoring of advanced air ways and for prolonged use of BVM as well as monitoring effectiveness of chest compression and return or loss
of spontaneous circulation.

⚠ **NOTE:** The algorithms for cardiac arrest or arrhythmias reflect current American Heart Association ACLS guidelines, as they should be used in the prehospital setting. Femoral IO or humeral IO are preferential choices for adult patients in cardiac arrest.

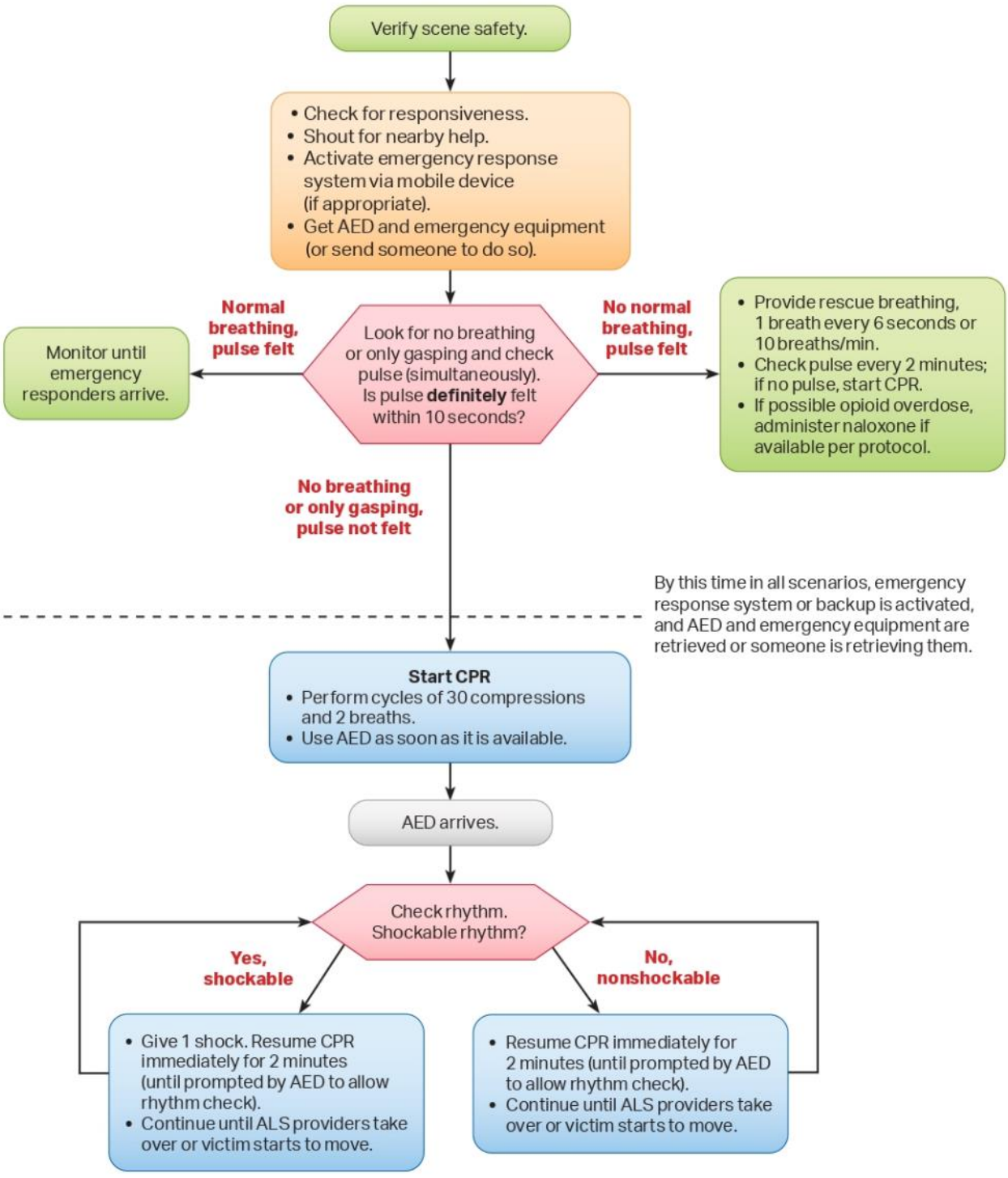
In the case of peripartum cardiac arrest, provision of high-quality CPR remains a priority. If a patient's fundus height is at or above the level of the umbilicus, manual uterine displacement to either the left or right is the preferred method of relieving aortocaval compression during chest compressions. Additionally, local hospital resources for advanced care should be activated immediately upon recognition of peripartum cardiac arrest. **Contact On-Line Medical Control** discuss the potential of additional therapies.

Consider vector change (pads to anterior/posterior) for refractory VF/VT.

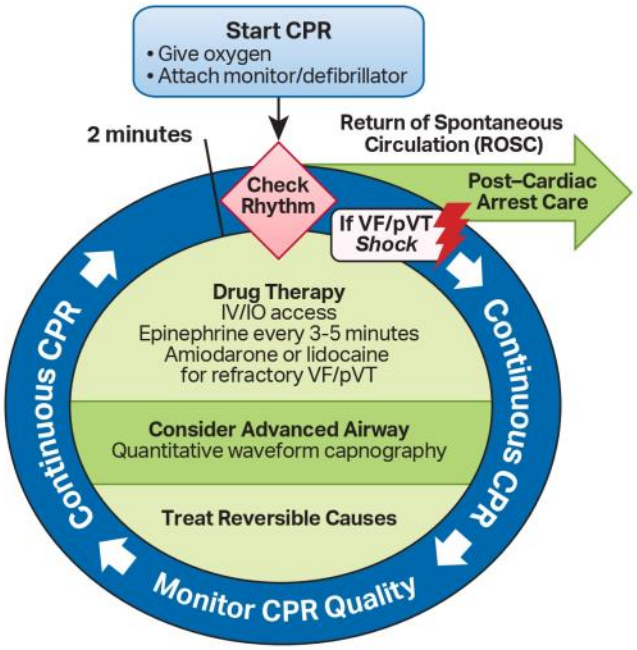
ALL EMS PROVIDERS

STANDING ORDERS

Adult Basic Life Support Algorithm for Healthcare Providers



Adult Cardiac Arrest Circular Algorithm



CPR Quality

- Push hard (at least 2 inches [5 cm]) and fast (100-120/min) and allow complete chest recoil.
- Minimize interruptions in compressions.
- Avoid excessive ventilation.
- Change compressor every 2 minutes, or sooner if fatigued.
- If no advanced airway, 30:2 compression-ventilation ratio.
- Quantitative waveform capnography
  - If P_{ETCO_2} is low or decreasing, reassess CPR quality.

Shock Energy for Defibrillation

- **Biphasic:** Manufacturer recommendation (eg, initial dose of 120-200 J); if unknown, use maximum available. Second and subsequent doses should be equivalent, and higher doses may be considered.
- **Monophasic:** 360 J

Drug Therapy

- **Epinephrine IV/IO dose:** 1 mg every 3-5 minutes
- **Amiodarone IV/IO dose:** First dose: 300 mg bolus. Second dose: 150 mg.
  or
- **Lidocaine IV/IO dose:** First dose: 1-1.5 mg/kg. Second dose: 0.5-0.75 mg/kg.

Advanced Airway

- Endotracheal intubation or supraglottic advanced airway
- Waveform capnography or capnometry to confirm and monitor ET tube placement
- Once advanced airway in place, give 1 breath every 6 seconds (10 breaths/min) with continuous chest compressions

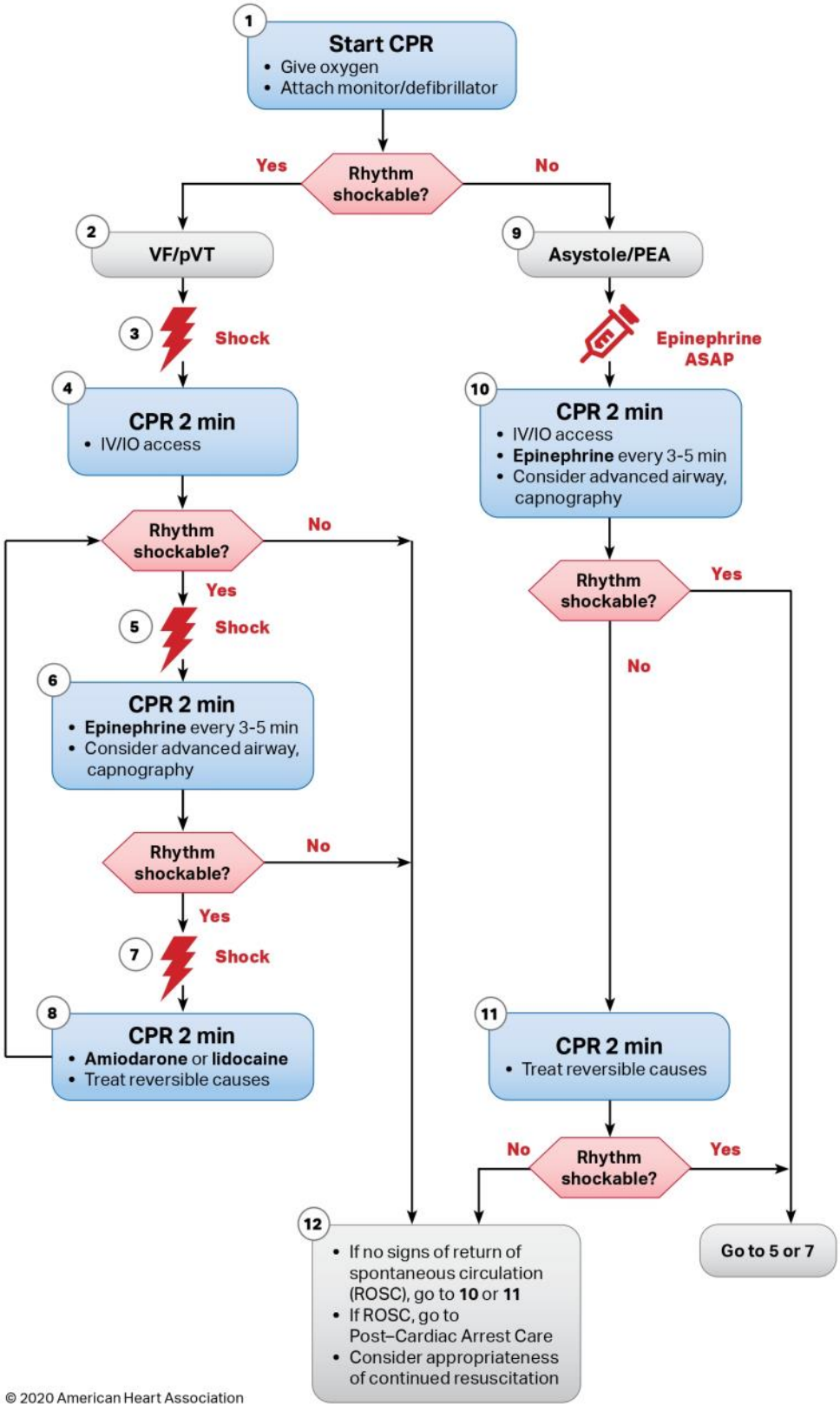
Return of Spontaneous Circulation (ROSC)

- Pulse and blood pressure
- Abrupt sustained increase in P_{ETCO_2} (typically ≥40 mm Hg)
- Spontaneous arterial pressure waves with intra-arterial monitoring

Reversible Causes

- **H**ypovolemia
- **H**ypoxia
- **H**ydrogen ion (acidosis)
- **H**ypo-/hyperkalemia
- **H**ypothermia
- **T**ension pneumothorax
- **T**amponade, cardiac
- **T**oxins
- **T**hrombosis, pulmonary
- **T**hrombosis, coronary

Adult Cardiac Arrest Algorithm



CPR Quality

- Push hard (at least 2 inches [5 cm]) and fast (100-120/min) and allow complete chest recoil.
- Minimize interruptions in compressions.
- Avoid excessive ventilation.
- Change compressor every 2 minutes, or sooner if fatigued.
- If no advanced airway, 30:2 compression-ventilation ratio
- Quantitative waveform capnography
  - If $PETCO_2$ is low or decreasing, reassess CPR quality.

Shock Energy for Defibrillation

- **Biphasic**: Manufacturer recommendation (eg, initial dose of 120-200 J); if unknown, use maximum available. Second and subsequent doses should be equivalent, and higher doses may be considered.
- **Monophasic**: 360 J

Drug Therapy

- **Epinephrine IV/IO dose:** 1 mg every 3-5 minutes
- **Amiodarone IV/IO dose:** First dose: 300 mg bolus. Second dose: 150 mg.
  or
  Lidocaine IV/IO dose: First dose: 1-1.5 mg/kg. Second dose: 0.5-0.75 mg/kg.

Advanced Airway

- Endotracheal intubation or supraglottic advanced airway
- Waveform capnography or capnometry to confirm and monitor ET tube placement
- Once advanced airway in place, give 1 breath every 6 seconds (10 breaths/min) with continuous chest compressions

Return of Spontaneous Circulation (ROSC)

- Pulse and blood pressure
- Abrupt sustained increase in $PETCO_2$ (typically ≥40 mm Hg)
- Spontaneous arterial pressure waves with intra-arterial monitoring

Reversible Causes

- **H**ypovolemia
- **H**ypoxia
- **H**ydrogen ion (acidosis)
- **H**ypo-/hyperkalemia
- **H**ypothermia
- **T**ension pneumothorax
- **T**amponade, cardiac
- **T**oxins
- **T**hrombosis, pulmonary
- **T**hrombosis, coronary

CPR-Induced Consciousness (CPRIC)

C5

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
Patient who demonstrates consciousness while undergoing cardiopulmonary resuscitation with no measurable spontaneous cardiac output displayed.	• Concurrently manage or prioritize cardiac arrest before management of CPRIC symptoms if possible • Any patient exhibiting CPRIC symptoms should have their resuscitation time extended to a minimum of 45 minutes

DEFINITIONS

Interfering CPRIC

The act of purposefully interfering with management of cardiac arrest such as:

- Pushing/pulling rescuers away
- Moving arms and legs
- Pulling out IV access
- Biting down on airway adjuncts
- Talking to rescuers

Non-Interfering CPRIC

The act of not interfering with management of cardiac arrest but showing heightened consciousness/awareness that resuscitation is ongoing such as:

- Blinking
- Taking breaths
- Eyes tracking
- Tearing
- Groaning
- Slight movement

ALL EMS PROVIDERS

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- Communicate with other personnel on scene that CPRIC is occurring
- Give consideration to bystanders and family members at the scene
  - -Time should be allocated to debriefing them to what is happening to the patient when possible
- Care should be given by EMS personnel around language use at the scene
  - -Some CPRIC patients who survive their cardiac arrest have lucid memories during their resuscitation
- Talking and reassuring patients during resuscitation should be considered as a supplemental management technique

PARAMEDIC PROVIDERS

- Consider administration of ***Ketamine*** **Adult Dose**: 1mg/kg IV/IO up to 250mg and may repeat x1 after 5 minutes if needed. **Pediatric Dose**: 1mg/kg IV/IO up to 250mg and may repeat x1 after 5 minutes if needed.

NOTE: The limit per dose of 250mg is specific to CPR-induced consciousness. If needed at a later point in the presentation, additional Ketamine may be administered for airway insertion or post-intubation sedation and analgesia per those protocols.

Post-ROSC Care

C6

STANDING ORDERS

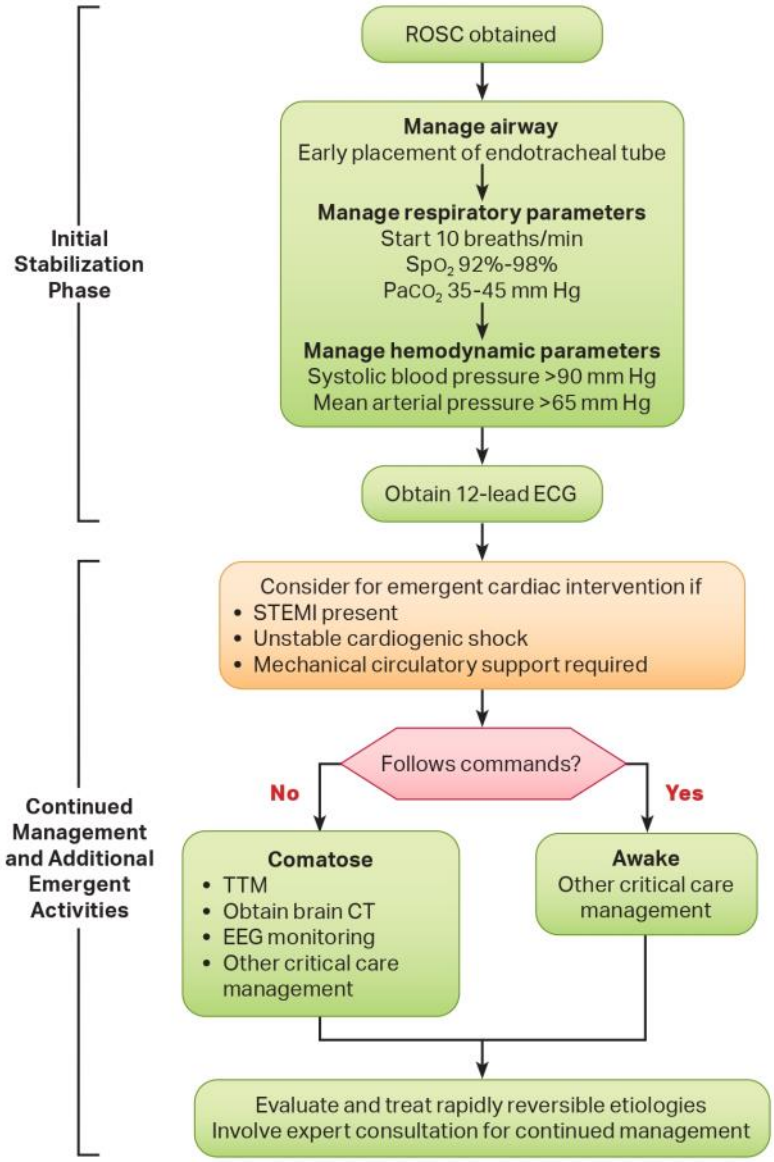
CRITERIA	PATIENT CARE GOALS
Patient who has return of spontaneous circulation (ROSC) following resuscitation for cardiac arrest	• Optimize neurologic and other function following cardiac arrest resuscitation

PARAMEDIC PROVIDERS

- Continue to manage problems associated with airway, breathing, and circulation as clinically indicated. Monitor closely for reoccurrence of cardiac arrest, and return to appropriate protocol if cardiac arrest does re-occur.
    1. Most patients immediately post resuscitation will require ventilatory assistance.
    2. Hyperventilation of the post arrest patient should be avoided as current resuscitation theory suggests that it can lead to hypotension and recurrent cardiac arrest. Patients with an advanced airway should receive 1 breath every 6 seconds (10 breaths/minute).
    3. The condition of post-resuscitation patients fluctuates rapidly and continuously, and they require close monitoring. A significant percentage of patients with ROSC patients will re-arrest.
- Obtain post-ROSC vital signs
- Re-assess oxygenation and ventilation
    1. Titrate oxygen to keep O2 saturation ≥ 94%. Attempt to minimize hyperoxygenation by titrating to saturation between 94-99%
    2. Carefully assess ventilation. Ensure ventilation rate ≤ 10. Hyperventilation is a significant cause of hypotension and recurrence of cardiac arrest in the post resuscitation phase.
- If systolic BP < 90 or Mean Arterial Pressure (MAP) ≤ 65, bolus with NS **Adult Dose:** 500mL, **Pediatric Dose:** 10mL/kg.
    1. Consider vasopressor support with field Epinephrine drip if hypotension persists.
        a. To create ℞ ***Epinephrine Drip*** add 1 mg Epinephrine to 1 liter NS (results in concentration of 1mcg/ml) and start at 1-2mL/min, titrate up to Adult: 50mL (50mcg) per minute, Pediatric: up to 0.05mL/kg (0.05mcg/kg) max 25mL/min. ⚠ **NOTE:** The dose for post ROSC management is higher than the 10mL/min maximum for other indications.
    2. Evaluate for common causes of post-resuscitation hypotension including hyperventilation, hypovolemia, and pneumothorax
- Obtain blood glucose if not already performed and treat per protocol, if indicated.
- Obtain 12-Lead EKG as soon as practical
    1. Evaluate for STEMI. Treat per [C11: ST Segment Elevation Myocardial Infarction] if present
    2. If STEMI present, when possible, transport to nearest Level 1 cardiac hospital.
    3. Transmit EKG when possible
- Assess neurologic status
- If patient seizes, treat per [M21: Seizure]
- Notify receiving hospital as soon as practical
- When possible, and if not already known, attempt to determine and document:
    1. If cardiac arrest was witnessed
    2. If bystander CPR was performed (if time allows, attempt to capture name and contact info for follow-up contact and potential recognition)
    3. Estimated down-time prior to initiation of resuscitation efforts
    4. Initial presenting rhythm
- Patients with ROSC but without return of neurologic function may be candidates for Targeted Temperature Management (TTM) at receiving facility
    1. Current data have not identified a benefit from initiating the cooling process in the pre-hospital environment for patients who are candidates for Targeted Time Management.

STANDING ORDERS

ACLS Healthcare Provider
Post–Cardiac Arrest Care Algorithm



Initial Stabilization Phase

Resuscitation is ongoing during the post-ROSC phase, and many of these activities can occur concurrently. However, if prioritization is necessary, follow these steps:

- Airway management: Waveform capnography or capnometry to confirm and monitor endotracheal tube placement
- Manage respiratory parameters: Titrate FIO_2 for SpO_2 92%-98%; start at 10 breaths/min; titrate to $PaCO_2$ of 35-45 mm Hg
- Manage hemodynamic parameters: Administer crystalloid and/or vasopressor or inotrope for goal systolic blood pressure >90 mm Hg or mean arterial pressure >65 mm Hg

Continued Management and Additional Emergent Activities

These evaluations should be done concurrently so that decisions on targeted temperature management (TTM) receive high priority as cardiac interventions.

- Emergent cardiac intervention: Early evaluation of 12-lead electrocardiogram (ECG); consider hemodynamics for decision on cardiac intervention
- TTM: If patient is not following commands, start TTM as soon as possible; begin at 32-36°C for 24 hours by using a cooling device with feedback loop
- Other critical care management
  - Continuously monitor core temperature (esophageal, rectal, bladder)
  - Maintain normoxia, normocapnia, euglycemia
  - Provide continuous or intermittent electroencephalogram (EEG) monitoring
  - Provide lung-protective ventilation

H's and T's

Hypovolemia
Hypoxia
Hydrogen ion (acidosis)
Hypokalemia/**h**yperkalemia
Hypothermia
Tension pneumothorax
Tamponade, cardiac
Toxins
Thrombosis, pulmonary
Thrombosis, coronary

Cardiogenic Shock

C7

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
Patient suspected of cardiogenic shock with hypotension (SBP <90 or MAP <65) **AND** either: • Previously known/suspected cardiac failure history **OR** • Active ischemia with hemodynamic instability	• Supportive management

EXCLUSION CRITERIA

- Suspected hypovolemic or anaphylactic shock, or any suspicion of a fluid-responsive condition where fluid restriction may be harmful
- This is not a protocol for routine Post-ROSC care. See [C6: Post ROSC Care]

ALL EMS PROVIDERS

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice

PARAMEDIC PROVIDERS

- Obtain 12-Lead EKG
- Assess for additional conditions and provider supportive care per clinical condition and protocol, (e.g. STEMI, ACS, etc.)
- Restrict fluid administration
    A. May consider trial administration to assess fluid responsiveness, but do so in small boluses of 100-250mL
    B. Carefully monitor pulmonary status and discontinue further boluses if pulmonary condition (i.e. respiratory distress, oxygenation, or clinical condition) appears to worsen with fluids
- If clinically unstable and not tolerating low blood pressure, initiate ***Epinephrine*** drip
- To create an Epinephrine drip, take 1mg ***Epinephrine*** (either 1mg/mL, formerly 1:1,000 or 0.1mg/mL, formerly 1:10,000) and inject into a 1 L bag of normal saline. (**NOTE:** LABEL BAG). This creates a concentration of ~1mcg/ml. Administer up to Adult: 10mL/min (10mcg/min) IV.
- Notify receiving facility as early as possible

Chest Pain—General

C8

STANDING ORDERS

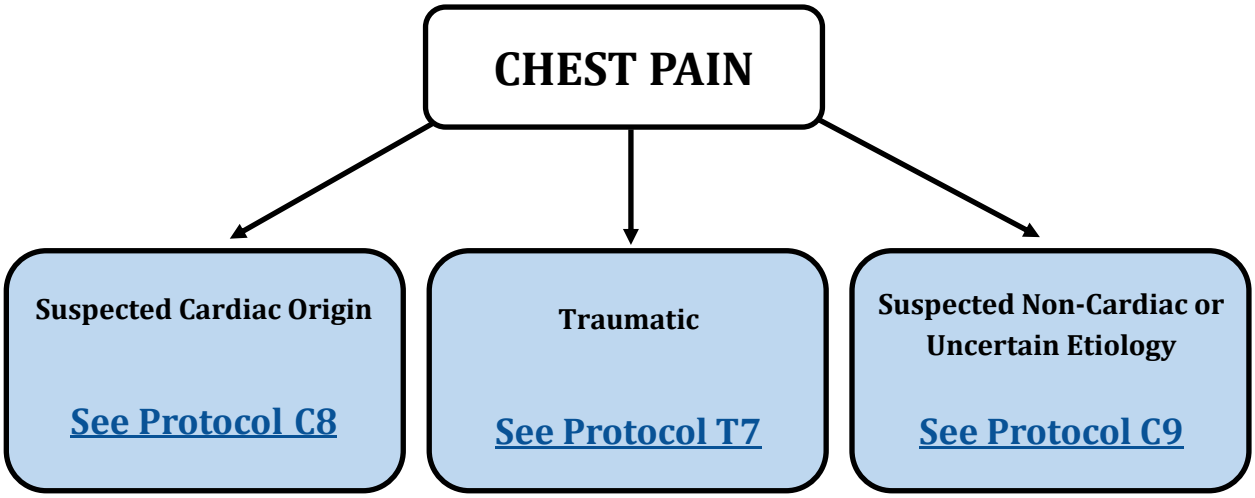
CRITERIA	PATIENT CARE GOALS
Patients with chest pain	• Evaluate for acute coronary syndrome

ALL EMS PROVIDERS

For all patients with chest pain, evaluation for acute coronary syndrome should occur.

Commonly , it is difficult with the tools available EMS clinicians to completely rule out a cardiac cause of chest pain. Therefore, all patients should have transport for emergency medical evaluation recommended. Cardiac disease is but one of the many causes of chest pain and the EMS clinician should consider various causes such as esophageal, chest wall, pulmonary embolism, aortic dissection, spontaneous pneumothorax, etc. Patients commonly fall into one of three categories: suspected cardiac, traumatic, or uncertain cause of chest pain.

*****A cardiac monitor/defibrillator should be brought to the patient's side during the initial assessment. *****



Consider cardiac origin chest pain in the following:

- Chest pain or discomfort in other areas of the body (i.e. arm, jaw, epigastrium), shortness of breath, sweating, nausea, vomiting and dizziness.
- Atypical or unusual symptoms are more common in women, the elderly and patients with diabetes. May also present with CHF, syncope and/or shock.

PARAMEDIC PROVIDERS

*****A cardiac monitor/defibrillator should be brought to the patient's side during the initial assessment. *****

Chest Pain—Suspected Cardiac

C9

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
Patients with chest pain or anginal equivalent with symptoms suspicious for possible acute coronary syndrome/ischemia including discomfort in other areas of the body (e.g. arm, jaw, epigastrium) of suspected cardiac origin, shortness of breath, sweating, nausea, vomiting, and dizziness.	• Provide effective oxygenation and ventilation • Recognize and alleviate respiratory distress • Provide the least invasive necessary interventions to patients in need of respiratory support • Identify a potentially difficult airway in a timely manner • Identify patients requiring emergent and/or specialty cardiac care (STEMI)

ALL EMS PROVIDERS

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- Allow patient to seek position of comfort
- Request ALS evaluation if not automatically dispatched
- Minimize on-scene time

EMT AND ABOVE PROVIDERS

- Obtain 12-lead EKG, if trained
- Obtain pulse oximetry, apply oxygen for SPO2 <94%
- If no contraindications: assist with administration of patient's prescribed ℞ ***Nitroglycerin***, if available. 0.4mg sublingual up to every 5 minutes if pain persists up to a total of 3 doses.
- If no contraindications: administer ℞ ***Aspirin*** 324 mg (4 ea x 81 mg) if not already taken PTA

EMT w/ IV Therapy Endorsement

- Establish IV access

PARAMEDIC PROVIDERS

- Evaluate for presence of congestive heart failure
- Apply cardiac monitor and obtain 12-lead EKG as soon as possible
- If EKG indicates STEMI, follow [C11: ST Segment Elevation Myocardial Infarction]
- Consider serial EKGs if high index of suspicion and situation permits
- ℞ If no contraindications: administer ***Nitroglycerin*** 0.4 mg sublingual up to every 5 minutes if pain persists up to a total of 3 doses
- Ask specifically about erectile dysfunction medications, which currently include Viagra (Sildenafil Citrate), Levitra (Vardenafil) and Cialis (Tadalafil)
- For Viagra and Levitra: do not administer nitrates within 24 hours of last dose, for Cialis: do not administer nitrates within 48 hours of last dose
- If prolonged transport, consider application of topical Nitro paste
- If ongoing pain, consider additional analgesia:
  A. If any hemodynamic instability present, use ℞ ***Fentanyl*** 25-50 mcg IV, titrated cautiously, CTD: 200mcg
  B. If no hemodynamic instability or if hypertensive, use ℞ ***Morphine*** 2 mg, titrated cautiously, CTD: 10mg
- Treat nausea and vomiting as needed per [M17: Nausea & Vomiting Management]
- Follow arrhythmia protocols as needed

Chest Pain—Suspected Cardiac (cont.)

C9

NOTES

- A reference list of anti-coagulant medication names is listed in [C2: Atrial Fibrillation/Flutter with Rapid Ventricular Response]

- WA DOH Cardiac Triage Criteria include:
  Post-Cardiac arrest with ROSC OR ≥ 21 years of age with symptoms lasting more than 10 minutes suspected to be caused by coronary artery disease:
  Chest discomfort—pressure, burning, crushing pain, tightness, heaviness, cramping, or aching
  -symptoms may come and go, or be exertional

DIFFERENTIAL DIAGNOSIS CONSIDERATIONS

- Pulmonary embolism
- Aortic dissection
- Bronchitis, pneumonia
- Pleuritis
- Tension/pneumothorax

DOCUMENTATION / KEY PERFORMANCE INDICATORS

- 12-Lead EKG acquired
- 12-Lead EKG acquired <10 min from arrival of first ALS unit on scene
- Aspirin administration
- Code STEMI alert activation
- Scene time goal < 20 minutes
- Transport to appropriate designated cardiac receiving center

Chest Pain—Uncertain Etiology

C10

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
Patients with non-cardiac chest pain or chest pain with uncertain etiology	• Identify/rule-out STEMI quickly • Determine time of symptom onset • Administer appropriate medications as indicated • Transport to appropriate facility if needed

ALL EMS PROVIDERS

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- Allow patient to seek position of comfort
- Request ALS evaluation if not automatically dispatched
- Obtain pulse oximetry, apply oxygen only to patients with dyspnea (SPO2 <94%) or signs of heart failure at a rate to keep SPO2 ≥ 94% and < 99% (avoid hyperoxia)

PARAMEDIC PROVIDERS

- Apply cardiac monitor and obtain 12-lead EKG as soon as possible
- Clinically evaluate. If alternate pathology suspected (e.g. cardiac etiology, STEMI, suspected dissection, pneumothorax– use protocol for suspected condition)
- Manage pain or nausea as clinically indicated per protocol

NOTES

For all patients with chest pain, evaluation for acute coronary syndrome should occur. For ALL patients with chest pain, consider the possibility of cardiac disease no matter what the history and physical exam suggest. However, there are other sources of non-cardiac chest pain to consider such as pulmonary embolism, spontaneous pneumothorax, aortic dissection/aneurysm, esophageal, chest wall, etc.

DIFFERENTIAL DIAGNOSIS CONSIDERATIONS

- Pulmonary embolism
- Spontaneous pneumothorax
- Aortic dissection/aneurysm
- Chest wall trauma
- Illicit drug use

DOCUMENTATION / KEY PERFORMANCE INDICATORS

- 12-Lead EKG acquired
- 12-Lead EKG acquired <10 min from arrival of first ALS unit on scene

ST Segment Elevation Myocardial Infarction (STEMI)

C11

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
Patient with clinical presentation and EKG either concerning for, or diagnostic of, STEMI or De Winter's T Waves	• Identify STEMI quickly • Determine the time of symptom onset • Activated hospital-based STEMI system of care • Monitor vital signs and cardiac rhythm and be prepared to provide CPR and defibrillation if needed • Administer appropriate medications • Transport to appropriate receiving facility

PARAMEDIC PROVIDERS

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- Apply cardiac monitor as soon as possible
- Evaluate for presence of congestive heart failure
- Obtain IV access, x2 if situation permits
- Apply oxygen if needed to obtain or maintain oxygen saturation ≥ 94%
- Consider serial 12-Lead EKGs if clinical circumstances and/or initial EKG are suspicious but non-diagnostic
- Administer full dose ℞ ***Aspirin*** 324mg (4 x 81mg) if not already administered
- Patients with identified STEMI from the field are to be transported to nearest Level 1 Cardiac Hospital
  - Skagit Valley Hospital (Mount Vernon)
  - PeaceHealth St. Joseph's Medical Center (Bellingham)
  - Providence Regional Medical Center (Everett)
- Critically ill patients (e.g. life threatening arrythmias, severe respiratory distress, shock) unresponsive to EMS treatment may be transported to the closest facility for further assistance with stabilization
- Notify the Level 1 Cardiac Hospital of Code STEMI activation as soon as possible
- Transmit 12-Lead EKG to destination as soon as possible
- If patient is post cardiac arrest, follow [C6: Post ROSC Care]
- Cardiac monitor at all times
- If no contraindications, give ℞ ***Nitroglycerin*** (NTG) 0.4mg sublingual up to every 5 minutes if pain persists up to total of 3 doses
  1. Ask specifically about erectile dysfunction medications, which currently include Viagra (sildenafil citrate), Levitra (vardenafil) and Cialis (tadalafil). For Viagra and Levitra, do not administer nitrates within 24 hours of last dose, for Cialis do not administer nitrates within 48 hours
  2. ⚠ **NOTE:** In the setting of an inferior STEMI (II, III, aVF) nitroglycerin or morphine use may result in hypotension. Use carefully, if at all, and only if SBP > 120. Use NTG at reduced intervals (10 minutes) - and only if BP permits.
- If prolonged transport, consider application of ℞ ***Nitro-Paste*** (1/2" - 1")
- If ongoing pain, consider additional analgesia:
  1. If any hemodynamic instability present, use ℞ ***Fentanyl*** 25-50mcg IV, titrated cautiously, CTD: 200mcg
  2. If no hemodynamic instability or if hypertensive, use ℞ ***Morphine*** 2mg, titrated cautiously, CTD: 10mg
- Treat nausea per [M17: Nausea & Vomiting Management]
- If hypotension occurs, and patient is oxygenating adequately, use 250ml NS bolus increments to address. Monitor carefully for CHF.
- Follow arrhythmia protocols as indicated

ST Segment Elevation Myocardial Infarction (STEMI)

C11

STANDING ORDERS

NOTES	DOCUMENTATION / KEY PERFORMANCE INDICATORS
De Winter's T Waves: A STEMI Equivalent • The De Winter EKG pattern is an anterior STEMI equivalent that presents without obvious ST segment elevation. • Key diagnostic features include ST depression and peaked T waves in the precordial leads. • The de Winter pattern is seen in ~2% of acute LAD occlusions and is often under-recognized by clinicians. • Unfamiliarity with this high-risk ECG pattern may lead to under-treatment (e.g. failure of cath lab activation), with attendant negative effects on morbidity and mortality.	• Time of symptom onset • Time of patient contact • Time of first 12-Lead EKG (Goal: 10 min from arrival of ALS capable unit) • Time ASA administered or reason why not given • Time of hospital STEMI activation • Time of arrival at destination • Pertinent past medical history

Background

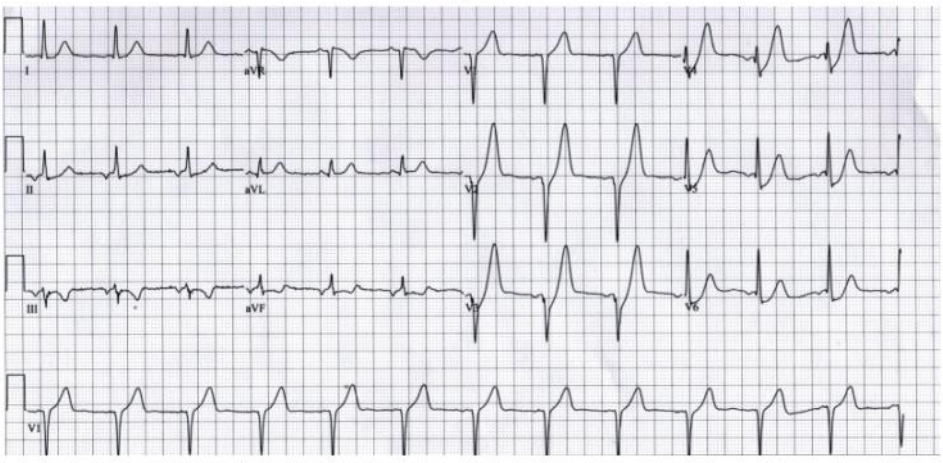
- The de Winter ECG pattern was first reported in a 2008 case series by de Winter and Wellens, who observed this ECG pattern in 30 / 1532 patients with acute LAD occlusions (2% of cases).
- Verounden and colleagues replicated this finding in a 2009 case series. They found a de Winter ECG pattern in 35 / 1890 patients requiring PCI to the LAD (2% of cases). Patients with the de Winter ECG pattern were younger, more likely to be male and with a higher incidence of hypercholesterolaemia compared to patients with a classic STEMI pattern.
- There is now growing evidence to suggest that the de Winter ECG pattern is highly predictive of acute LAD occlusion.
- Some authors have proposed that the de Winter pattern should be considered a "STEMI equivalent", and that patients with chest pain and this ECG pattern should receive emergent reperfusion therapy with PCI or thrombolysis.

Diagnostic Criteria for De Winter's EKG:

- Tall, prominent, symmetric T waves in the precordial leads
- Upsloping ST segment depression >1mm at the J-point in the precordial leads
- Absence of ST elevation in the precordial leads
- ST segment elevation (0.5mm-1mm) in aVR
- "Normal" STEMI morphology may precede or follow the deWinter pattern

NOTE: Original reports of the de Winter pattern suggested that the ECG did not change or evolve until the culprit artery had been opened. Since then, cases have been reported where the deWinter pattern evolved from, or evolved to a "classic" anterior STEMI.

Example EKG:

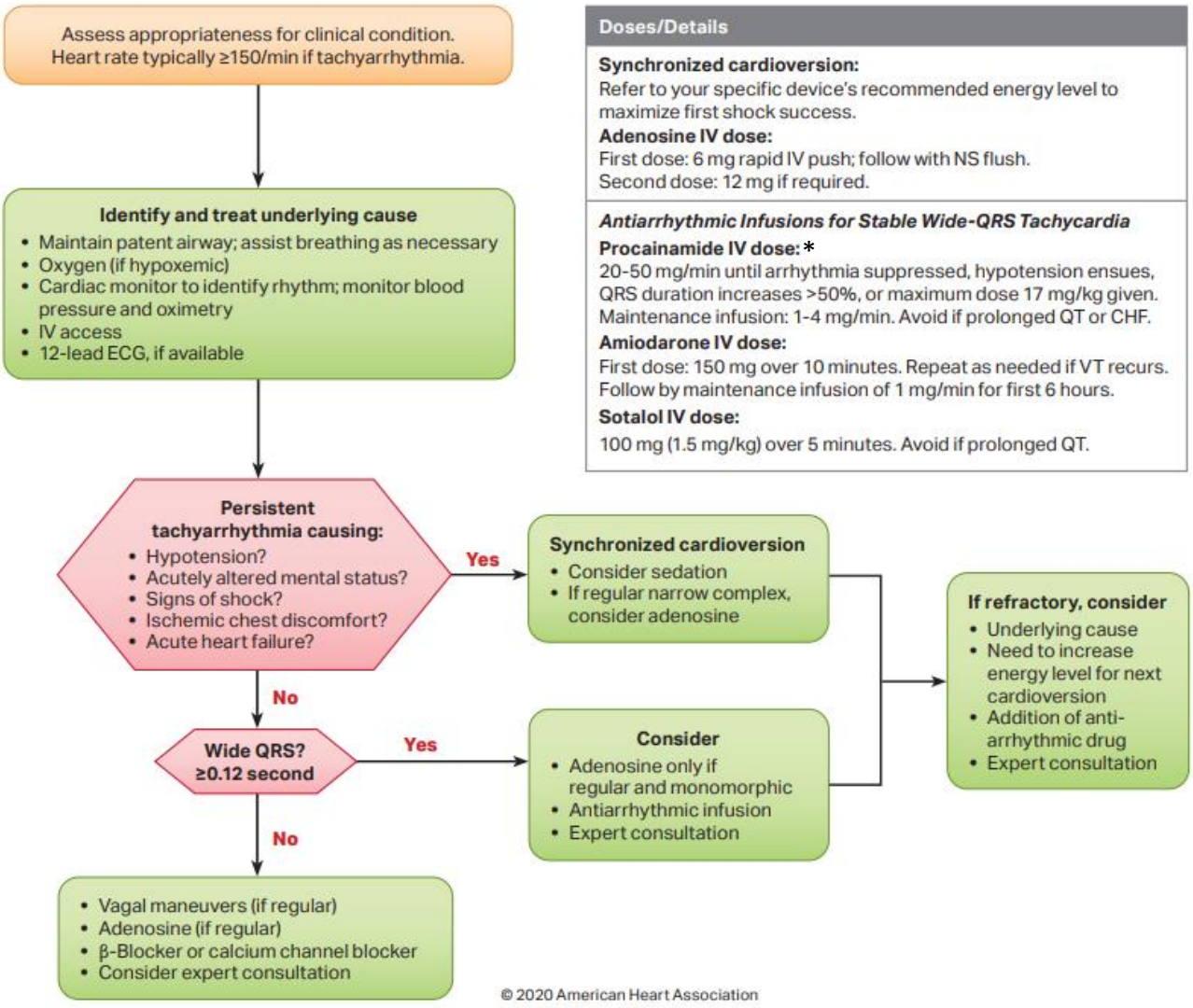


Tachycardia –Adult

C12

PARAMEDIC PROVIDERS

Adult Tachycardia With a Pulse Algorithm



- The modified Valsalva is the recommended vagal maneuver (Have patient in semirecumbant position. Have them blow on a 10cc syringe and attempt to push out the plunger. As soon as strain ends, lay patient flat and raise their legs.
- Procainamide and Sotalol are not carried pre-hospitably and are not approved for field EMS * use.
- If situation permits, **Contact On-Line Medical Control** prior to administering amiodarone to the patient with stable wide-QRS tachycardia. **NOTE:** Dose and rate of administration for amiodarone are different than for cardiac arrest administration.
- • In in rapid, narrow complex atrial fibrillation or flutter (sustained HR > 120) see protocol for Atrial Fibrillation with Rapid Ventricular Response.

Implantable Ventricular Assist Devices (LVAD, RVAD, BiVAD)

C13

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
• Adult patients that have had an implantable ventricular assist device (VAD) including Left Ventricular Assist Device (LVAD), right ventricular assist device (RVADs); and biventricular- assist devices (BiVADs) and have symptoms of cardiovascular compromise • Patients with VADs that are in cardiac arrest • Patients with VADs that are experiencing a medical or injury-related event not involving the cardiovascular system or VAD malfunction	• Rapid identification of, and interventions for, cardiovascular compromise in patients with VADs • Rapid identification of, and interventions for VAD-related malfunctions or complications

ALL EMS PROVIDERS

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- Request ALS response if not automatically dispatched (cardiac monitor and/or doppler may be required)
- Assess for possible pump malfunction:
  - A. Assess for alarms.
  - B. Auscultate for pump sound "hum".
  - C. Evaluate patient for signs of hypoperfusion including pallor, diaphoresis, altered mental status.
- If the VAD pump has malfunctioned:
  - A. Utilize available resources to troubleshoot potential VAD malfunctions and to determine appropriate corrective actions to restore normal VAD function:
    - i. Contact the patient's VAD-trained companion, if available.
    - ii. Contact the patient's VAD coordinator, using the phone number on the device.
    - iii. Check all the connections to system controller.
    - iv. Change VAD batteries, and/or change system controller if indicated.
- Manage airway as indicated
- If patient is experiencing VAD-related complications or cardiovascular problems, when possible, expedite transport to the medical facility where VAD was placed if patient's clinical condition and time allows.
- If patient has a functioning VAD and is experiencing a non-cardiovascular-related problem, transport to a facility that is appropriate for the patient's main presenting problem without manipulating the device.
- If patient is in full cardiac arrest:
  - A. CPR should NOT be performed if there is any evidence the pump is still functioning. The decision whether to perform CPR should be made based upon best clinical judgment in consultation with the patient's VAD-trained companion and the VAD coordinator (or **Contact On-Line Medical Control** if VAD coordinator unavailable).
  - B. CPR may be initiated only where:
    - i. You have confirmed the pump has stopped AND troubleshooting efforts to restart it have failed, AND
    - ii. The patient is unresponsive and has no detectable signs of life.

EMT AND ABOVE PROVIDERS

EMT w/ IV Therapy Endorsement

- Establish IV access

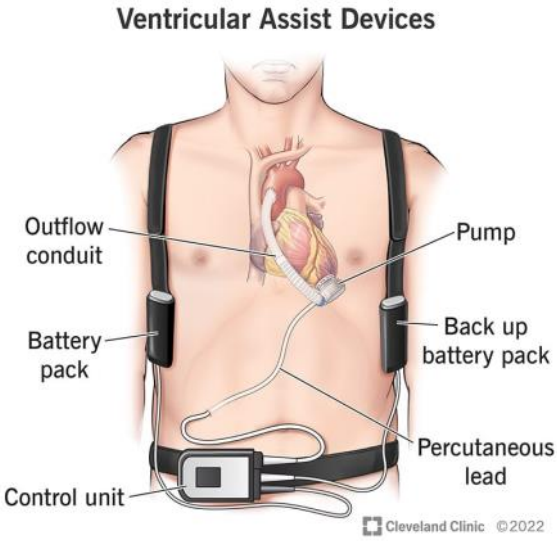
Implantable Ventricular Assist Devices (LVAD, RVAD, BiVAD) (cont.)

C12

STANDING ORDERS

PARAMEDIC PROVIDERS

- Perform cardiac monitoring
- Acquire 12-lead EKG



NOTES	DOCUMENTATION / KEY PERFORMANCE INDICATORS
• You do not need to disconnect the controller or batteries in order to defibrillate or cardiovert. • **You do not need to disconnect the controller or batteries in order to acquire a 12-lead EKG.** • Automatic **non-invasive cuff blood pressures may be difficult to obtain** due to the narrow pulse pressure created by the continuous flow pump. • Flow though many VAD devices is not pulsatile and p**atients may not have a palpable pulse or accurate pule oximetry**. • The blood pressure, if measurable, may not be an accurate measure of perfusion. • Ventricular fibrillation, ventricular tachycardia, or asystole/PEA may be the patient's normal" underlying rhythm. Evaluate clinical condition and provide care in consultation with VAD coordinator. • The patient's travel bag should accompany him/her at all times with back-up controller and spare batteries. • If feasible, bring the patient's Power Module, cable and Display Module with patient to the hospital. • All patients should carry a spare pump controller with them. • The most common cause for VAD alarms are low batteries or battery failures. • Although automatic non-invasive blood pressure cuffs are often ineffective in measuring systolic and diastolic pressure, if they do obtain a measurement, the MAP is usually accurate. • Other VAD complications include: -Infection -Stroke/TIA -Bleeding -Arrhythmias -Cardiac Tamponade -CHF -Aortic Insufficiency	• Information gained from the VAD control box indicating any specific device malfunctions • Interventions performed to restore a malfunctioning VAD to normal function • Time of notification to and instructions from VAD-trained companion and/or VAD coordinator

SECTION 3:

MEDICAL EMERGENCIES

TABLE OF CONTENTS

Abdominal Pain

M1

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
Patient with abdominal pain or symptoms not suspected to be related to pregnancy or trauma.	• Improve patient comfort • Identify life-threatening causes of abdominal pain

ALL EMS PROVIDERS

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- If patient is female and of childbearing age (12-50), consider pregnancy as a possibility. When possible obtain last known period and self-reported pregnancy status.
- Allow patient to seek position of comfort
- Provide supportive care
- Maintain NPO status

EMT AND ABOVE PROVIDERS

EMT w/ IV Therapy Endorsement

- Consider establishing IV access as clinically indicated

PARAMEDIC PROVIDERS

- Consider 12-Lead EKG as clinically indicated
- Use [M19: Pain Management] and [M17: Nausea & Vomiting Management] as clinically indicated
- If patient is clinically ill, has unstable vital signs, or if clinical suspicion for abdominal aortic aneurysm (AAA):
  -Establish two large bore IV's
  -Apply Cardiac monitor
  -Notify receiving hospital as soon as practical.

NOTES

Key Considerations

- Assess for life-threatening causes of abdominal pain
- Provide appropriate treatment for pain, vomiting, and shock
- Consider transport to a trauma center if aortic aneurysm is suspected

Pertinent Assessment Findings

- Rebound tenderness
- Guarding
- Abdominal distension
- Abdominal tympany to percussion
- Tenderness focal to a specific abdominal quadrant
- Presence of "pulsatile" abdominal mass
- Absence of or significant inequality of femoral or distal arterial pulses in lower extremities
- Hyper or hypothermia
- Rectal bleeding, hematemesis (character), vaginal bleeding

DIFFERENTIAL DIAGNOSIS CONSIDERATIONS

- Abdominal aortic aneurysm (AAA)
- Ectopic pregnancy
- Appendicitis
- Cholecystitis
- Pyelonephritis

DOCUMENTATION / KEY PERFORMANCE INDICATORS

- Assessment of abdomen to include findings on palpation/ percussion including presence or absence of masses and presence and nature of tenderness/pain
- Treatment and response to treatment

Adrenal Insufficiency

M2

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
A patient with a) known/identified adrenal insufficiency or b) high clinical suspicion for adrenal insufficiency	• Improve patient comfort • Identify life-threatening causes of abdominal pain

ALL EMS PROVIDERS

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- Notify receiving facility
- All other care per protocol appropriate to the clinical presentation of the patient

EMT AND ABOVE PROVIDERS

EMT w/ IV Therapy Endorsement

• Discuss with ALS provider prior to establishing IV access

PARAMEDIC PROVIDERS

- If extended transport time and/or patient is clinically unstable, **Contact On-Line Medical Control** to request approval of ***Dexamethasone*** administration **Adult Dose**: 10mg IV **Pediatric Dose:** 0.6mg/kg IV up to a maximum of 10mg.

NOTES

Adrenal crisis is a life-threatening condition caused by inadequate adrenocortical function leading to impaired physiological responses to stressors such as illness and injury. This deficit can lead to hypotension, hypoglycemia, shock, and death. Immediate intervention can be lifesaving. You may be encountering an adrenal crisis if: the patient takes Hydrocortisone, Prednisone, Dexamethasone, or other glucocorticoids on a regular basis; and/or is having signs/symptoms including: nausea, vomiting, hypotension, and/or altered mental status.

Alcohol Intoxication and Non-Transport

M3

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
• Patient with known or suspected recent alcohol use **AND** Absence of history or clinical findings to suggest alternate pathology **AND** Non-transport is being considered	• Evaluate for alternate pathology that may be masked by alcohol intoxication • Prioritize patient safety and well-being

ALL EMS PROVIDERS

Alcohol intoxication requiring EMS involvement is a high-risk encounter as alcohol impairs patient decision making and can initially mask alternate pathology.

Patient safety and well-being remain the care priorities. Patients with clinical findings of intoxication, EMS personnel concern for alternate pathology and/or overall patient safety, transport is indicated and encouraged.

However, not every patient with a history of alcohol use/exposure requires EMS transport.

A careful patient and scene assessment and discussion with on-line medical control are indicated prior to any consideration for non-transport.

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- Use other protocols as indicated by assessment and findings
- Evaluate carefully for the following (transport is indicated if present):
    A. Evidence of airway or respiratory compromise
    B. Evidence of hypoxia
    C. Presence of hypoglycemia. Obtain blood glucose level)
    D. History or exam findings of trauma or injury
    E. Use of co-ingested substances (including toxic alcohols such as methanol or isopropyl)
    F. Presence of other medical complaints
    G. Presence of findings to suggest non-alcohol related cause of altered mental status
    H. Presence of suicidal ideation
    I. Use of anti-coagulants
- Evaluate mental status and decision-making capacity. See [G25: Patient Refusal]
- Document clinical level of intoxication: Specifically document mental status and neurologic assessment including any speech or coordination findings. (Slurred speech or ataxia are findings of clinical intoxication).

⚠ **NOTE**: Clinical intoxication is determined by a clinical assessment and is unrelated to an evaluation for legal intoxication and ability to operate a motor vehicle.

- When possible, assess type, amount, and rate of consumption involved.
- Clinically assess risk for a rising blood alcohol level.
- Assess scene/environment for patient safety.
    -Identify if someone is available at scene who can take responsibility for monitoring the patient.

Alcohol Withdrawal

M4

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
• Clinical suspected *severe* alcohol withdrawal featuring: 1. A reported history of cessation or reduction in a heavy and prolonged use of alcohol **AND** 2. At least 2 of the following: -Autonomic instability (e.g, tachycardia, diaphoresis) -Hand tremor -Severe anxiety -Psychomotor Agitation -Nausea -Hallucination or illusions -Delirium -Generalized tonic-clinic seizures ⚠ **NOTE:** If actively seizing: See [M21: Seizure]	• Evaluate for alternate pathology that may be masked by alcohol intoxication • Prioritize patient safety and well-being

ALL EMS PROVIDERS

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- Obtain blood glucose ⚠ **NOTE:** EMRs may only perform blood glucometry after completing MPD-approved specialized training.
- Assess for potentially complicating conditions (e.g. sepsis, trauma)
- Consider obtaining CIWA scale (see reference at end of protocol)

EMT AND ABOVE PROVIDERS

EMT w/ IV Therapy Endorsement

- Consider establishing IV access

PARAMEDIC PROVIDERS

- Apply cardiac monitor
- Consider ℞ ***Midazolam*** **Adult Dose**: 2mg slow IV, may repeat as needed every 10 minutes up to 3 doses **Pediatric Dose**: Not Applicable
- For active seizures, See [M21: Seizure]

NOTES

- Alcohol withdrawal can present with a wide variety of clinical severity
- Only suspicion for severe withdrawal merits medication administration in the prehospital environment. Alcohol withdrawal is a medical emergency and warrants transport to the emergency department.
- In general, alcohol withdrawal symptoms usually begin within ~8 hours after blood alcohol levels decrease, peak at about 72 hours, and are markedly reduced by day 5-7 of abstinence
- **Delerium Tremens** is the combination of delirium plus alcohol withdraws. Withdrawal delirium usually begins about 2-3 days after appearance of symptoms of alcohol withdrawal and lasts from ~1-8 days. Withdrawal delirium is associated with increased mortality (usual from hyperthermia, cardiac dysrhythmias, complications of seizures, or complications with co-morbidities).
- Obtaining a pre-hospital CIWA scale is *not* an EMS requirement. However a basic understanding of the CIWA scale facilitates communication with health care personnel as the scale is used to guide hospital therapy.

Alcohol Withdrawal

R14

The CIWA^{AR} SCALE (Clinical Institute Withdrawal Assessment of Alcohol Scale - Revised)

NAUSEA AND VOMITING
Ask "Do you feel sick to your stomach? Have you vomited?" Observation.

0 No nausea and no vomiting
1 Mild nausea with no vomiting
2
3
4 Intermittent nausea with dry heaves
5
6
7 Constant nausea, frequent dry heaves and vomiting

TREMOR
Arms extended and fingers spread apart. Observation.

0 No tremor
1 Not visible, but can be felt fingertip to fingertip
2
3
4 Moderate, with patient's arms extended
5
6
7 Severe, even with arms not extended

PAROXYSMAL SWEATS
Observation.

0 No sweat visible
1 Barely perceptible sweating, palms moist
2
3
4 Beads of sweat obvious on forehead
5
6
7 Drenching sweats

ANXIETY
Ask "Do you feel nervous?" Observation.

0 No anxiety, at ease
1 Mild anxious
2
3
4 Moderately anxious, or guarded, so anxiety is inferred
5
6
7 Equivalent to acute panic states as seen in severe delirium or acute schizophrenic reactions

AGITATION
Observation.

0 Normal activity
1 Somewhat more than normal activity
2
3
4 Moderately fidgety and restless
5
6
7 Paces back and forth during most of the interview, or constantly thrashes about

TACTILE DISTURBANCES
Ask "Have you any itching, pins and needles sensations, any burning, any numbness, or do you feel bugs crawling on or under your skin?" Observation.

0 None
1 Very mild itching, pins and needles, burning or numbness
2 Mild itching, pins and needles, burning or numbness
3 Moderate itching, pins and needles, burning or numbness
4 Moderately severe hallucinations
5 Severe hallucinations
6 Extremely severe hallucinations
7 Continuous hallucinations

AUDITORY DISTURBANCES
Ask "Are you more aware of sounds around you? Are they harsh? Do they frighten you? Are you hearing anything that is disturbing to you? Are you hearing things you know are not there?" Observation.

0 Not present
1 Very mild harshness or ability to frighten
2 Mild harshness or ability to frighten
3 Moderate harshness or ability to frighten
4 Moderately severe hallucinations
5 Severe hallucinations
6 Extremely severe hallucinations
7 Continuous hallucinations

VISUAL DISTURBANCES
Ask "Does the light appear to be too bright? Is its colour different? Does it hurt your eyes? Are you seeing anything that is disturbing to you? Are you seeing things you know are not there?" Observation.

0 Not present
1 Very mild sensitivity
2 Mild sensitivity
3 Moderate sensitivity
4 Moderately severe hallucinations
5 Severe hallucinations
6 Extremely severe hallucinations
7 Continuous hallucinations

HEADACHE, FULLNESS IN HEAD
Ask "Does your head feel different? Does it feel like there is a band around your head?" Do not rate for dizziness or lightheadedness. Otherwise, rate severity.

0 Not present
1 Very mild
2 Mild
3 Moderate
4 Moderately severe
5 Severe
6 Very severe
7 Extremely severe

ORIENTATION AND CLOUDING OF SENSORIUM
Ask "What day is this? Where are you? Who am I?"

0 Oriented and can do serial additions
1 Cannot do serial additions or is uncertain about date
2 Disoriented for date by no more than 2 calendar days
3 Disoriented for date by more than 2 calendar days
4 Disoriented for place/or person

Interpreting CIWA Scores

Scores on the CIWA-Ar range from 0 to 67

- Scores lower than 8 indicate mild withdrawal symptoms that rarely require the use of medications
- Scores from 8 to 15 indicate moderate withdrawal symptoms that are likely to respond to modest doses of benzodiazepines
- Scores higher than 15 indicate severe sydrome that require close monitoring to avoid seizures and alcohol withdrawal delirium (delirium tremens)

Allergic Reaction / Anaphylaxis

M5

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
Patients of all ages with suspected allergic reaction and/or anaphylaxis	• Identify and provide timely therapy for potentially life-threatening reactions to known or suspected allergens to prevent cardiorespiratory collapse and shock • Provide symptomatic relief for symptoms due to known or suspected allergens

ALL EMS PROVIDERS

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- Apply oxygen if clinically indicated
- Attempt to identify a known or suspected trigger
- Evaluate for presence of:
  - -Diffuse progressive hives
  - -Respiratory distress
  - -Hypotension

⚠ **NOTE**: *EMRs are limited to use of Epi-Pen®/Epi-PenJr® auto-injector EMTs may administer via syringe and vial or ampule after completing MPD-approved specialized training.*

- If clinically indicated, administer Rx ***Epinephrine*** (1mg/1mL). May repeat in 10 minutes x1 as needed.
  - **-Adult dose/Peds > 30kg or > 10 years:** 0.3mg IM
  - **-Pediatric dose >10kg or 2-10 years: :** 0.15mg IM
  - **-Pediatric dose <10 kg or < 2 years:** 0.10mg IM
- Medical control contact is not required unless need for ***Epinephrine*** is in doubt
  - -Obtain patient or parent permission if able, if unable to obtain consent due to decreased mental status or absence of parent for a minor, administer ***Epinephrine*** under implied consent.

EMT AND ABOVE PROVIDERS

EMT w/ IV Therapy Endorsement

- Consider establishing IV access

PARAMEDIC PROVIDERS

- For urticaria or pruritus, administer Rx ***Diphenhydramine*** 1 mg/kg, up to maximum dose of 50 mg IM, IV, or PO) a. The IV route is preferred for the patient in severe shock
- If respiratory distress with wheezing is present, consider administering:
  - Rx ***Albuterol*** 2.5-5 mg nebulized **AND/OR**
  - Rx ***Epinephrine*** 1mg/mL, 5mL nebulized
- For signs of hypoperfusion, also administer 20 mL/kg isotonic fluid (normal saline or lactated Ringer's) rapidly (over 15 minutes) via IV or IO, and repeat as needed for ongoing hypoperfusion
- Transport as soon as possible, and perform ongoing assessment as indicated.
- Cardiac monitoring should be considered for those with known heart problems or who received multiple doses of ***Epinephrine***
- If clinical instability does not respond to initial IM Epinephrine, consider Rx ***Epinephrine*** drip
- To create an Epinephrine drip, take 1mg ***Epinephrine*** (either 1mg/mL, formerly 1:1,000 or 0.1mg/mL, formerly 1:10,000) and inject into a 1 L bag of normal saline. (⚠ **NOTE:** LABEL BAG). This creates a concentration of ~1mcg/ml. Administer up to Adult: 10mL min (10mcg/min) IV.

Allergic Reaction / Anaphylaxis

M5

STANDING ORDERS

NOTES	DOCUMENTATION / KEY PERFORMANCE INDICATORS
Be aware Skagit County school district policies require students experiencing allergic emergencies be transported.	• Medications given • Dose and concentration of Epi given • Route of Epi administration • Time of Epi administration • Response to Epi administration

MPD-Approved BLS Epinephrine Administration Kit

CONTENTS	
Quantity	**Description**
1 ea	Vial or ampule 1mg/mL Epinephrine (formerly known as 1:1000)
2ea	23G or 25G 1” safety needles
2ea	1ml/cc syringes (Epi-Rite™ recommended)
2ea	Alcohol wipes
2ea	Band-Aids
1ea	Laminated Skagit County BLS Epi dosage card (available from EMS office)

Altered Mental Status

M6

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
Patients with altered mental status / impaired decisional capacity	• Identify treatable causes • Protect patient from harm

ALL EMS PROVIDERS

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- Evaluate Airway: Manage airway as indicated clinically.
- Evaluate Breathing: look for respiratory depression or failure.
  - Consider carbon monoxide poisoning
  - Consider breath odor (e.g.—alcohol, ketosis, etc.)
  -Apply oxygen as needed
  -Support respiratory effort as needed
- Evaluate Circulation: look for findings of shock or inadequate perfusion
- Assess neurologic status
  -Evaluate AVPU and/or GCS scale
  - A person who is alert, oriented to time, place, and event *may still have an altered mental status*
  -Assess overall decision-making capacity
- If patient is agitated and/or combative See [M8: Behavioral Emergencies: Agitated or Violent]
- Obtain blood glucose early in patient care ⚠ **NOTE:** EMRs may only perform blood glucometry after completing MPD-approved specialized training.
- If normal glucose, continue on
- Treat hypoglycemia as indicated see [M10: Diabetic Emergencies: Hypoglycemia]
- Obtain vitals and include temperature when practical
- Assess pupils
- Evaluate for focal deficit
- Evaluate for trauma
- When possible, attempt to identify baseline neurologic status from bystanders/family
- Evaluate chest/abdomen for life assist devices (pacemaker, insulin pump, VP shunt, etc…).
- Evaluate skin/extremities (e.g., track marks, skin turgor, dialysis or other access).
- Evaluate for medic alert bracelets/identifiers/devices
- Evaluate environment (e.g., bystanders/family, survey for pills, paraphernalia, environmental exposure, overall circumstances, suicide notes, or POLST or CODE STATUS forms)
- Evaluate for toxidrome (see Poisoning and Overdose protocol
- When possible attempt to determine:
  -Time last known normal.
  -Any prodromal symptoms or events.
  -Past Medical History, Medication history or potential exposures
- Provide supportive management as clinically indicated.

EMT AND ABOVE PROVIDERS

- Consider end-tidal CO2 monitoring as indicated

EMT w/ IV Therapy Endorsement

- Establish IV access

PARAMEDIC PROVIDERS

- Apply cardiac monitor
- Consider 12-Lead EKG as clinically indicated

Altered Mental Status (cont.)

NOTES

- A listing of potentially applicable protocols if cause of Altered Mental Status is identified:

Suspected Cause	Protocol(s)
Diabetes	M9: Diabetic Emergencies Hyperglycemia M10: Diabetic Emergencies Hypoglycemia
Trauma	Section 5: Trauma Emergencies
Shock	M22: Sepsis M23: Shock M5 Allergic Reaction/Anaphylaxis Section 5: Trauma Emergencies
Cardiac Dysrhythmia	Section 2: Cardiac Emergencies
Overdose	M18: Overdose—Opioid M20: Poisoning
Opioid Overdose	M18: Overdose—Opioid M20: Poisoning
Infection	M13: Fever M22: Sepsis
Hypoxia	C8: Chest Pain– General R2: Shortness of Breath—General
Environmental	Section 6: Environmental Emergencies
Seizure	M22: Seizure
Intoxication	M3: Alcohol Intoxication

DIFFERENTIAL DIAGNOSIS CONSIDERATIONS

- Infection/UTI
- Substance abuse
- Hypoxia
- Trauma/head injury
- Toxic exposure/poisoning
- Mental health
- Diabetic emergency

DOCUMENTATION / KEY PERFORMANCE INDICATORS

- GCS / AVPU
- Temperature
- Pupil exam
- Blood glucose
- ETOH/drug use
- FAST Exam
- LAMS if positive FAST
- Recent surgery, wound care, or other potential sources of infection

POTENTIAL CAUSES OF ALTERED MENTAL STATUS	
A	Alcohol/Drug abuse
E	Endocrine/Epilepsy/Electrolyte
I	Infection
O	Overdose/Oxygen deficit
U	Uremia
T	Trauma/Tumor/Temperature
I	Insulin (hypo/hyperglycemia)
P	Psychiatric/Poisons
S	Stroke/Shock

Back Pain

M7

STANDING ORDERS

EMT AND ABOVE PROVIDERS (CONTINUED)

- If life-threatening etiology suspected, notify receiving hospital as soon as practical
- Provide transport to an appropriate receiving facility as indicated
- Reassess vital signs and response to therapeutic interventions throughout transport

PARAMEDIC PROVIDERS

- Provide analgesia if indicated see [M19: Pain Management]
- If present, treat nausea and vomiting see [M17: Nausea & Vomiting Management]

NOTES

- Provide appropriate treatment for pain, nausea, vomiting, and shock
- Back pain and abdominal pain can often co-exist with similar disease processes
- Identify patients on anticoagulants since they are higher risk for spinal epidural hematoma or retroperitoneal hemorrhage which can present as back pain
- Identify patients with IVDA history and/or impaired immune system since they are higher risk for spinal epidural abscess
- Identify patients with a history of cancer or with one suspicious for cancer—spinal metastasis can cause spinal cord compression

DOCUMENTATION / KEY PERFORMANCE INDICATORS

- Pain scale
- Response to intervention

Back Pain (Non-Traumatic)

M7

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
• Back pain or discomfort suspected to be related to a non-traumatic cause or when pain is suspected due to non-acute trauma (such as chronic pain conditions)	• Reduce patient discomfort • Identify life-threatening causes of back pain

EXCLUSION CRITERIA

• Back pain from spinal trauma see [T1: Trauma Management—General]
• Back pain from suspected labor see [P4: Imminent Childbirth)

ALL EMS PROVIDERS

• Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
• Obtain vital signs including pulse, respiratory rate, pulse oximetry, and blood pressure

EMT AND ABOVE PROVIDERS

• Assess for life-threatening causes of back pain, which may include:

A. Spinal cord compression (from spinal epidural abscess, malignancy, spinal epidural hematoma for patients on anticoagulants, etc.)

i. Urinary and/or bowel incontinence
ii. Inability to walk due to weakness
iii. New neurologic deficits in extremities
iv. Loss of sensation in saddle distribution

B. Aortic dissection or ruptured abdominal aortic aneurysm (AAA)

i. Unequal femoral or distal lower extremity pulses
ii. "Pulsatile" abdominal mass
iii. Associated abdominal pain and/or chest pain
iv. Known history of abdominal aortic aneurysm or dissection

C. Pyelonephritis

i. Fever
ii. Nausea, vomiting
iii. Urinary frequency/urgency
iv. Dysuria
v. Hematuria
vi. Abdominal pain
vii. Costovertebral angle tenderness to percussion

• Assess for other non life-threatening causes of back pain:

A. Kidney stone

i. Unilateral, colicky flank pain
ii. Nausea and vomiting
iii. Possible hematuria

B. Gallbladder disease

i. Right upper quadrant (RUQ) pain/tenderness, pain radiating to back
ii. Nausea and vomiting

EMT w/ IV Therapy Endorsement

• Establish IV access if need for ALS analgesia or fluid resuscitation is anticipated

Behavioral Emergencies: Agitated or Violent

M8

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
Patients of all ages who are exhibiting agitated, violent, or uncooperative behavior or who are a danger to self or others.	• Provision of emergency medical care to the agitated, violent, or uncooperative patient • Maximizing and maintaining safety for the patient, EMS personnel, and others

ALL EMS PROVIDERS

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- Consider coordinated response with law enforcement
- Safety Considerations:
  - A. Don personal protective equipment
  - B. Do not attempt to enter or control a scene where physical violence or weapons are present
  - C. Request law enforcement response to secure and maintain scene safety if needed
- If patient is age <12 and situation permits, **Contact On-Line Medical Control** for guidance
- If situation permits, attempt to establish patient rapport first:
  - A. Attempt verbal reassurance and to calm the patient down
  - B. If present/available (in person or by phone) engage patient family/friends to support cooperation and encouragement

EMT AND ABOVE PROVIDERS

- Obtain blood glucose as soon as safely possible
- Consider physical restraints (if used, **ALS evaluation is required**):
  - A. Body
    - i. Stretcher straps should be applied as the standard procedure for all patients during transport
    - ii. Straps should never restrict the patients chest wall motion
    - iii. Patients should ***never*** be placed or transported on their abdomen/chest (e.g. "hog-tied" or restrained in a prone position)
  - B. Extremities
    - i. EMS soft restraint devices should not require a key to release
    - ii. Restrain all four extremities to maximize safety of patient, staff, others
    - iii. Restrain all four extremities to the stationary frame rail of the stretcher
    - iv. Multiple knots should not be used to secure a restraint device

PARAMEDIC PROVIDERS

- Attempt verbal reassurance and to calm the patient down prior to proceeding to chemical restraint

⚠ **NOTE**: The use of chemical sedation is at the discretion and clinical judgement of the EMS provider and not at the request of law enforcement personnel or others at the scene.

- For severe agitation or violence, Give ℞ ***Ketamine*** 4-5 mg/kg IM up to 500mg (**Adult** or **Pediatric**) if no IV access or 1mg/kg up to 250mg IV if access available (**Adult** or **Pediatric**)
  - A. Repeat in 5-10 minutes (IM) or 5 minutes (IV) if inadequate effect (rarely required)
  - B. Repeat in 30-45 minutes (IV) in setting of prolonged transport, if needed.
- For mild to moderate agitation, consider either ℞ ***Olanzipine*** 10mg ODT (Adult Only) or ℞ ***Droperidol*** 2.5-5mg IM/IV as an alternative to Ketamine and use lower end of dosing for elderly patients.
- Continue verbal reassurance and calming of patient following administration of chemical restraint
- Perform continuous airway and cardio-respiratory monitoring as indicated post chemical restraint
- Monitor vital signs at least every 5 minutes once sedated
  - A. **As soon as practical following onset of sedation, apply cardiac, oximetry, and nasal side-stream end-tidal CO2 (ETCO2) monitoring**
  - B. If situation permits, obtain temperature to evaluate for hyperpyrexia (elevated temperature)

Behavioral Emergencies: Agitated or Violent (cont)

M8

STANDING ORDERS

PARAMEDIC PROVIDERS (CONTINUED)

- Evaluate for potential causes (e.g. hypoxia, hypoglycemia, trauma, hypotension, or toxicologic) and treat as indicated per protocols.
- If alcohol, drug abuse, or toxicologic cause suspected, administer ℞ ***Midazolam*** 2.5-5mg IV
- Consider ℞ ***Midazolam*** 2.5-5mg IV if needed for further management of agitation. Repeat every 5 minutes as needed. CTD: 10mg.
- Consider ℞ ***Ondansetron*** 4-8mg IV if time permits. (⚠ **NOTE:** nausea following Ketamine disassociation is not immediate, and when it occurs, generally does so at the end of its metabolism, often 30+ minutes later and therefore it is reasonable to defer nausea management to receiving facility)
- Notify receiving facility as soon as practical
- Whenever possible, transport patient in sitting or semi-recumbent position to reduce aspiration risk
- Management of emergence reactions:

A. An emergence reaction is an uncomfortable or terrifying hallucination which may occur as ketamine metabolizes and patient transitions through the partial dissociation continuum. This generally occurs when patient is awakening and is usually 20-40 minutes after dose has been given. Emergent reactions are uncommon in children, but become more frequent in adolescents adulthood and increases frequency as age advances.

i. Commonly simple redirection is helpful

ii. In more severe cases, it may require a benzodiazepine such as ℞ **Midazolam** 1-2.5mg IV/IO to calm patient

NOTES	DOCUMENTATION / KEY PERFORMANCE INDICATORS
1. The management of these patients requires a constant reevaluation of the risk/benefit balance for the patient and bystanders in order to provide the safest care possible for all involved. These are complex and high-risk encounters. There is no one size fits all solution for addressing these patients. 2. On-line medical control oversight should be contacted at any time for advice, especially when patients level of agitation is such that transport may place all parties at risk 3. Air transport for these patients is generally not advised 4. Stretchers with adequate foam padding, particularly around the head, facilitates patients ability to self-position the head and neck to maintain airway patency 5. The following techniques are **expressly prohibited** by EMS providers: - Secure or transport in a prone position - "Sandwiching" patients between backboards - Techniques that constrict the neck or compromise the airway -EMS provider use of weapons as adjuncts in managing a patient 6. Patients in law enforcement custody: Law enforcement may call for a field evaluation of a patient in custody. They may be in physical restraints or have been subjected to the use of "less-lethal" methods during apprehension. These patients often have physiological and toxicological factors contributing to their presentation. They must be evaluated with respect to the immediate effects of the force used and possible underlying pathophysiologic processes 7. Use of the term "excited delirium" is no longer recommended	• Etiology of agitated or violent behavior if known •Medications or substances found on scene • Physical evidence or history of trauma • Adequate oxygenation by pulse oximetry • Blood glucose measurement • Measures taken to establish patient rapport • Clinical response to pharmacologic management medications • Number of physical sits of placement of physical restraints • Duration of placement of physical restraints • Repeated assessment of airway patency • Repeated assessment of vital signs • Initiation and duration of engagement with law enforcement, if applicable

Diabetic Emergencies—Hyperglycemia

(HIGH BLOOD SUGAR)

M9

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
Blood glucose level > 250 mg/dL Indications for blood glucose testing include: -Altered mental status -Suspected stroke -Suspected seizure -Toxicologic ingestions (including alcohol)	• Limit morbidity from hyperglycemia • Appropriate hydration for hyperglycemia

ALL EMS PROVIDERS

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- Obtain blood glucose level
- If normal glucose, continue on clinically indicated pathway (stroke, seizure, etc.). Document blood glucose level.
- If blood glucose is high, treat for possibility of diabetic ketoacidosis (DKA) if clinically suspected:
  - A. Suspect if clinically ill, hyperglycemic, and with Kussmaul respirations. Common symptoms and findings include excessive thirst or hunger, frequent urination, severe dehydration, abdominal pain, nausea/vomiting, or altered mental status.
  - B. Assess for clinical indicators of precipitating factors (myocardial infarction, sepsis, lack of insulin)
- Most patients with hyperglycemia do not have DKA and do not require pre-hospital intervention

⚠ **NOTE:** EMRs may only perform blood glucometry after completing MPD-approved specialized training.

EMT AND ABOVE PROVIDERS

EMT w/ IV Therapy Endorsement

- Consider establishing IV access

PARAMEDIC PROVIDERS

- Apply cardiac monitor
  - **Adult:** Obtain 12-lead EKG if situation permits
- Consider IV NS bolus
  - **Adult:** NS up to 1-2 liters IV bolus
  - **Pediatric:** NS up to 10ml/kg IV bolus Reassess and re-bolus if hemodynamically unstable, signs of shock and/or signs of inadequate perfusion. If signs of adequate perfusion and no findings of shock, do not re-bolus. There is a concern that aggressive fluid administration can precipitate a dangerous condition of cerebral edema.

NOTES

Key Considerations

1. New onset diabetic ketoacidosis in pediatric patients commonly presents with nausea, vomiting, abdominal pain, and/or urinary frequency

2. Consider causes for hyperglycemia by thinking about the 3 I's:
   a. Insulin – this refers to any medication changes for insulin or oral medications including poor compliance or malfunctioning insulin pump
   b. Ischemia – this refers to hyperglycemia sometimes being an indication of physiologic stress in a patient and can be a clue to myocardial ischemia in particular
   c. Infection – underlying infection can cause derangements in glucose control

DIFFERENTIAL DIAGNOSIS CONSIDERATIONS

- Alcohol intoxication
- Drug use
- Trauma / Head Injury

DOCUMENTATION / KEY PERFORMANCE INDICATORS

- Reassessment of vital signs and mental status after administration of IV fluids
- Blood glucose level

Diabetic Emergencies—Hypoglycemia

(LOW BLOOD SUGAR)

M10

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
Blood glucose level < 60 mg/dL **OR** Blood glucose level <70 with clinical confounders or concern such as: altered mental status, diaphoresis, confusion, or weakness. In newborns, a blood glucose of < 40 mg/dL is diagnostic Indications for blood glucose testing include: -Altered mental status -Suspected stroke -Suspected seizure -Toxicologic ingestions (including alcohol)	• Limit morbidity from hypoglycemia • Treat symptomatic hypoglycemia

ALL EMS PROVIDERS

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- Obtain blood glucose level ⚠ **NOTE:** EMRs may only perform blood glucometry and administer oral glucose after completing MPD approved specialized training.
- If normal glucose, continue on clinically indicated pathway (stroke, seizure, etc.). Document blood glucose level.
- If blood glucose is low and patient is alert and able to protect airway and take oral glucose administer

  ℞ ***Oral Glucose***

  -**Adult dose**: ~15-25 grams (1 tube, dose varies by manufacturer) glucose gel PO
  -**Pediatric dose:** ~0.5-1 gram/kg up to 25 grams (estimate fraction of tube) glucose gel PO
  -In patients who are completely alert, a glucose equivalent (juice) may be given
  -Repeat glucose as needed if inadequate response in 3-5 minutes, no max dose.
- If patient is not alert or is unable to protect airway:
  -Request ALS if not automatically dispatched
- Reassess patient including recheck of blood glucose level as needed
- Attempt to determine etiology of hypoglycemia:
  -Consider recent medication use (too much insulin?)
  -Consider recent caloric intake (too little food?)
- Determine if patient is on insulin. If patient is NOT on injected insulin but is on oral diabetic medications and hypoglycemia occurs, transport is indicated due to the high risk of recurrent, refractory hypoglycemia
- If patient recovers and is alert, appropriate, and able to take oral carbohydrates, non-transport may be considered. If patient is not to be transported, encourage more frequent glucose monitoring combined with increased caloric intake. Insure that the patient is able to take oral carbohydrate.
  A. Ongoing care is optimized if a separate individual can be identified to stay with the patient for at least several hours.
  B. Provide the patient with a completed "After Care Instructions for Diabetic Emergencies" form.
  C. Advise patient follow up with primary care provider

  ⚠ **NOTE:** Transport is recommended if seizure activity accompanied hypoglycemia
- If possible, and particularly if patient is known to have had prior 911 calls for episodes of hypoglycemia:
  A. Attempt to identify the provider name and clinic name of the patient's primary care provider
  B. Notify EMS Office/MPD

EMT AND ABOVE PROVIDERS

EMT w/ IV Therapy Endorsement

- If patient is not alert or unable to protect airway:
  -Establish IV access

Diabetic Emergencies—Hypoglycemia (cont.)

(**LOW** BLOOD SUGAR)

M10

STANDING ORDERS

PARAMEDIC PROVIDERS

- Rx Administer ***Dextrose***

Using D10W (25 grams of Dextrose in 250mL, resulting in 1 gram glucose per 10mL):

1. **Adult dose**: 50-100mL (5-10g dextrose) IV push, repeat every 3-5 minutes PRN based on glucose and clinical response. (MAX TOTAL DOSE: None)
2. **Pediatric dose**: 5mL-10mL/kg (0.5-1g/kg dextrose) (max 5 grams/50mL per dose) IV push, repeat every 3-5 minutes PRN based on glucose and clinical response. (MAX TOTAL DOSE: NONE)

Using D50W

(⚠ **NOTE**: Use D50W only in the setting where D10W is not available (i.e., drug shortages)).

1. **Adult dose:** 25-50 mL (12-25g dextrose) D50W slow IV push. Remove and waste 50mL NS from a 250mL bag of NS and then add 50mL of D50W, to create a ~D10NS solution. Then administer 50-100mL (5-10g dextrose) IV push, repeat every 3-5 minutes PRN based on glucose and clinical response. Repeat every 3-5 minutes PRN based on glucose and clinical response. (MAX TOTAL DOSE: None)
2. **Pediatric dose**: Create a D10NS solution to approximate D10W. Remove and waste 50mL NS from a 250mL bag of NS and then add 50mL of D50W, to create a ~D10NS solution. Then administer ~D10NS 5mL-10mL/kg (0.5-1g/kg dextrose) (max 5 grams/50ml per dose) IV push, repeat every 3-5 minutes PRN based on glucose and clinical response. (MAX TOTAL DOSE: NONE)

- If unable to obtain IV access, Rx administer ***Glucagon***
  - **Adult dose**: 1mg IM
  - **Pediatric dose:** 1mg IM for pediatric patient >20kg or >5 years of age
    0.5mg IM for pediatric patient <20kg or <5 years of age
- Consider IO placement for Dextrose administration if unresponsive to Glucagon and altered mental status

NOTES

Key Considerations

1. Transport is always indicated for hypoglycemia not associated with Insulin (Example: oral agents)

2. Consider contribution of oral diabetic medications to hypoglycemia

2. If possible, have family/patient turn off insulin pumps

3. Consider potential for intentional overdose of hypoglycemic agents

DIFFERENTIAL DIAGNOSIS CONSIDERATIONS

- Alcohol intoxication
- Drug use
- Mental/behavioral health emergency
- Trauma/head injury

DOCUMENTATION / KEY PERFORMANCE INDICATORS

- Document reassessment of vital signs and mental status after administration of glucose dextrose/glucagon
- Document blood glucose level baseline and after intervention

Dystonic Reaction

M11

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
• Patient with suspected dystonic reaction	• Manage life threats • Identify and treat suspected dystonic reaction

PARAMEDIC PROVIDERS

- Follow [G27: Universal Patient Care Guideline]
- Evaluate for medication exposure history. Medications most commonly associated with dystonic reaction include:
    A. Antipsychotics.
    B. Anti-emetics (promethazine, prochlorperazine, and metoclopramide).
    C. Antibiotics (erythromycin).
    D. Anticonvulsants (carbemazepine, vigabatrin).
    E. H2 receptor antagonists (ranitidine, cimetidine).
    F. Recreational drugs (cocaine).
    G. The above medications are only a partial listing. Obtain medication history when possible
- Manage any identified life threats (manage ABC's)
- Administer ***Diphenhydramine***
    Adult Dose: 25-50mg IV/IM
    Pediatric Dose: 1-2mg/kg up to 25mg IV/IM
- If no response to Diphenhydramine, and dystonic reaction still suspected, administer
    Midazolam
    Adult Dose: 1-2mg IV/IM
    Pediatric Dose: 0.05-0.1mg/kg up to 1mg IV IM
- Monitor and reassess
- Transport is indicated

Emerging Infectious Disease

M12

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
Use of this protocol: (a) Applies during times of a declared pandemic/ emerging infectious illness or (b) May be used at the discretion of EMS provider concerned for need for maximum barrier protection. This protocol is meant to provide a placeholder for general guidance during a pandemic and specific guidance for the patient whom there is a high index of suspicion for an emerging infectious illness.	• Identify patients at high risk of having potential emerging infectious disease and take action to prevent spread of infection • Limit use of invasive/aerosolizing procedures when possible to minimize exposure risk • Limit transport to those for who it is medically indicated and/or there are no safe alternatives

ALL EMS PROVIDERS

• Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice

Pre-Arrival/PPE:

• Maintain situational awareness regarding [potential emerging infectious disease]
• For identified high-risk [potential emerging infectious disease] patients OR for aerosolizing procedures on any patient, Level III PPE (N95 or equivalent mask, eye protection (goggles recommended), gloves, and gown) should be used.
• Treat all patients and individuals as if the potential for [potential emerging infectious disease] is present. However, pay attention to the dispatch information for signs and symptoms indicative of possible [potential emerging infectious disease]. Understand that a negative dispatch screen or absence of identified [potential emerging infectious disease] risk factors by dispatch does not indicate that [potential emerging infectious disease] is not present.

Arrival/PPE:

• Do not rely solely on dispatch for alerts on donning appropriate PPE. The minimal level of PPE for all patients includes N-95 or equivalent mask and gloves. Eye protection recommended. For identified high-risk [potential emerging infectious disease] patients OR for aerosolizing procedures on any patient, Level III PPE (N95 or equivalent mask, eye protection (goggles recommended), gloves, and gown) should be used.
• For all patients, a mask should be applied if not already in place.
• For identified high-risk patients, consider the SCOUT approach:
  -Upon approach to the residence/location of patient, consider having only one responder in appropriate PPE enter initially (the SCOUT Approach) while additional responders remain outside, until a brief initial assessment is done.
  -Attempt to maintain social distancing (6+ feet) from anyone in the residence and as you enter ask, "Does anybody here have a fever, cough, shortness of breath or is concerned they may have the [potential emerging infectious disease]?"
  -If yes, a surgical mask should be given to the patient by a friend or family member who is already in close contact with the patient or by a PPE protected EMS provider until the need for oxygen is assessed
  -Attempt to minimize the number of EMS/Fire responders with direct contact or potential exposure.
  -Move patient care to a well-ventilated area (e.g., outside) as expeditiously as possible.
  -*Vaccination Dependent*: If indicated and possible, perform any optional but potentially aerosolizing treatments (e.g. nebulizers) in a well-ventilated area (e.g. outside)
  -Notify hospital as soon as practical of impending arrival if [potential emerging infectious disease] is suspected. (If the patient is hypoxic and/or in respiratory distress/clinically ill, notify the hospital as early as practical in clinical care.)

Assess the patient for need for transport:

• In the setting of [potential emerging infectious disease], active efforts to limit transport to those for whom it is medically indicated and/or there are no safe alternatives is recommended. A careful history and examination by providers is warranted.

STANDING ORDERS

Assess the patient for need for transport (cont.):

- In the setting of [potential emerging infectious disease], judicious use of medical transport and attention to destination facility capacities may be necessary
- If patient is hypoxic, clinically dyspneic, or appears clinically ill (sick vs not sick—if they appear sick) transport is indicated

Preparing for transport:

- Drivers, if they provide direct patient care (e.g. moving patients onto stretcher) should wear all recommended PPE
- For patients who meet the definition of "high risk" of suspicion for [potential emerging infectious disease]:
  - Notify the receiving hospital of suspicion for [potential emerging infectious disease] (if not already performed)
  - If the transport vehicle does not have an isolated driver's compartment, the driver should remove the face shield or goggles, gown and gloves and perform hand hygiene. A facemask should continue to be used during transport.
  - If the transport vehicle does have an isolated driver's compartment, the driver should remove an dispose of PPE and perform hand hygiene to avoid contaminating the compartment.
  - Family members and other contacts of patients with [potential emerging infectious disease], should not ride in the transport vehicle, if possible. If they are allowed to ride in the transport vehicle, they should wear a facemask.
  - During transport, limit the number of providers in the patient compartment to essential personnel to minimize exposure risk.
  - Prior to transport, close the door/window between driver/patient compartments before bringing the patient on board.
  - During transport, vehicle ventilation in both compartments should be on non-circulated mode to maximize air changes that reduce infectious particles in the vehicle.
  - If the vehicle has a rear exhaust fan, use it to draw air away from the cab, toward the patient-care area, and out the back of the vehicle.
  - Some vehicles are equipped with a supplemental recirculating ventilation unit that passes air through HEPA filters before returning it to the vehicle. Such a unit can be used to increase the number of air changes per hour.

Care during Assessment/Transport:

- Mask all patients, regardless of index of suspicion for [potential emerging infectious disease], before transport
- For all patients, regardless of [potential emerging infectious disease] index of suspicion, attempt to minimize use of elective aerosol generating procedures where possible (all patients). When an aerosol generating procedure is to be performed, level III PPE is indicated.
- Level III PPE includes:
  - N95 or equivalent masks (surgical masks, cloth masks, etc.. do NOT qualify)
  - Full face shield and/or goggles (eye protection)
  - Gown
  - Gloves

- Aerosolizing procedures include:
  - BVM
  - Suctioning
  - Supraglottic airway insertion
  - Endotracheal Intubation
  - CPR
  - High flow oxygen delivery (>6 lpm)
  - Non-invasive ventilation (e.g. CPAP)
  - Nebulized medication administration

Emerging Infectious Disease

M12

STANDING ORDERS

⚠ **NOTE:** Where possible, perform any aerosolizing procedure in a maximally ventilated area (e.g. outdoors) or, if possible, the rear doors of the transport vehicle should be open and the HVAC system should be activated during aerosol-generating procedures. This should be done away from any pedestrian traffic.

- If the patient requires oxygen, apply and titrate flow rate as needed:
  - Apply a surgical mask over a nasal cannula or non-rebreather to shield the potentially contaminated exhalation coming from the mask vents if active coughing is occurring.
  - **Flow rates > 6 liters per minute are considered an aerosolizing procedure and full PPE precautions are indicated.**
  - BVMs and other ventilatory equipment, should be equipped with HEPA filtration to filter expired air if available
- If the patient requires an advanced airway:
  - It is appropriate to have a lower threshold for using a supraglottic airway instead of endotracheal intubation in the field to reduce the risk of [potential emerging infectious disease] exposure. The supraglottic airway has theoretical advantage of being faster and easier to place and may reduce potential exposure time. Medications (sedatives/paralytics) may be used for placement of a supgralottic airway instead of an endotracheal tube during the [potential emerging infectious disease] pandemic at the discretion of the provider.

  - Intubations of the suspected [potential emerging infectious disease] patient with severe hypoxia is an aersolizing procedure that may pose a risk to providers, but is also a high-risk procedure for the patient. Current experience indicates hypoxia can worsen or persist following initial intubation and ventilation, and these can complicate assessment, care, and transport in the pre-hospital environment.

- For patients for whom nebulizer therapy is being considered:
  - For select patients at provider discretion, consider performing a nebulized therapy in a well-ventilated area (e.g., outside) prior to transport. (Document in narrative the decision to perform a treatment in an area of maximized ventilation)
  - (Consider nebulizer therapy only for those who have a history of asthma and who are clinically bronchospastic.) Furthermore, in the patient for with a high index of suspicion for [potential emerging infectious disease], consider prehospital deferral of nebulizer therapy is appropriate.

After the Call:

- After the patient is released to the facility or when the call is completed at a scene where the patient was left at home, EMS providers should remove and discard PPE and perform hand hygiene.
- Careful attention to the doffing (PPE removal) process is warranted for high-risk patients or following aerosolized patients as studies indicate this represents one of the higher risk points for contamination.
- Used PPE should be discarded in accordance with routine procedures.
- Documentation of patient care should be done after EMS providers have completed the transport, removed their PPE, and performed hand hygiene.
  - Documentation of PPE used by EMS should be included as part of the ePCR, so follow-up can be done in case of lab confirmation.
  - Ensure you annotate clearly on the PCR your agency,
  - Include the names of all providers involved, especially mutual aid providers, for infection control tracking
  - The patient care report should be completed and locked as soon as possible following delivery of the patient to the emergency department
- Follow CDC guidelines for cleaning the ambulance prior to using the vehicle for another transport.
  - The standard agency process for follow-up of any potentially infectious disease should be in place in the case of lab confirmation; as well to assess if everyone used appropriate PPE, monitor workers for symptoms, and perhaps exclude from work according to CDC guidance keeping in mind this guidance might change.

Accidental High Risk Exposure:

- Report any suspected high-risk [potential emerging infectious disease] exposures to the agency QA officer and EMS Office using the approved EMS Sentinel Event Report Form.

Fever

M13

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
• A patient with a temperature > 38° C (100.4°F) **NOTE:** Obtain a temperature under any of the following conditions when possible: • An infectious process is suspected or being evaluated • An environmental emergency (cold or heat exposure) is suspected • Pediatric seizures • Citizen Assist Calls if age ≥ 60, or if they have co-morbidities/chronic illness requiring assistance with activities of daily living • Suspected malignant hyperthermia or neuromalignant syndrome (medication induced illnesss)	• Immediate treatment of fever is rarely warranted unless temperature ≥ 42°C (106.5° F). The main reason to treat fever is to relieve discomfort. • Identify and manage other emergent priorities first, and manage fever when circumstances permit.

ALL EMS PROVIDERS

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- Consider infectious control precautions and decontamination procedures as clinically indicated
- If indicated, evaluate and treat underlying illness as per appropriate protocol (e.g. Sepsis, Heat Illness)
- Evaluate for and consider Sepsis. See [M22: Sepsis]
  -Ask about recent travel history
  -Inquire about infectious symptoms (e.g. cough, dysuria, nausea/vomiting, diarrhea)

EMT AND ABOVE PROVIDERS

- If no contraindications, consider anti-pyretic
  1. Rx ***Acetaminophen***: **Adult dose**: 650-1000mg PO; **Pediatric dose**: 15mg/kg PO
  2. For febrile patients refusing transport, it is permissible to recommend ibuprofen (**Adult dose**: 400-800mg PO; **Pediatric dose**: 15mg/kg [up to maximum of 800mg] PO) as an alternative.

EMT w/ IV Therapy Endorsement

- Consider establishing IV access if clinically indicated
- Evaluate patient volume status

PARAMEDIC PROVIDERS

- For patients whom PO medication may be contraindicated (e.g. altered mental status, critically ill, abdominal pain, etc and >15 minute transport time, Paramedic discretion may administer parenteral Rx ***Acetaminophen*** **Adult Dose**: 1000mg IV over 15 minutes or **Pediatric Dose**: 15mg/kg up to 1000mg max dose over 15 minutes or 15mg/kg rectal suppository

Gastrointestinal (GI) Bleed

M14

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
• Patient with known or suspected gastrointestinal (GI) bleeding	• Supportive management

ALL EMS PROVIDERS

• Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice

EMT AND ABOVE PROVIDERS

• When possible, attempt to determine:
-History of anti-coagulant or anti-platelet (aspirin, clopidegrel) use.
-History of NSAID use (e.g., ibuprofen, naproxen).
-History of prior GI bleed.
-History of liver disease and presence of known varices.
-History of diverticulosis or arterio-venous malformations (AVM's).
• If patient is stable and circumstances permit, consider orthostatic vital signs.

EMT w/ IV Therapy Endorsement

• Consider establishing IV access if clinically indicated

PARAMEDIC PROVIDERS

• Evaluate for hemorrhagic shock
• If patient is clinically unstable or meta-stable (e.g. tachycardic but not hypotensive)
-Place two large bore IVs
-Apply cardiac monitor
i. Obtain baseline 12-lead EKG if circumstances permit
-Notify receiving hospital as soon as practical

Potential Causes of GI Bleeding	
• Peptic Ulcer Disease	• Diverticulosis
• Esophageal Varices	• Inflammatory Bowel Disease (Crohn's, Ulcerative Colitis)
• Esophagitis/Gastritis	• Colitis (infectious, ischemic, inflammatory)
• Mallory-Weiss Tear	• Arteriovenous malformations
• Boerhaave's Syndrome (ruptured esophagus)	• Polyps
• Malignancy	• Malignancy
• Angiodysplasia	• Hemorrhoids
• Meckel's Diverticulum	

Hyperkalemia

M15

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
A known or clinically suspected elevated potassium, including: • Dialysis patients in cardiac arrest absent clear alternative clinical condition (e.g. trauma arrest) See [C4: Cardiac Arrest-Adult] • A dialysis patient who has missed recent dialysis and presents with any cardiac dysrhythmia • Patients with current/recent laboratories identifying a known elevated potassium (K) greater than 6 mmol/L • Consider in patients with crush injury See [T16: Crush Syndrome] • Suspicion for succinylcholine induced hyperkalemia - See [MF44: Succinylcholine]	• Prevent life-threatening cardiac dysrhythmias by reducing serum potassium levels through medication administration and monitoring

ALL EMS PROVIDERS

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- Patients with known or suspected hyperkalemia merit ALS evaluation and monitoring

EMT AND ABOVE PROVIDERS

EMT w/ IV Therapy Endorsement

- Consider establishing IV access if clinically indicated

PARAMEDIC PROVIDERS

- For patients with cardiac arrest, see [C4: Cardiac Arrest-Adult]
- For patients at risk for crush syndrome, see [T16: Crush Syndrome]
- Apply cardiac monitor, obtain 12 lead EKG
- For patients not in cardiac arrest, initiate therapy if any of the following are present:
  1. Known laboratory with potassium (K^+) greater than 6 (mmol/L)
  2. Clinical suspicion for hyperkalemia and presence of cardiac dysrhythmia
  3. Clinical suspicion for hyperkalemia and 12 lead EKG concerning for hyperkalemia (including peaked T waves and/or widened QRS)
- Treatment (non cardiac arrest patient):
  1. ℞ ***Calcium gluconate***: **Adult dose**: 1500-3000mg slow IV push. (Use higher dose if EKG changes present). **Pediatric dose**: 60 mg/kg up to 1500mg max dose.)
  2. ℞ ***Albuterol*** nebulizer: **Adult and Pediatric dose**: 20mg nebulized
  3. ℞ ***Sodium Bicarbonate***: **Adult dose**: 50 mEq IV/IO x1. **Pediatric dose**: 1 mEq/kg up to 50mEq x1

Migraine

M16

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
• Patient with clinically suspected migraine (no other cause for headache suspected) **AND** • Patient history of migraines of similar character	• Minimize noise and other stimuli • Administer medication as indicated to manage pain and nausea

ALL EMS PROVIDERS

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
  - Where possible, minimize lights, sound, and other stimuli

EMT AND ABOVE PROVIDERS

• If able to tolerate PO, and available, may give ***Acetaminophen*** **Adult dose**: 100mg **Pediatric dose**: 15mg/kg up to 1000mg **NOTE:** Caution as migraines are rare condition in pediatric patient

EMT w/ IV Therapy Endorsement

• If nausea present, consider establishing IV access

PARAMEDIC PROVIDERS

• For severe migraine or nausea, consider (in order of preference):

Droperidol **Adult dose**: 1.25-2.5mg IV (NO PEDIATRIC INDICATION)

Prochlorperazine **Adult dose**: 5-10mg IV (NO PEDIATRIC INDICATION)

Promethazine **Adult dose**: 5-10mg IV (NO PEDIATRIC INDICATION)

Ondansetron **Adult dose**: 8mg ODT or 4-8mg IV, Pediatric dose: 2-4mg ODT or 0.15mg/kg IV up to 8mg **NOTE:** Caution as rare condition in pediatric patient

If Droperidol, Prochlorperazine, or Promethazine is used, consider ***Diphenhydramine*** **Adult dose:** 12.5-25mg slow IV push (over 2 minutes) to prevent/address akathisia.

NOTE: The order of preference for medication use in migraine is different than order of preference for general nausea management due to the medications having different effects on migraine headaches.

Nausea & Vomiting Management

M17

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
Patient with nausea and/or vomiting	• Attempt to determine underlying cause • Follow appropriate protocols as indicated by patient presentation

ALL EMS PROVIDERS

⚠ **NOTE:** Nausea and vomiting have a wide spectrum of potential causes- in addition to treating the patient's nausea and vomiting, an evaluation by history and physician are indicated to help try to identify the underlying cause. The history and physical exam help further direct the components of evaluation (e.g., EKG in suspected myocardial infarction) and management. Follow appropriate protocols as indicated by patient presentation. This protocol is meant as a supplemental protocol of the focused management of nausea and vomiting

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- ℞ ***Isopropyl Alcohol*** (prep pad)
  1. Hold 2.5 cm (1") from nose and instruct patient to inhale for up to 60 seconds
  2. Repeat every 2 minutes as needed for a max total 3 doses
  3. May repeat process in 20 minutes

PARAMEDIC PROVIDERS

- Follow appropriate protocols as directed by clinical presentation, using this protocol as a supplement for symptom management only
- First line medication for most nausea and vomiting is ℞ ***Ondansetron***
  - A. **Adult Dose:** 4-8mg IV or PO/ODT
    -Dose may be repeated in 5-10 minutes if needed. **Contact On-Line Medical Control** in order to exceed 16mg total dose.
  - B. **Pediatric Dose:** 0.15mg/kg (up to 8mg) IV or PO
- Second line medication for management of nausea and vomiting is ℞ ***Prochlorperazine***
  - A. **Adult Dose**: 5-10mg slow IV or IM (Start with 5mg for most patients, may repeat x1 PRN in 10 minutes). ⚠ **NOTE**: May be added to 50-100ml of NS and administered over several minutes.
    - Reduce dose by half if medically frail, age >65 years, history of liver or renal disease, or any clinical concern for risk of sedation
  - B. **Pediatric dose:** (age > 2 years AND weight >12kg): 0.1mg/kg slow IV or 0.1mg/kg IM
    ⚠ **NOTE**: May be added to 50-100ml of NS and administered over several minutes.
- Third line medication for management of nausea and vomiting is ℞ ***Droperidol***
  - A. **Adult Dose**: 0.625-1.25mg IV (⚠ **NOTE**: NOT mg/kg), May repeat dose x1 at 10 minutes
  - B. **Pediatric Dose:** *Use only as second line agent*. Dose is 0.01 mg/kg up to max of 1.25mg IV, may repeat x1 at 20 minutes.
  - C. When administering IV for nausea or migraine, *slow* IV push is thought to reduce akisthesia incidence.
- Fourth line medication for management of nausea and vomiting is ℞ ***Promethazine***
  - A. **Adult Dose:** 6.25mg-25mg IV (consider 6.25mg in the elderly) IM or Slow IV
  - B. **Pediatric Dose:** (age >2 years only, do not use if age <2 years): 0.25-0.5mg slow IV/IM
  - C. ⚠ **NOTE:**
    - i. Promethazine is best administered in diluted solution. If clinical situation permits, and if volume appropriate, inject dose of promethazine into 100ml NS bag, label the bag, and administer over 10-15 minutes.

ii. If clinical situation permits, consider co-administration of

Diphenhydramine

A. **Adult Dose:** 12.5-25mg IV/IM

B. **Pediatric Dose:** 1-2 mg/kg IV/IM up to 25mg to reduce symptoms/risk of akathisia and/or dystonia. Use a low dose in the elderly.

- If akathisia/dystonia occur, diphenhydramine may be repeated x2 PRN

iii. Intra-arterial administration of Promethazine may result in severe tissue damage. Be certain of quality of IV access prior to use

iv. Promethazine can result in sedation, particularly in the elderly - use lowest doses possible and monitor for side effects (including sedation, dystonia, and akathisia).

v. Promethazine (± diphenhydramine) may be used first-line for management of nausea secondary to suspected vertigo as they have mechanisms of actions that theoretically address the fundamental mechanisms of vertigo-induced nausea (i.e., dopaminergic and anticholinergic actions).

Opioid Overdose—Known or Suspected

M18

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
Known or suspected opioid overdose **AND** altered mental status, miosis, **OR** bradypnea/ respiratory insufficiency/apnea	• Rapid recognition and intervention of a clinically significant opioid poisoning or overdose • Prevention of respiratory and/or cardiac arrest

ALL EMS PROVIDERS

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- Scene Safety: Be alert to potential for drug paraphernalia, exercise caution and employ appropriate personal protective equipment and techniques
- Evaluate for opiate toxidrome: altered mental status, pinpoint pupils (miosis) not always present), decreased respiratory rate (bradypnea) and/or respiratory insufficiency
- The essential feature of opioid overdose requiring EMS intervention is respiratory depression and/or insufficiency (hypercapnia, hypoxia, apnea, and/or loss of airway reflexes). Careful and continuous monitoring is indicated.
- Critical resuscitation components (e.g. opening and/or maintaining the airway, provision of oxygen, rescue ventilation, ensuring adequate circulation) should be performed prior to naloxone administration.
- If symptomatic from a confirmed or suspected opioid overdose, consider naloxone administration. The administration of the initiation dose and/or subsequent doses can be incrementally titrated until respiratory depression is reversed.
- ***Naloxone*** may be administered by EMRs and EMTs via the intra-nasal (IN) route using a Mucosal Atomization Device with preloaded syringe or by commercial nasal spray device
  - -**Adult dose**: 0.2-4mg IN (administer in divided doses by giving half total dose in each nostril)
  - -**Pediatric dose**: 0.1mg/kg IN with maximum initial dose 2mg.
  - -Doses may be repeated as needed
- Apply oxygen and support ventilation with BVM as needed

EMT AND ABOVE PROVIDERS

- Obtain blood glucose level
- Patients who respond to naloxone and obtain alertness should be encouraged to agree to transport (The ED can provide a further period of observation, chemical dependency resource referrals, and a naloxone home kit…)
- An ALS assessment must be conducted before a Opioid overdose patient may elect to refuse transport

EMT w/ IV Therapy Endorsement

- Consider establishing IV access

PARAMEDIC PROVIDERS

- Consider additional administration of ***Naloxone*** as needed via IN, IV, IM, or IO routes.
  - -**Adult dose**: 0.2-4mg IN, IV, IM, or IO. Repeat as needed, no max dose.
  - -**Pediatric dose**: 0.1mg/kg IN, IV, IM, or IO with maximum initial dose 2mg. Repeat as needed, no max dose.
  - -Doses can be chosen based on nature and severity of clinical presentation
  - -The goal of titration is return of adequate respiratory function and airway reflexes, not necessarily normal alertness. When clinically appropriate, titrate in the lowest doses possible to achieve adequate return of respiratory function while attempting to avoid precipitated withdrawal.

NOTE: Increasingly potent opiates have become available on the street. If there is a high index of clinical suspicion for reversible opiate toxicity, continue to repeat naloxone up to 8mg and then **Contact On-Line Medical Control**

Opioid Overdose—Known or Suspected (cont.)

M18

PARAMEDIC PROVIDERS (CONTINUED)

- Be aware that the signs and symptoms of a opioid overdose may also be seen in newborns who have been delivered from a mother with recent or chronic opiate use.
- Assess for clinical improvement. If no response to naloxone, continue to evaluate for alternate causes including co-ingestions and provide supportive care
- Apply cardiac monitor
- Consider end-tidal CO2 monitoring, as clinically indicated
- When possible, attempt to identify intoxicating agent(s) and exposure history.
    - A. Attempt to identify timing and route of potential exposures. Remove transdermal patches if present. (Transport removed patches and turn over to ED personnel.)
    - B. Attempt to identify quantity of medication exposure and safely collect all possible medications and bring to the department when possible.
    - C. Attempt to identify involvement of any long acting opiates (See Extended Release Opiates Table). If long acting opiates are involved, transport is indicated with careful monitoring as repeat naloxone dosing may be indicated.
- Be prepared for the possibility of precipitated withdrawal following the administration of naloxone.
    - A. If precipitated withdrawal occurs, if possible attempt to manage initially without subsequent sedative. If sedation or medication is required, continue careful cardiopulmonary monitoring
    - B. Supportive care
    - C. Use Agitated/Combative Patient protocol as last resort.
- Patients who do not respond to naloxone or who are clinically unstable should be transported without delay.
- Patients may be evaluated for refusal of transport
    - A. Patients with long acting opiates (e.g., methadone) or who present with an intentional overdose should be transported.
    - B. Having a friend or family member available to observe a patient increases the safety margins in patients who refuse transport. See [TM2: Naloxone Leave Behind Program]
    - C. Evaluations for refusals of care following naloxone are an ALS responsibility.
    - D. Report to law enforcement if a patient who received naloxone in the field subsequently elopes from the scene.

NOTES	DOCUMENTATION / KEY PERFORMANCE INDICATORS

Extended Release Opiates*

Trade Name	Generic Name
Avinza	Morphine sulfate extended-release capsules
Butrans	Buprenorphine transdermal system
Dolophine	**Methadone**
Duragesic	**Fentanyl Transdermal System**
Embeda	Morphine sulfate and naltrexone extended release capsules
Exalgo	Hydromorphone extended-release tablets
Kadian	**Morphine extended-release** capsules
MS Contin	**Morphine controlled-release** tablets
Nucynta ER	Tapentadol extended-release oral tablets
Opana ER	Oxymorphone extended-release tablets
OxyContin	Oxycodone controlled-release
Palladone	Hydromorphone extended release

***Bold indicates current most commonly encountered names, list is not complete and new products/names added regularly.**

- Signs and symptoms of opioid overdose
- Pulse oximetry
- Capnography
- Naloxone dose and route (including if given prior to EMS arrival)
- Clinical response to Naloxone
- Number of doses of Naloxone

Pain Management

(Identical to Trauma Protocol T18)

M19

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
Patients who are experiencing pain.	The practice of prehospital emergency medicine requires expertise in a wide variety of pharmacological and non-pharmacological techniques to treat acute pain resulting from myriad injuries and illnesses. One of the most essential missions for all healthcare providers should be the relief and/or prevention of pain and suffering. Approaches to pain relief must be designed to be safe and effective in the organized chaos of the prehospital environment. The degree of pain and the hemodynamic status of the patient will determine the rapidity of care.

ALL EMS PROVIDERS

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- If situation permits, determine patients pain score assessment using standardized pain scale
  - A. Age < 4 years: Observational Scale (FLACC scale—See Pediatric Pain Assessment Scale)
  - B. Age 4 - 12 years: Self-report scale (Wong Baker Faces—See Pediatric Pain Assessment Scale)
  - C. Age > 12 years: Self-report scale (Numeric Rating Scale)
- Consider use of non-pharmaceutical pain management techniques:
  - A. Place in position of comfort
  - B. Apply ice packs, splint, elevation if clinically indicated
  - C. Verbal reassurance to ease anxiety

EMT AND ABOVE PROVIDERS

EMT w/ IV Therapy Endorsement

- Consider obtaining IV access if ALS pharmaceutical pain management is anticipated

PARAMEDIC PROVIDERS

- Consider use of analgesics:
  - A. ***Acetaminophen:*** 15mg/kg PO up to 1 gram if no contraindications to oral medications
  - B. ***Fentanyl:***
    - i. Best used for both critically ill patients and for initial trauma patients due to neutral hemodynamic properties and rapid metabolism. Can be used for those with a reported morphine allergy. The key to analgesia with fentanyl is frequent patient assessment and titration to effect. Pain scale measurement is a component of pain assessment, but in determining opiate dosage, clinical judgement of the totality of the clinical presentation is required.
    - ii. **Adult Dose**: Up to 1 - 2 mcg/kg slow IV push over 1 minute
      - a. For most patients start with 25-100mcg slow IV initial dose.
      - b. For patients with moderate/severe pain (most patients), give subsequent titrated doses up to every 5 minutes as needed with up to 0.5mcg/kg slow IV push (max 100mcg increments). CTD: 200mcg
      - c. In cases of extreme pain (select population), repeat doses up to 1-2 mcg/kg slow IV dose up to every 3-5 minutes are permitted. Pulse oximetry monitoring is mandatory.
      - d. In the intubated patient with a suspected painful condition, titrate in 100-200mcg IV increments.
      - e. Intranasal administration up to 100mcg doses can be used in adults.

iii. Pediatric dose: ⚠ **NOTE:** **Fentanyl is contraindicated in neonates/infants < 1 month due to bradycardia.** Age >1 month consider up to 1 mcg/kg (maximum of 100mcg increment slow IV push over 1 minute or intranasal. Consider giving initial dose intranasal, then establishing IV for subsequent doses.

iv. For most patients start with 25mcg IV or IN.

v. For patients with moderate/severe pain, give subsequent titrated doses up to 0.5mcg/ kg slow IV or IN up to every 5 minutes as needed. CTD: 100mcg.

vi. For patients in extreme pain (select population), repeat doses of up to 1mcg/kg IV or IN (up to 100mcg increment) every 3-5 minutes are permitted. Pulse oximetry monitoring is mandatory.

vii. In the intubated patient, titrate in 1mcg/kg IV increments.

C. Morphine:

i. Best used for hemodynamically stable or non-trauma patients. Has longer duration of action than fentanyl, but more histamine release

ii. ⚠ **NOTE:** There is wide variability in dose response to morphine. Multiple studies indicate that a single 0.1mg/kg IV dose of morphine can result in inadequate pain relief in a sizeable percentage (>50% in some studies) of patients. The key to analgesia with morphine is frequent patient assessment and titration to effect. Pain scale measurement is a component of pain assessment, but in determining opiate dosage, clinical judgement of the totality of the clinical presentation is required

iii. ℞ ***Morphine*** **Adult dose**: up to 0.1mg/kg IV slow IV push (maximum of 15mg incremental dose), with clinical judgement determining dose.

- For most patients start with 2-10mg IV initial dose.
- For patients with moderate/severe pain (most patients), give subsequent titrated doses up to every 5 minutes as needed with up to 0.05mg/kg slow IV push (maximum 7.5mg increments). CTD: 20mg.
- In patients in extreme pain (select population), repeat doses of up to 0.1mg/kg (up to 15mg increment) every 3-5 minutes are permitted. Pulse oximetry monitoring is mandatory.
- Generally a decreasing dose is recommended as pain improves. Adjust increments of dosing based on clinical situation and response.

iv. ℞ ***Morphine*** **Pediatric dose**: up to 0.1mg/kg slow IV push (maximum of 5mg incremental dose), with clinical judgement determining dose

- For most patients start with 1-2mg IV initial dose.
- For patients with moderate/severe pain (most patients) give subsequent titrated doses up to every 5 minutes as needed with up to 0.05 mg/kg slow IV push (maximum 5mg increments). CTD: 10mg.
- In patients in extreme pain (select population), repeat doses of up to 0.1mg/kg (up to 15mg increment) every 3-5 minutes are permitted. Pulse oximetry monitoring is mandatory.
- Generally a decreasing dose is recommended as pain improves. Adjust increments of dosing based on clinical situation and response.

v. Consider anti-emetic administration if situation permits (current literature does not support routine use)

℞ ***Ondansetron*** **Adult dose:** 4-8 mg IV **Pediatric dose**: 0.15 mg/kg IV up to 8mg

vi. Administer diphenhydramine if needed for pruritus or urticaria (common effect of histamine release with morphine)

℞ ***Diphenhydramine*** **Adult dose:** 12.5-50 mg IV (use lower dose if age >65)
Pediatric dose: 0.5-2mg/kg IV

Pain Management

(Identical to Trauma Protocol T18)

M19

PARAMEDIC PROVIDERS (CONTINUED)

D. Ketamine

i. For most patients, Ketamine is not recommended as the primary medication used in pain management. Other non-sedating medications should be used preferentially.

ii. While Ketamine can be an effective analgesic, it can completely obliterate the clinical exam.

iii. Ketamine may be combined with other analgesics and used with sub-dissociative dosing (see adjunctive medications below for dosing recommendations).

iv. Ketamine may be used as initial analgesic in the entrapped and/or critically ill (e.g. polytrauma) patient with limited/impaired access by the EMS provider, or in a critical patient for whom intubation is anticipated. In the setting of limited access, monitoring should be applied to the extent possible, and standard monitoring applied as soon as access is obtained. In this setting ℞ ***Ketamine*** **Adult Dose**: If reasonable airway access 0.5-2mg/kg IV/IO up to 250mg IV, and may follow with 0.25mg/kg IV IO up to 125mg every 10-15 minutes as needed. If IV/IO access is unable to be secured, or extremely limited access for monitoring may give 50mg IM and repeat every 5 minutes as needed up to 500mg IM. **Pediatric dose**: 0.5-2mg/kg IV/IO up to 200mg and may follow with 0.25mg/kg IV/IO up to 100mg every 10-15 minutes. If IV/IO access is unable to be secured, or limited access for monitoring may give 2-5mg/kg IM up to 50mg and repeat dose up to every 5 minutes as needed max dose 250mg IM.

- Adjunctive medications

A. Adjunctive medications are an option for refractory pain management in the non-intubated patient. In general it is best to titrate analgesics to effect, rather than add adjunctive medications as the cross interactivity rate - specifically with precipitating respiratory depression can be very high, and is not always clinically apparent.

B. ℞ ***Midazolam*** 1-2mg IV in the adult may be initiated in the setting of severe pain and anxiety not adequately managed by initial titration of narcotics. Cardiopulmonary monitoring is mandatory. Contact online medical control for subsequent dosing or if pediatric administration is being considered. (Midazolam can have a paradoxical reaction and increase activity/anxiety in pediatric patients.)

C. ℞ ***Ketamine*** **Adult and Pediatric Dose**: 0.1-0.15mg/kg up to 100mg (slow IV or added to 50 or 100ml NS and infused over ~15 minutes is a sub-dissociative dose that may potentiate the effect of analgesia without obliteration of awareness. However, it can still cause alterations of perception and complicate subsequent assessment, particularly if administered rapidly. Given the lack of adverse hemodynamic effects, early use of sub-dissociative ketamine for pain management in setting of trauma is appropriate. Limited evidence suggests retreatment with fentanyl may potentiate effects.

D. Cardiopulmonary monitoring

E. Continuous pulse oximetry is recommended if tolerated if potential respiratory depressants are administered.

F. Continuous pulse oximetry monitoring is mandatory and ETCO2 monitoring is recommended:

- If a combination of potential respiratory depressants (e.g., narcotics & benzodiazepines) are used.
- If the patient is clinically intoxicated.
- If the patient has known pulmonary disease (e.g., COPD).
- Or if more than (2) doses of a potential respiratory depressant administered.

G. For non-intubated patients, side-stream ETCO2 monitoring is indicated if clinically evident sedation occurs following administration.

NOTES	DOCUMENTATION / KEY PERFORMANCE INDICATORS
• Pain scale assessment should be recorded before and after analgesic medication administration and upon arrival at destination. • All patients should have drug allergies identified prior to administration of pain medication	• Vital signs with pulse oximetry • Acquisition of patient allergies prior to medication administration • Initial pain scale assessment • Medication administration with dose and route • Reassessment with repeat vitals and pain scale assessment • ETCO2 monitoring

Pain Management

(Identical to Trauma Protocol T18)

M19

PEDIATRIC PAIN ASSESSMENT SCALES

Age <4 — **FLACC SCALE**

	SCORING		
Category	**0**	**1**	**2**
FACE	No particular expression, or smiling	Occasional grimace or frown, withdrawn, disinterested	Freqent to constant quivering chin, clenched jaw
LEGS	Normal or relaxed	Uneasy, restless, tense	Kicking or legs drawn up
ACTIVITY	Lying Quietly, normal position, moves easily	Squirming, shifting back and forth, tense	Arched, rigid, or jerking
CRY	no cry (awake or asleep)	Moans or whimpers, occasional complaint	Crying steadily, screams or sobs, frequent complaints
CONSOLABILITY	Content, relaxed	Reassured by occasional touching, hugging, or being talked to, distractable	Difficult to console or comfort

Age ~4 to ~12

Wong-Baker FACES® Pain Rating Scale

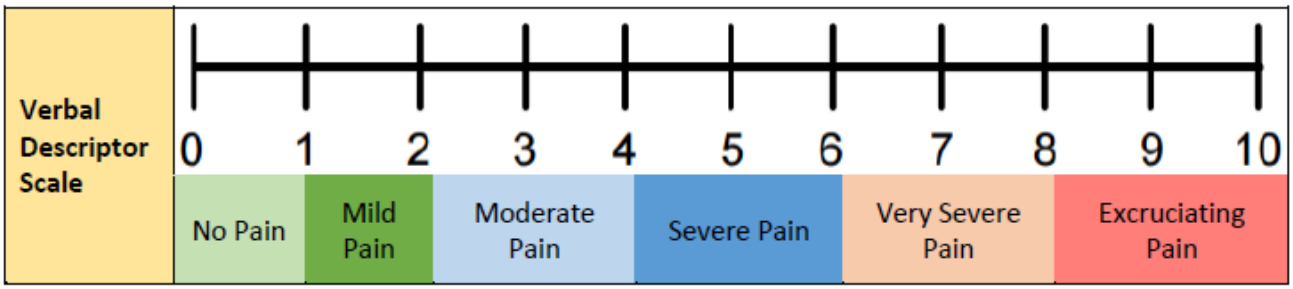
Instructions for Usage

Explain to the person that each face represents a person who has no pain (hurt), or some, or a lot of pain.

Face 0 doesn't hurt at all. Face 2 hurts just a little bit. Face 4 hurts a little bit more. Face 6 hurts even more. Face 8 hurt a whole lot. Face 10 hurts as much as you can imagine, although you don't have to be crying to have this worst pain.

Ask the person to choose the face that best depicts the pain they are experiencing.

Universal Pain Assessment Tool



Poisoning / Overdose

M20

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
Known or suspected intentional or accidental overdose or poison exposure. For Opioids see: Opioid Overdose Known or Suspected Protocol	• Remove patient from hazardous material environment. Decontaminate to remove continued sources of absorption, ingestion, inhalation, or injection • Identify intoxicating agent by toxidrome or appropriate environmental testing • Assess risk for organ impairments (heart, brain, kidney) • Identify antidote or mitigating agent • Treat signs and symptoms in effort to stabilize patient

ALL EMS PROVIDERS

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- Pay special attention to scene safety and request additional resources if needed
- If indicated, remove patient from any hazardous material environment and decontaminate to remove continued sources of absorption, ingestion, inhalation, or injection
- When possible, attempt to identify intoxicating agent(s) and or exposure history.
  - A. Attempt to identify timing and route of potential exposures
  - B. Attempt to identify quantity of medication exposure and safely collect all possible medications and bring to the department when possible.
  - C. Use [M18: Overdose—Opioid], [E2: Carbon Monoxide Poisoning] and other appropriate protocols as indicated.
- Evaluate and monitor for known toxidromes
  - A. See charts on following pages for specific toxins and treatments
- Evaluate for signs of possible concomitant trauma/injury and use appropriate protocols as indicated
- Evaluate for intentionality (suicidal ideation)

EMT AND ABOVE PROVIDERS

- Obtain blood glucose level if indicated in exposure history, patient history, or altered mental status

⚠ **NOTE:** Several toxics (e.g. alcohols, salicylates such as aspirin, and beta-blockers, and certain antibiotics) can result in hypoglycemia in non-diabetics, particularly in pediatric patient exposures.

- In stable patients with no intentionality (suicidality), no findings of toxicity or instability, and suspected low risk/no risk exposure it is permissible to contact Poison Control **1-800-709-0911** for consultation and guidance.

PARAMEDIC PROVIDERS

- If high risk exposure or signs of toxicity and situation permits, obtain 12-Lead EKG and carefully monitor rate, rhythm, QRS and QT duration.
- Consider activated charcoal if:
  - A. A potentially significant ingestion has occurred immediately (< 1 hour) prior to EMS Arrival **AND**
  - B. Transport time is greater than 15 minutes **AND**
  - C. No contraindications are present:
    - -A depressed or altered level of consciousness
    - - A concern for a potentially rapid decrease in consciousness
    - -Aspiration risk concern (including nausea/vomiting)
    - -Caustic or heavy metal ingestions
    - -Lack of patient cooperation

℞ ***Activated Charcoal***

Adult dose: 25-100 grams PO x1, diluted in water

Pediatric dose: 0.5-1gram/kg (up to 100 grams) PO x1, diluted in water

Poisoning / Overdose (cont.)

M20

PARAMEDIC PROVIDERS (CONTINUED)

• Treat signs and symptoms (nausea) in effort to stabilize patient. See Protocol M22: Seizure as needed

NOTES	DOCUMENTATION /
Not all ingestions/poisonings present with clearly defined toxidromes. Be alert to the possibility of multi-drug/poly-pharmacy poison exposures and resulted mixed and/or competing toxidromes.	• Signs and symptoms & onset time • Identification of possible etiology • Initiating measures on scene to prevent exposure to others

Class of Drugs	Treatment Indications	Specific Treatment(s)
Alpha-2 Adrenergic Agonists Examples: Xylazine ("Tranq")	Sedation, bradycardia, and hypotension Also frequently combined with other drugs of abuse.	Supportive treatment. Note: Naloxone indicated if respiratory depression due to frequency of combination use with opiates.
Amphetamines	Severe agitation, psychosis, or ventricular arrhythmias, seizures	Supportive treatment. Midazolam or Diazepam are first line treatment. See [M8: Behavioral Emergencies: Agitated or Violent] as needed.
Anticholinergics Examples: diphenhydramine, benztropine, atropine	Toxidrome includes dilated pupils, vasodilation (flushing), hyperthermia, dry skin (no diaphoresis), hallucinations/ agitation, tachycardia, urinary retention.	Supportive treatment.
Benzodiazepines Examples: diazepam, lorazepam, clonazepam, alprazolam, midazolam, chlordiazepoxide	Benzodiazepine abuse or overdose can lead to decreased level of consciousness, respiratory depression and hypotension.	Treatment consists of supportive measures. Monitor carefully for respiration depression and/or loss of airway protection.
Beta Blockers Examples: atenolol, metoprolol, nadolol, propanolol, bisiprolol, carvedilol*, nebivolol *beta blocker properties	Profound bradycardia, hypotension or conduction defects, hypoglycemia	Contact on-line medical control if clinically unstable or symptomatic. Consider **Glucagon** 0.03-0.1 mg/kg/dose every 20 minutes as needed slow IVP. Max Dose: 1 mg/dose
Calcium Channel Blockers Examples: amlodipine, diltiazem felodipine, nicardipine, nifedipine, verapamil, isradipine	Profound bradycardia, hypotension or conduction defects	Supportive treatment. If clinically unstable, notify receiving hospital as early as practical.
Cocaine	Severe agitation, seizures, or arrhythmias	Supportive treatment. Midazolam or Diazepam are first line treatment, including for patients with chest pain following cocaine use. See [M8: Behavioral Emergencies: Agitated or Violent as needed.

Poisoning / Overdose (cont.)

Class of Drugs	Treatment Indications	Specific Treatment(s)
Cyanide	Smoke exposure, industrial accident, or exposure with: early weakness, headache, nausea followed altered LOC, hemodynamic instability, seizure, respiratory depression or arrest, or cardiac dysrhythmia	100% Oxygen, supportive care, early hospital notification. IF cyanide kit available, administer as directed See [E3: Cyanide Exposure]
Narcotics/Opiates Examples: buprenorphine, codeine, fentanyl, hydrocodone, hydromorphone, methadone, meperidine, morphine, oxycodone, tramadol. **NOTE:** Clonidine overdoses may present with findings similar to opiate overdose and may respond to naloxone.	Signs of narcotic overdose include: decreased level of consciousness, pinpoint pupils (except meperidine), and respiratory depression. Respiratory depression is the main indication for treatment. Caveat: Be aware that giving naloxone to a long-term narcotic user, chronic abuser or addict can induce narcotic withdrawal, which creates a new set of difficult problems.	Supportive management. For patients with respiratory depression or inability to protect the airway give Naloxone, see [M18: Opioid Overdose] If high index of suspicion and clear narcotic toxidrome repeat and escalate dose. If low suspicion and no response, reconsider diagnosis.
Organophosphate Poisoning (Pesticides and Nerve Agents) Examples: insecticides (malathion, parathion, diazinon, fenthion, dichlorvos chlorpyrifos), nerve gasses (soman, sarin, tabun, VX), ophthalmic agents (echothiophate, isoflurate), and anthelmintics (trichlorfon)	Profound bradycardia, seizures, abnormal (wet) lung sounds The organophosphate toxidrome: **S** – Salivation, Seizures **L** – Lacrimation **U** – Urination **G** – GI vomiting and diarrhea **B** – Bradycardia*, bronchorrhea, bronchospasm **A** – Arrhythmias **M** – Miosis (small pupils)* * Tachycardia and mydriasis (dilated pupils) are also possible Caveat: Organophosphates are highly toxic in very small quantities and pose a significant risk to EMS and health care workers through secondary contamination.	**Atropine** 0.02mg/kg IV or IM every 3-5 min until lung sounds clear to auscultation. There is no maximum dose of atropine in this setting. Use **atropine** in the initial treatment of bradycardia and seizures. Notify receiving hospital as soon as practical.
Tricyclic Antidepressants (TCA) Examples: amitriptyline, amoxapine, clomipramine, despiramine, doxepin, imipramine, nortriptyline, protryptline, trimipramine	Decreased level of consciousness; hypotension, seizures, malignant arrhythmias (e.g. *Torsades de Pointes*, VT), prolongation of the QT or QRS intervals. Caveat: Patients with TCA overdoses are prone to deteriorating very quickly. Note: Sodium containing solutions act like antidotes, because they protect the heart against the toxic effects of the TCA. Induced alkalosis from bicarbonate and hyperventilation also protect against the toxic effects of TCAs.	Give 20ml/kg Normal Saline Bolus. Repeat as clinically indicated. If QRS widening >100ms or any malignant dysrhythmia, give: **Sodium Bicarbonate** 1-2 mEq/kg IV bolus. (Sodium Bicarb is carried in 1 mEq/ml syringes, so the volume amounts to 1 ml/kg) Monitor for narrowing of QRS or improvement in blood pressure. Repeat x1 PRN. Treat arrhythmias according to the appropriate protocol. Treat seizures per [M21: Seizure]

Seizure

M21

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
Patient with clinically suspected recent seizure **OR** witnessed or ongoing seizure activity	• Cessation of seizures in the prehospital setting. • Minimizing adverse events during or subsequent to seizure activity in the prehospital setting. • Minimizing seizure recurrence during transport.

ALL EMS PROVIDERS

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- Assess for presence of trauma, diabetes, pregnancy, hyperthermia, or toxic exposure and manage per appropriate protocol.
- Consider syncope when clinical impression unclear
- Perform airway management as needed
  - -Most patients are generally best managed with chin-lift, jaw thrust, suctioning, and or basic airway adjuncts
- Apply oxygen when clinically indicated
- Assess neurologic status
- When practical, attempt to determine:
  - -Duration of seizure (s)
  - -Presence of prior history of seizures, diabetes, or hypoglycemia
  - -Typical appearance/character of prior seizure activity
  - -Baseline seizure frequency and duration
  - -Presence of concurrent symptoms of apnea, cyanosis, vomiting, bowel/bladder incontinence, or fever.
  - -If any bystander administration of medications to stop the seizure occurred
  - -Current medications, including anti-convulsants
  - -History of recent dose changes or non-compliance with prescribed anti-convulsants
  - -History of trauma, pregnancy, heat exposure, or toxin exposure
  - -History of substance abuse and/or withdrawal

EMT AND ABOVE PROVIDERS

- Obtain blood glucose and treat as indicated

⚠ **NOTE**: Hypoglycemic patients with seizure activity should be transported and are not good candidates for non-transport.

EMT w/ IV Therapy Endorsement

- Consider establishing IV access

PARAMEDIC PROVIDERS

- Administer ***Midazolam*** IF:
  - Seizure activity is ongoing on arrival of EMS or has lasted > 5 minutes
  - -Recurrent seizure activity occurs
  - -Patient reports aura of oncoming seizure

  A. ℞ The ***Midazolam*** **Adult dose**: 2.5-10mg IM; **Pediatric dose**: 0.2mg/kg IM (up to 10mg)
  - i. IM route is preferred route of administration if IV is not yet established
  - ii. Intranasal route may also be used
  - iii. If IV is established, **Adult dose**: 2-5mg IV; **Pediatric dose**: 0.1mg/kg IV (up to 5mg)

  B. Midazolam may be administered prophylactically following seizures that are suspected to have occurred as a result of a withdrawal syndrome (e.g., alcohol).

  C. Midazolam dose may be repeated every 5 minutes up until 3 doses.
  - ⚠ **NOTE:** More than two doses of benzodiazepines are associated with a higher risk of airway compromise. ETCO2 monitoring is indicated.
    Use caution, weigh risks/benefits of deferring treatment until hospital, and/or consider consultation with on-line medical control oversight if patient has received two doses of benzodiazepines by bystanders and/or prehospital providers.

  D. ℞ ***Ketamine*** **Adult and Pediatric dose:** 1mg/kg IV mixed in 50mL bag given wide open over 2 minutes (maximum 100mg) or 3mg/mg IM (maximum 300mg)

STANDING ORDERS

PARAMEDIC PROVIDERS (CONTINUED)

D. Patients who meet requirements for midazolam administration should be listed as ***status epilepticus*** under primary or secondary impression in the ePCR
E. Notify receiving hospital as soon as practical in setting of *status epilepticus*
F. Patients with simple seizure activity that is resolved prior to EMS arrival, that lasted less than 5 minutes, and that is not recurrent do not require medication administration.

- Consider NS bolus
- Apply cardiac monitor
  -Consider 12-lead EKG if circumstances unclear regarding seizure activity vs. syncope
- If patient is in the third trimester of pregnancy or < 8 weeks postpartum, treatment should also include magnesium.
  A. Rx ***Magnesium*** dose is 4-6 grams IV over ~4 minutes
  -If not IV available, administer 10 grams IM (5 grams each buttock)
  B. If practical or in setting of prolonged transport, initiate Rx ***Magnesium*** drip at 2 grams/hour IV. (Mix 4 grams of ***Magnesium*** in 1000ml NS and administered at 500 ml/hr).
- If practical, obtain temperature.
  -If patient is a pediatric patient < age 6 years, temperature is useful to evaluate for presence of febrile seizures.
  -Treat fever per Fever Protocol if no contradictions such as decreased LOC or alertness
  -The presence of fever with seizure in children < 6 months old and > 6 years old is not suggestive of a simple febrile seizure, and should be concerning for a potentially serious condition such as meningitis or encephalitis. Similarly multiple seizures in < 24 hours are indicative of a complex seizure and are more concerning for alternate pathology.
- If patient is intubated:
  A. Rx ***Midazolam*** may be repeated up to 4 doses prior to contacting on-line medical control.
  B. Consider Rx ***Ketamine*** 1-2mg/kg IV if ongoing seizure activity following third dose of ***Midazolam***.
  C. Be aware that the use of paralytics obscures ability to clinically appreciate seizure activity, but seizure activity may be ongoing.
- For patients who receive more than 1 dose of Midazolam or who receive Ketamine, ETCO2 monitoring is indicated
- **Contact On-Line Medical Control** if maximal medication dosing regimen reached and seizure activity persists

NOTES	DIFFERENTIAL DIAGNOSIS CONSIDERATIONS
Key Considerations • Many airway/breathing issues in seizing patients can be managed without intubation or placement of an advanced airway. Reserve these measures for patients that fail less invasive maneuvers as noted above • For new onset seizures or seizures that are refractory to treatment, consider other potential causes including, but not limited to, trauma, stroke, electrolyte abnormality, toxic ingestion, pregnancy with eclampsia, hyperthermia	• Trauma • Diabetic emergency • Pregnancy • Hypothermia • Syncope • Toxic exposure **DOCUMENTATION / KEY PERFORMANCE INDICATORS** • Presence of seizure upon EMS arrival • Blood glucose level • Neurologic status • Medications administered

Sepsis

M22

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
Patient with suspected infectious illness **AND** Clinically ill in appearance **OR** unstable vital signs **OR** altered mental status. *NOTE: An effective proven pre-hospital screen for sepsis that is both sensitive and specific has not yet been developed or established.*	• Initiate early fluid resuscitation to maintain/restore adequate perfusion to vital organs • Utilize supportive measures to correct hypoxia • Differentiate between possible underlying causes of shock in order to facilitate additional therapy • Initiate early sepsis alert notification to receiving facility

ALL EMS PROVIDERS

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- Obtain full set of vital signs, including temperature (immediate treatment for fever is rarely warranted in sepsis patients)
- Obtain carefully measured respiratory rate (RR >22/min may be early indicator of sepsis)
- Follow infectious control precautions as clinically indicated
- Apply oxygen as clinically indicated
- Consider ALS intercept for all patients that meet sepsis criteria unless transport will be significantly delayed
- Notify receiving hospital as soon as practical of suspected sepsis patient

EMT AND ABOVE PROVIDERS

- Obtain blood glucose

EMT w/ IV Therapy Endorsement

- Consider establishing large bore IV access x2
- Initiate NS fluid bolus up to 30ml/kg

PARAMEDIC PROVIDERS

- Goal for fluid administration is a Mean Arterial Pressure (MAP) of ≥ 65.
  - -MAP = (1/3 x Systolic BP) + (2/3 Diastolic BP)
  - -If circumstances prevent MAP calculation, goal for SBP is ≥ 90.
- If persistently hypotensive after NS and with clinical signs of shock/inadequate perfusion, consider initiating vasopressor support:
  - i. To create an Epinephrine drip, take 1mg Rx ***Epinephrine*** (either 1mg/mL, formerly 1:1,000 or 0.1mg/mL, formerly 1:10,000) and inject into a 1 L bag of normal saline. (⚠ LABEL BAG). This creates a concentration of ~1mcg/ml. Administer 1mL/minute IV and titrate to effect. **Adult:** Up to 10mL/min (10mcg/min) **Pediatric:** Up to 5mL/min (5mcg/min)
  - ii. Alternately, a push-dose pressor approach may be utilized to facilitate perfusion. Mix the Rx ***Epinephrine*** drip, and remove 10mL (10 mcg) in a 10mL syringe. Administer 5-10 mcg (5-10mL) as bolus up to every 5 minutes as needed for support of hemodynamics.
- If febrile or in discomfort: consider administration of parenteral Rx ***Acetaminophen*** IV **Adult dose**: 1000 mg over 15 minutes **Pediatric dose**: 15mg/kg over 15 minutes max dose 1000mg.

NOTES	DOCUMENTATION / KEY PERFORMANCE INDICATORS
An effective proven pre-hospital screen for sepsis that is both sensitive and specific has not yet been developed or established. Pre-hospital end-tidal CO2 as a screening for sepsis has not proven sensitive or specific and is not a required component of sepsis screening	• Medications administered • Full vital signs with reassessment • Neurologic status assessment • Amount of fluids given

Shock

M23

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
Clinical findings of poor perfusion such as hypotension AND etiology is not yet identified.	• Initiate early fluid resuscitation to maintain/restore adequate perfusion to vital organs • Differentiate between possible underlying causes of shock in order to facilitate additional therapy

EXCLUSION CRITERIA

- Hypovolemia
  See [T1: Trauma Management—General]
- Anaphylaxis
  See [M5: Allergic Reaction Anaphylaxis]
- Sepsis See [M22: Sepsis]
- Cardiogenic Shock
  See [C7: Cardiogenic Shock]

ALL EMS PROVIDERS

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- Obtain full set of vital signs, including temperature
- Attempt to determine cause of shock

EMT AND ABOVE PROVIDERS

- Obtain blood glucose

EMT w/ IV Therapy Endorsement

- Consider establishing IV access, if unable to establish IV access, consider IO placement
- Normal saline rapid IV bolus **Adult** and **Pediatric**: 20ml/kg

PARAMEDIC PROVIDERS

- Apply cardiac monitor
  -Obtain 12-lead EKG
- Normal saline rapid IV bolus **Adult** and **Pediatric**: 20ml/kg
  A. May repeat x2 PRN
  B. If persistently hypotensive after NS and with clinical signs of shock/inadequate perfusion, consider initiating vasopressor support:
    i. Rx To create an Epinephrine drip, take 1mg ***Epinephrine*** (either 1mg/mL, formerly 1:1,000 or 0.1mg/mL, formerly 1:10,000) and inject into a 1 L bag of normal saline. (⚠ LABEL BAG). This creates a concentration of ~1mcg/ml. Administer 1mL/minute IV and titrate to effect. **Adult:** Up to 10mL/min (10mcg/min) **Pediatric:** Up to 5mL/min (5mcg/min)
    ii. Rx Alternately, a push-dose pressor approach may be utilized to facilitate perfusion. Mix the ***Epinephrine*** drip, and remove 10mL (10 mcg) in a 10mL syringe. Administer 5-10 mcg (5-10mL) as bolus up to every 5 minutes as needed for support of hemodynamics.
  C. Goals: Clinical improvement in perfusion, MAP >65 AND/OR SBP >90

NOTES	DOCUMENTATION / KEY PERFORMANCE INDICATORS
Patients predisposed to shock: a. Immunocompromised b. Adrenal insufficiency c. History of a solid organ or bone marrow transplant d. Infants e. Elderly 3. In most adults, tachycardia is the first sign of compensated shock, and may persist for hours. Tachycardia can be a late sign of shock in children and a tachycardic child may be close to cardiovascular collapse	• Medications administered • Full vital signs with reassessment • Neurologic status assessment • Amount of fluids given

Stroke / CVA / Acute Onset Neuro Deficit

M24

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
Patient with symptoms, history, or exam findings suspicious for stroke - a new neurologic deficit (e.g. facial droop, localized (focal) weakness, speech or gait disturbance…)	• Identify treatable causes of altered mental status • Identify signs and symptoms of CVA • Protect patient from harm • Limit scene time to < 20 minutes

ALL EMS PROVIDERS

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- Perform pre-hospital stroke scale assessment (FAST exam)
- If positive FAST exam, determine severity score (LAMS) to help identify possible Large Vessel Occlusion (LVO) patients who may be candidates for mechanical intervention.
- Obtain detailed history and time of onset including **time last known well (LKW)**
- When possible, obtain the phone number of a family member to provide history
- Evaluate for anti-coagulant use
- Request ALS evaluation if not automatically dispatched but do not delay transport if BLS available
- Initiate CODE STROKE for LKW < 24 hours
- Minimize on scene time
- Expedite transport to nearest appropriate facility
- Closely monitor neurological status and note changes
- ⚠ **NOTE:** Do **NOT** administer or allow patient to self-administer ***Aspirin*** or ***Nitroglycerin***

EMT AND ABOVE PROVIDERS

- Obtain blood glucose level, treat hypoglycemia if present
- Obtain pulse oximetry, apply oxygen for SpO2 < 94%

EMT w/ IV Therapy Endorsement

- Consider establishing IV access

PARAMEDIC PROVIDERS

- Apply cardiac monitor and document cardiac rhythm
- If CODE STROKE, evaluate for TPA contraindications, document, and communicate to ED staff:
  - -Previous history of intracranial hemorrhage
  - -Head trauma or stroke in previous 3 months
  - -Symptoms suggestive of subarachnoid hemorrhage (severe headache)
  - -Seizure at onset
  - -Major surgery or serious trauma within previous 14 days
  - -Recent hemorrhage (GI bleed) within previous 21 days
  - -Minor or rapidly resolving symptoms
  - -Systolic BP >185 or diastolic >110 (relative contraindication)

NOTES

- **CODE STROKE** activations are still indicated for patients with clear contra-indications to thrombolytic therapy or whom are suspected to have intra-cranial hemorrhage. Carefully and clearly communicate any suspected contraindications or concerns to receiving staff
- **Large Vessel Occlusion Strokes**

Mechanical Clot Extraction is a very specialized procedure available at only a few facilities within WA state. None of those facilities exist within Skagit County. However, patients may be rapidly transferred to facilities with these capabilities and the timelines for potential LVO intervention are different than the timelines for potential tPA administration.

DIFFERENTIAL DIAGNOSIS CONSIDERATIONS

- Hypoglycemia
- Large vessel occlusion
- Traumatic brain injury

DOCUMENTATION / KEY PERFORMANCE INDICATORS

- Time last known well
- Blood glucose level
- FAST/LAMS scores
- Hospital Stroke alert and time

Syncope and Near-Syncope

M25

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
Patient with clinically suspected or witnessed syncope.	• Stabilize and resuscitate when necessary • Initiate monitoring and diagnostic procedures • Transport for further evaluation
EXCLUSION CRITERIA	
• Patient with witnessed or suspected seizure activity (in cases where evident) • Patient with clinically suspected head injury/trauma *prior* to loss of consciousness. • Patients with ongoing altered mental status	

ALL EMS PROVIDERS

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- Evaluate vital signs
  - -If clinical situation permits, consider obtaining orthostatic vital signs
  - -Assess patient volume status, consider possibility of shock
- Evaluate for traumatic injury from syncope. Treat as indicated per appropriate protocol.
- Perform neurologic assessment
- If possible, include the following components of the history:
  - A. Conditions leading to the event, including presence or absence of prodromal symptoms.
    - -Consider exertional syncope a high risk finding
  - B. Any patient complaints prior to the event
  - C. History from witnesses or others on scene, including seizures or shaking, presence of pulse breathing (if noted), duration of the event, and any events that lead to the resolution of the event.
- If possible, include the following elements in review of the patients past medical history:
  - A. History of known cardiovascular disease (heart disease, stroke, etc.)
  - B. History of known congestive heart failure (CHF)
  - C. History of prior syncope (and nature of evaluation for same)
  - D. History of prior dysrhythmia
  - E. History of anticoagulant use
  - F. History of prior seizure
  - G. History of GI (or alternate) blood loss
  - H. Pregnancy status and last menstrual period when indicated
  - I. History of recent medication changes

EMT AND ABOVE PROVIDERS

- Transport for further evaluation is generally recommended for patients with syncope.
- Obtain blood glucose. If indicated, treat per [M9: Diabetic Emergencies-Hyperglycemia] or [M10: Diabetic Emergencies—Hypoglycemia]
- If appropriate, may consider obtaining orthostatic vital signs

EMT w/ IV Therapy Endorsement

- Consider establishing IV access as clinically indicated

PARAMEDIC PROVIDERS

- Clinically evaluate in an attempt to determine underlying cause of symptoms
- Apply cardiac monitor as soon as practical
  - A. Obtain 12-lead EKG
    - i. In addition to standard evaluation for dysthymia and/or ischemia, observe for the following high risk EKG findings in syncope:
      - QTc prolongation >500ms
      - Delta waves and/or short PR interval to suggest Wolff-Parkinson-White
      - Findings of Brugada Syndrome*: incomplete RBBB pattern in V1/V2 with ST segment elevation

Syncope and Near-Syncope (Cont.)

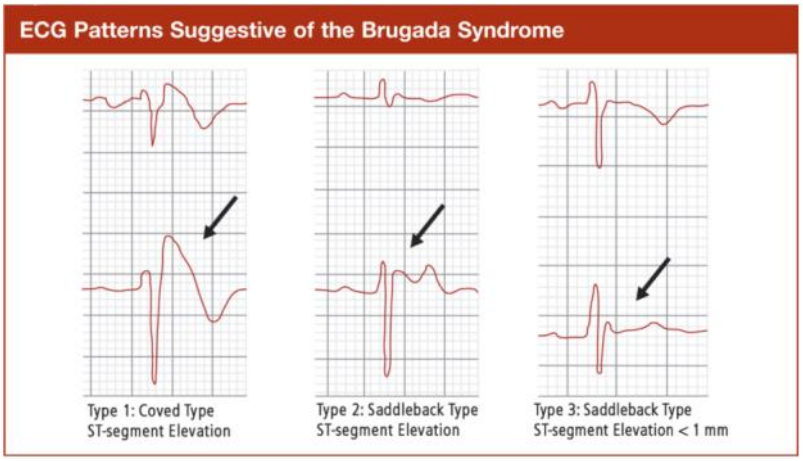
M25

NOTES

Key Considerations

Syncope is defined by both the loss of consciousness and the loss of postural tone. Syncope typically is abrupt in onset and resolves equally quickly. EMS providers may find the patient awake and alert on initial evaluation. Pre-syncope or near-syncope is defined as the prodromal symptoms of syncope. It usually lasts for seconds to minutes and may be described by the patient as "nearly blacking out" or "nearly fainting"

***Brugada Syndrome (associated with risk of sudden death)**



Type 1 (Coved ST segment elevation >2mm in >1 of V1-V3 followed by a negative T wave) is the only ECG abnormality that is potentially diagnostic. This is referred to as a Brugada sign.

For formal diagnosis of Brugada Syndrome the ECG findings must be associated with one of the following clinical criteria:
Syncope
Documented ventricular fibrillation (VF) or
Family history of sudden cardiac death at < 45 years old
Coved-type ECGs in family members
Inducibility of VT with programmed electrical stimulation
Nocturnal agonal respiration

DIFFERENTIAL DIAGNOSIS CONSIDERATIONS

- Cardiac dysrhythmia
- Cardiac ischemia or infarct
- Hypoglycemia
- Hemorrhage
- Shock
- Sepsis
- Stroke
- Dehydration
- Ectopic pregnancy
- Adverse medication effect
- Orthostatic hypotension

DOCUMENTATION / KEY PERFORMANCE INDICATORS

- Vital signs
- Blood glucose level
- GCS / AVPU

SECTION 4:

PEDIATRIC & OB/GYN EMERGENCIES

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Brief Resolved Unexplained Event (BRUE)

P1

STANDING ORDERS

CRITERIA

- A child or infant under one year of age with a transient episode lasting < 1 minute that is frightening to the observer with some combination of the following:

-Apnea (central or obstructive)
-Color change (usually cyanosis or pallor)
-Marked change in muscle tone (flaccidity or rigidity)
-Impression of choking or gagging

EXCLUSION CRITERIA

- Age >12 months
- Duration of event >1 minute
- Identified underlying alternate causes to include:
  - -Seizure
  - -Respiratory distress
  - -Cardiopulmonary arrest
  - -Trauma with known mechanism

PATIENT CARE GOALS

- Recognize patient characteristics and symptoms consistent with a BRUE
- Promptly identify and intervene for patients who require escalation of care
- Evaluate for identifiable causes of event

ALL EMS PROVIDERS

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- Manage airway, breathing, circulation as indicated
  - -Apply oxygen for signs of respiratory distress or hypoxemia. Escalate from blowby to nasal canula, to simple face mask, to non-rebreather mask as needed in order to maintain normal oxygenation (>94%)
  - -Suction nose and/or mouth (via bulb, suction catheter) if excessive secretions present
- If apnea persists, support ventilation with BVM
- Obtain blood pressure and temperature
- Apply continuous pulse oximetry, if available
- Obtain blood glucose **NOTE:** EMRs may only perform blood glucometry after completing MPD-approved specialized training.
- Regardless of patient appearance, all patients with a history of signs or symptoms of BRUE should be transported for further evaluation.
- When possible, attempt to obtain the following historical elements:
  - A. History and circumstances associated with event of symptoms.
  - B. History of color change (including cyanosis and/or pallor), irregular breathing or change in muscle tone.
  - C. Concurrent symptoms (fever, cough, rhinorrhea, vomiting, diarrhea, rash, labored breathing).
  - D. Prior history of BRUE, prior BRUE event in last 24 hours.
  - E. Family history of SIDS.
  - F. Treatment and Interventions performed (resuscitation attempts at home).
  - G. History of premature birth before 37 weeks gestation.
  - H. Past medical history (cardiac, neurologic, respiratory, or chromosomal anomalies).
  - I. History of gastroesophageal reflux.
- Recommended physical exam components include:
  - -An evaluation for signs of respiratory distress (grunting, nasal flaring, retracting).
  - -An assessment of color (pallor, cyanosis, normal)
  - -An assessment of mental status (alert, tired, lethargic, unresponsive, irritability).
  - -An assessment for external signs of trauma (accidental or non-accidental).

EMT AND ABOVE PROVIDERS

EMT w/ SGA Endorsement

- SGA should be utilized only if BVM ventilation fails in the setting of respiratory failure or apnea.

EMT w/ IV Therapy Endorsement

- Consider establishing IV access
  - -An IV is not indicated for a child that is well-appearing and returned to baseline following the event, with no findings of shock or clinically evident or anticipated need for medications.

Vaginal Bleeding

P2

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
• Patient with vaginal bleeding in any trimester **OR** • Female patient of childbearing age (10-55) with pelvic pain and clinical concern for known or suspected ectopic pregnancy	• Supportive management • Patients in third trimester of pregnancy should be transported on left side or with uterus manually displaced to the left if hypotensive • Do not place hand/fingers into vagina of bleeding patient except in cases of prolapsed cord or breech birth that is not progressing

EXCLUSION CRITERIA

- Patient in active labor/imminent childbirth See [P4: Imminent Childbirth]
- Seizure related to pregnancy/eclampsia
- Post-partum hemorrhage

ALL EMS PROVIDERS

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- Assess for signs and symptoms of shock

EMT AND ABOVE PROVIDERS

EMT w/ IV Therapy Endorsement

- Establish IV access

PARAMEDIC PROVIDERS

- Volume resuscitate if shock suspected
- Cardiopulmonary monitoring as clinically indicated
  -Obtain 12-lead EKG in setting of syncope
- Supportive management
- If hemodynamically unstable, notify receiving hospital as soon as practical
- If known to be pregnant, obtain OB history when possible:

  -Length of pregnancy

  -Number of pregnancies

  -Number of viable births

  -Number of non-viable births

  -Last menstrual period

  -Due date

  -Prenatal care

  -Number of expected babies

Pre-Eclampsia / Eclampsia

P3

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
• Patient in third trimester pregnancy (≥28 weeks) or ≤6 weeks postpartum **AND** • Systolic BP ≥140 **OR** Diastolic ≥90	• Supportive management

ALL EMS PROVIDERS

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- Check for blue band indicating patient risk for pre-eclampsia (see below)


EMT AND ABOVE PROVIDERS

EMT w/ IV Therapy Endorsement

- Establish IV access
- Normal Saline TKO

PARAMEDIC PROVIDERS

- Apply cardiac monitor
- If possible, position and transport patient in left lateral recumbent position to avoid supine hypotension syndrome from compression of inferior vena cava (IVC).
- If *eclampsia* is present and patient is *actively seizing*, treat per [M21: Seizure] protocol initially, and then when possible, administer Rx ***Magnesium*** 4-6 grams IV over ~4 minutes, followed by magnesium infusion at a rate of 2 grams/hour IV.
  - -To create infusion, add 4 grams Rx ***Magnesium*** to 1 liter NS and run at 500ml/hr.
  - -Obtain blood glucose and treat as indicated.
  - -If seizures refractory, return to [M21: Seizure] after magnesium administration. If seizures remain refractory, contact medical control to consider repeat magnesium dosing.
  - -If unable to obtain IV access, administer Rx ***Magnesium*** 10g IM in two doses (5g each buttock).
- If *eclampsia* is present and patient is *not* actively seizing, initiate treatment by administering Rx ***Magnesium*** 4-6 grams IV over ~10-20 minutes, followed by magnesium infusion at a rate of 2 grams/hour IV.
  - -To create infusion, add 4 grams magnesium to 1 liter NS and run at 500ml/hr.
- If *pre-eclampsia* is present and systolic BP ≥ 160 or diastolic BP ≥ 110, administer Rx ***Magnesium*** 2-6 grams IV over ~10-20 minutes and consider magnesium infusion at a rate of 2 grams/hour IV if transport time ≥ 15 minutes.
- If magnesium is administered:
  - -Closely monitor respiratory rate for hypermagnesemia induced respiratory depression.
  - -When possible monitor patellar deep tendon reflexes and fetal heart tones as well - for any signs of depression following magnesium. Decrease magnesium infusion rate to 1 gram/hour if any depression occurs.
- If possible, assess for presence of the following:
  - -Generalized edema.
  - -Hyperreflexia (check patellar reflexes).
  - -History of proteinuria.
- Notify receiving hospital as soon as practical.
- When possible, obtain OB history See [P4: Imminent Childbirth] for content.
- Supportive management.

Imminent Childbirth (with or without complications)

P4

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
• Patient with imminent delivery **Signs of Imminent Delivery:** Contractions, crowning, urge to push, urge to move bowels, membrane rupture or bloody show.	• Recognize imminent birth • Assist with uncomplicated delivery of term newborn • Recognize complicated delivery situations • Apply appropriate techniques when delivery complication exists

ALL EMS PROVIDERS

Skagit Valley Hospital Family Birth Center/Labor & Delivery Phone Number:
360-428-2283

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- Consider additional resources to provide care for mother and infant(s)
- Do not place hand/fingers into vagina of bleeding patient except in cases of prolapsed cord or breech birth that is not progressing
- If patient in labor but no signs of impending delivery, facilitate transport to appropriate receiving facility
- If signs of imminent delivery, allow delivery to proceed naturally, instructing the mother to push only during contractions.
  - A. Support the infant's head as needed
    -Do NOT routinely suction the infant's airway (even with a bulb syringe) during delivery
  - B. Grasping the head gently with hand over the ears, gently pull down to allow delivery of the anterior shoulder
  - C. Gently pull up on the head to allow delivery of the posterior shoulder
  - D. Slowly deliver the remainder of the infant
    -Newborns are slippery, take care not to drop the infant
  - E. Keep the infant at or below the level of the placenta to facilitate blood floow
  - F. Clamp umbilical cord at least 2 inches from the abdomen with 2 clamps and cut the cord between the clamps
  - G. Record APGAR scores at 1 and 5 minutes (See APGAR Reference Table at end of protocol)
    After delivery of infant, suctioning (including suctioning with a bulb syringe) should be reserved for infants who have obvious obstruction to the airway or require positive pressure ventilation
  - H. Dry infant and keep warm
  - I. Reassess mother and infant
  - J. The placenta will deliver spontaneously, often within 5-15 minutes of the infant
    -Do NOT force the placenta to deliver
    -Do NOT pull on the umbilical cord. Do not delay transport for delivery of the placenta
    -Facilitate transport
  - K. After delivery, massaging the uterus and allowing the infant to nurse will promote uterine contraction and help control bleeding
- When possible, obtain OB history:
  1. Length of pregnancy
  2. Number of pregnancies
  3. Number of viable births
  4. Number of non-viable births
  5. Last menstrual period
  6. Due date
  7. Prenatal care
  8. Number of expected babies
  9. History of opiate use and/or drug abuse

Imminent Childbirth (with or without complications)

P4

STANDING ORDERS

ALL EMS PROVIDERS (CONTINUED)

- Notify receiving facility ASAP if any of the following are present:
  1. Prepartum hemorrhage
  2. Postpartum hemorrhage
  3. Breech presentation
  4. Limb presentation
  5. Nuchal cord
  6. Prolapsed cord
  7. Seizure
- Some bleeding is normal with any childbirth. Large quantities of blood or free bleeding are abnormal

EMT AND ABOVE PROVIDERS

- If complications of delivery are identified:

A. Shoulder Dystocia—if delivery fails to progress after head delivers, quickly attempt the following:

i. Hyperflex mother's hips to severe supine knee-chest position
ii. Apply firm suprapubic pressure to attempt to dislodge shoulder
iii. Apply high-flow oxygen to mother
iv. Transport as soon as possible
v. Notify receiving hospital and/or closest appropriate receiving facility for direct medical oversight and to prepare team

B. Prolapsed Umbilical Cord

i. Placed gloved fingers between infant and uterus to avoid compression of cord
ii. Consider placing mother in prone knee-chest position
iii. Apply high-flow oxygen to mother
iv. Transport as soon as possible
v. Notify receiving hospital and/or closest appropriate receiving facility for direct medical oversight and to prepare team

C. Breech Birth

i. If head fails to deliver, place gloved hand into vagina with fingers between infant's face and uterine wall to create an open airway
ii. Consider placing mother in prone knee-chest position
iii. Apply high-flow oxygen to mother
iv. Transport as soon as possible
v. Notify receiving hospital and/or closest appropriate receiving facility for direct medical oversight and to prepare team

D. Maternal Cardiac Arrest

i. Apply manual pressure to displace uterus from right to left
ii. Attempt resuscitation per standard cardiac arrest protocol
iii. Transport as soon as possible if infant is estimated to be >24 weeks gestation (perimortem Cesarean section at receiving facility is most successful if done within 5 minutes of maternal cardiac arrest)
iv. Notify receiving hospital and/or closest appropriate receiving facility for direct medical oversight and to prepare team

EMT w/ IV Therapy Endorsement

- Obtain IV access when able, but do not delay delivery for IV access

Imminent Childbirth (cont.)

PARAMEDIC PROVIDERS

- Volume resuscitate mother as needed to maintain SBP ≥ 90mmHg
- Supine Hypotension Syndrome: Place patient in lateral recumbent position if mother has hypotension before delivery
- If seizures occur, treat using [P3: Pre-Eclampsia/Eclampsia]

APGAR SCORING SYSTEM

	Indicator	0 Points	1 Point	2 Points
A	**Activity** (muscle tone)	Absent	Flexed arms & legs	Active
P	**Pulse**	Absent	Below 100 bpm	Above 100 bpm
G	**Grimace** (reflex irritability)	Floppy	Minimal response to stimulation	Prompt response to stimulation
A	**Appearance** (skin color)	Blue; Pale	Pink body, blue extremities	Pink
R	**Respiration**	Absent	Slow and irregular	Vigorous Cry

NOTES	DOCUMENTATION / KEY PERFORMANCE INDICATORS
• Multiple studies have found no benefit to routine suctioning. Current guidelines from the Neonatal Resuscitation Program (NRP) and other organizations recommend against the practice, even for neonates born through meconium-stained amniotic fluid. • Suctioning was done because some clinicians believed it reduced the risk of aspiration, especially if there was meconium, and to stimulate breathing, but the evidence suggests that suctioning can stimulate the vagus nerve, which can lead to bradycardia. Studies that compared babies who did and did not receive suctioning found that those who received it had lower APGAR scores and oxygen saturation levels.	• Document all pertinent times delivery, contraction frequency and length)

Neonatal Routine Care & Resuscitation

P5

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
• Newly born infants	• Provide routine care to the newly born infant • Perform a neonatal assessment • Rapidly identify newly born infants requiring resuscitative efforts • Provide appropriate interventions to minimize distress in the newly born infant
EXCLUSION CRITERIA	
• Documented gestational age < 20 week (usually calculated by date of last menstrual period) *If any doubt about accuracy of gestational age, initiate resuscitation.*	

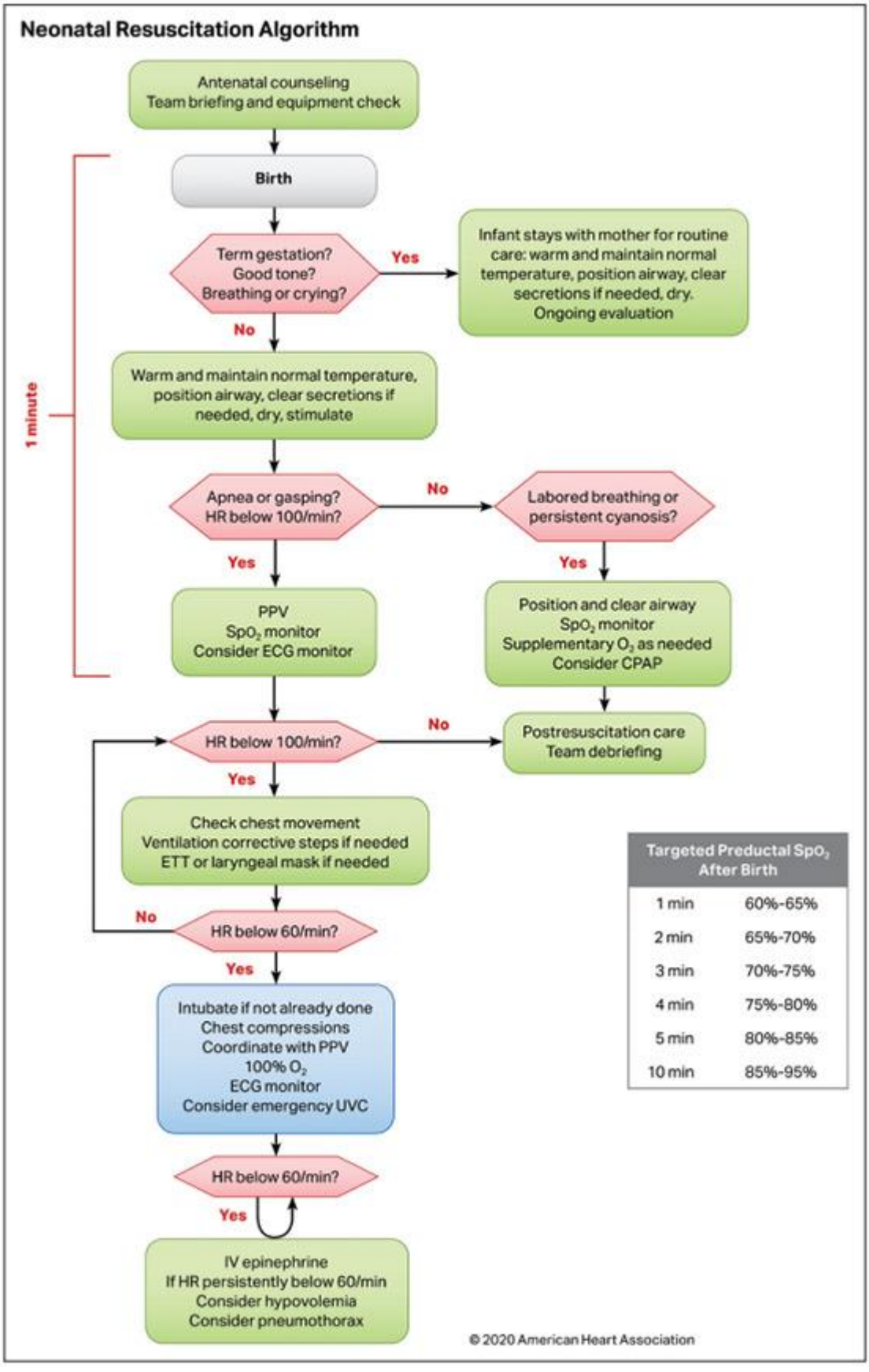
ALL EMS PROVIDERS

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- Clamp cord in two places (at least 2 in from abdomen) and cut cord between clamps if still attached to mother
  -Clamping of the cord should be delayed 30-60 seconds unless the child requires immediate resuscitation or placental circulation is not intact. In children not requiring resuscitation, studies have linked a delayed cord clamping with decreased rates of intraventricular hemorrhage, blood transfusion, and improved blood pressure.
- Warm, dry, stimulate
  -Wrap infant in dry towel or thermal blanket to keep infant as warm as possible during resuscitation; keep head covered if possible.
  -If strong cry, regular respiratory effort, good tone, and term gestation, infant should be placed skin-to-skin with mother and covered with dry linen.
  -If weak cry, signs of respiratory distress, poor tone, or preterm gestation, position airway (sniffing position) and clear airway as needed.

PARAMEDIC PROVIDERS

- Measure heart rate (instead of pulse)
  -3-lead EKG is the recommended method for assessing the heart rate rather than auscultation or palpation
- Evaluate the need for possible resuscitation. Note the following if resuscitation is required:
  -Current recommendations are to initiate resuscitation for all term infants with room air (FiO2 of 21% or FiO2 of 21-30% for preterm neonates (<37 weeks).
  -Low oxygen saturation is normal for the first few minutes of life. The O2 saturation is 60-65% at one minute of life, and usually increases by 5% every ~1 minute thereafter.
  -Current recommendations are to place the pulse oximetry probe on the right hand (not the left) to allow pre-ductal measurements of oxygen going to the brain.
  -Increase FiO2 if the infant is not achieving normal saturation or has a heart rate <100
  -Increase FiO2 to 100% if chest compressions or intubation is required
  -Starting with non-invasive positive pressure ventilation (CPAP) in a patient with moderate to severe respiratory distress, grunting, or periods of apnea is appropriate.
- If heart rate > 100 beats per minute:
  A. Monitor for central cyanosis or signs of respiratory distress. If apneic or in significant respiratory distress:
    i. Initiate bag-valve-mask ventilation with room air at 40-60 breaths per minute.
    ii. Consider endotracheal intubation or placement of supraglottic airway.
      - It is appropriate care to manage airway with BVM alone.
- Consider blood glucose measurement, if clinically indicated. Administer ***Glucose*** if <40

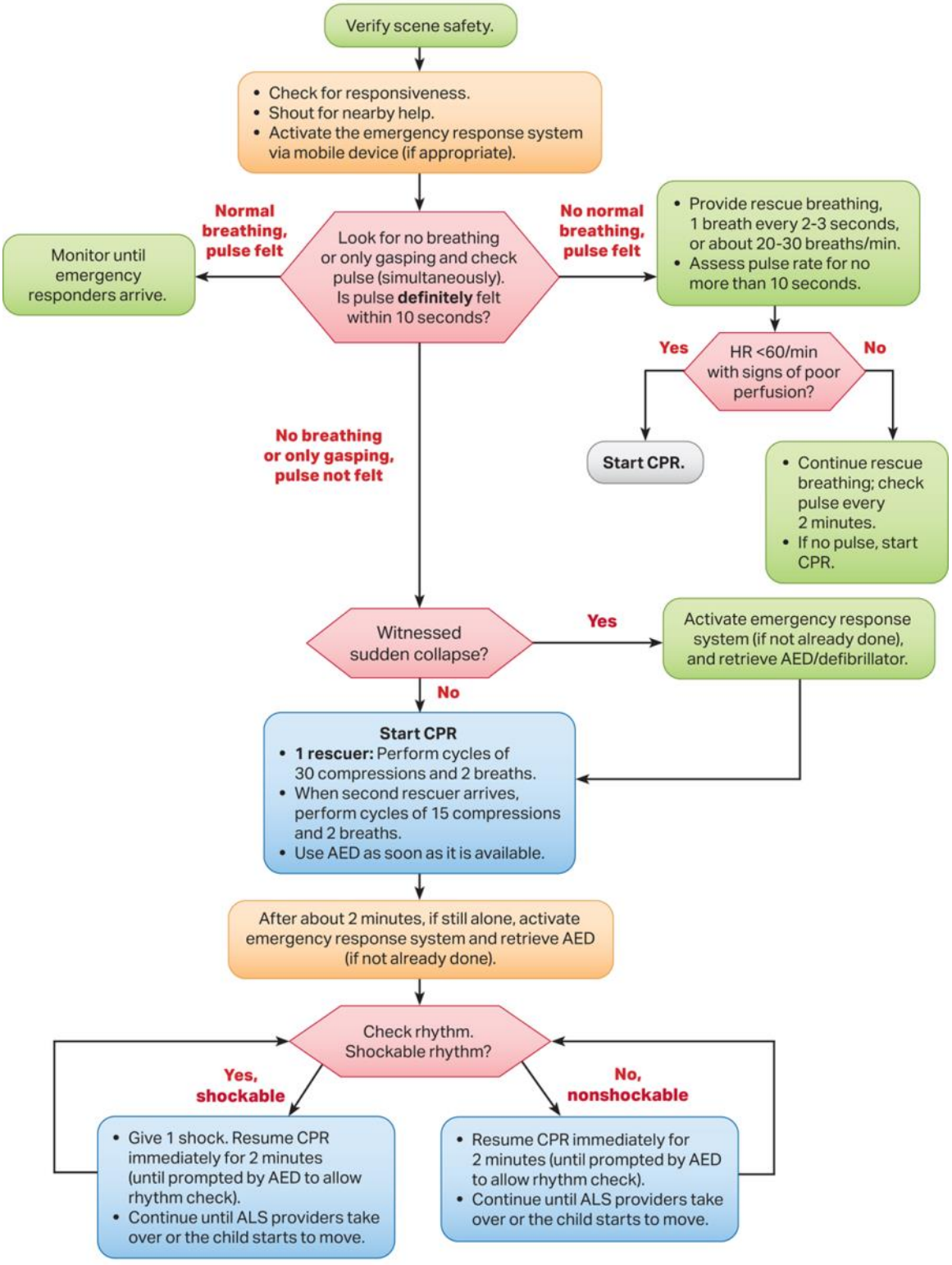
Neonatal Routine Care & Resuscitation (cont.)



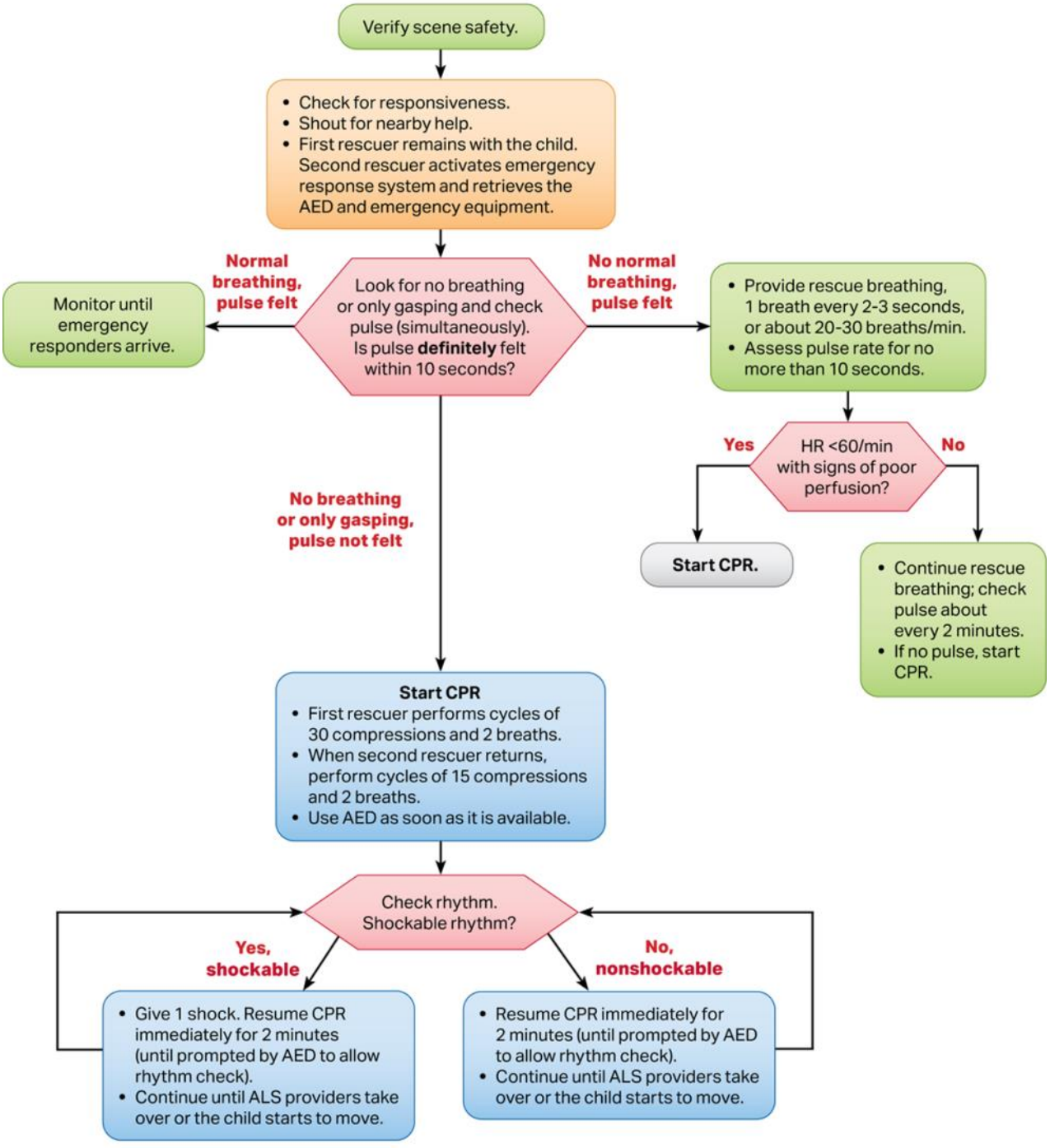
STANDING ORDERS

ALL EMS PROVIDERS

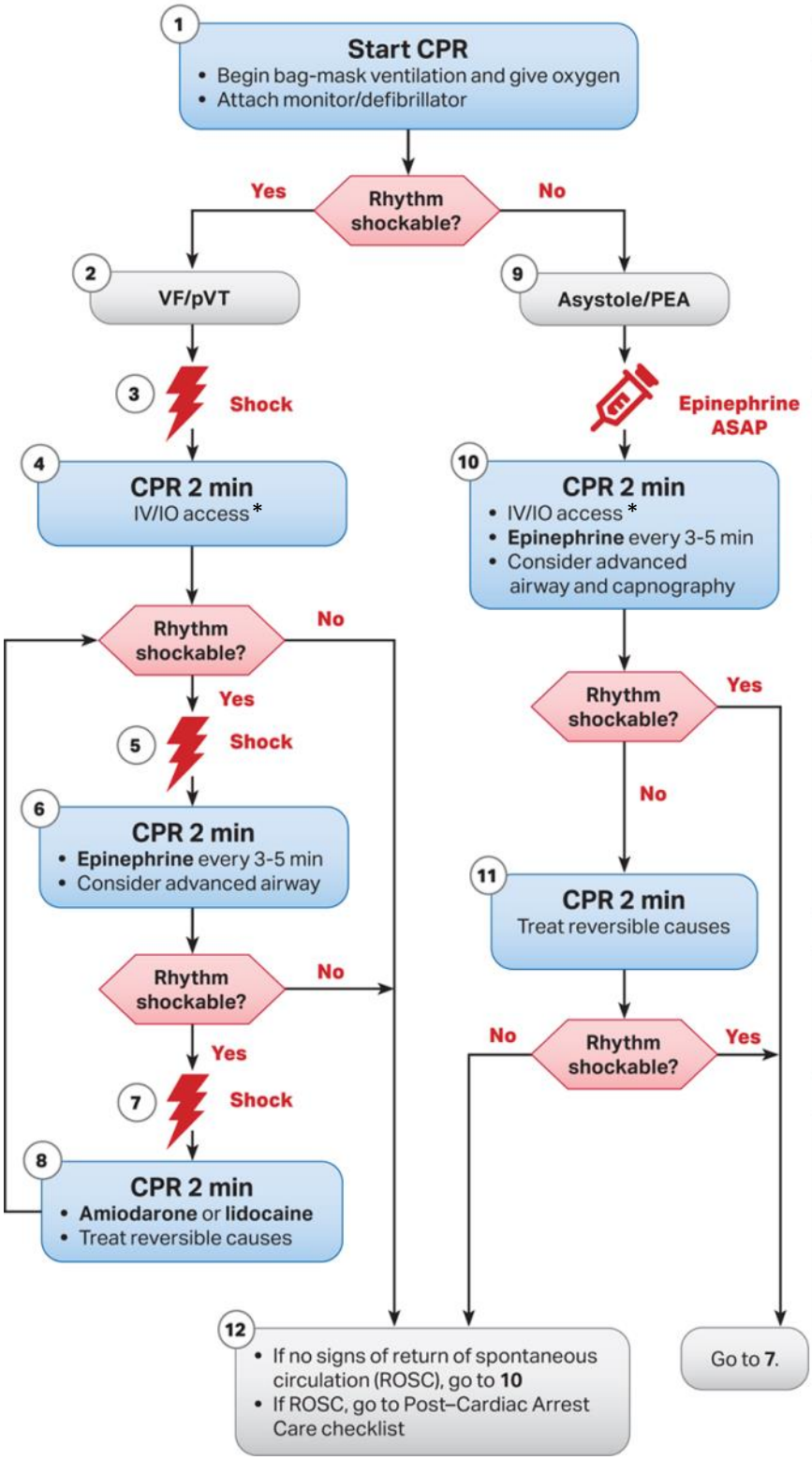
Pediatric Basic Life Support Algorithm for Healthcare Providers—Single Rescuer



Pediatric Basic Life Support Algorithm for Healthcare Providers—2 or More Rescuers



Pediatric Cardiac Arrest Algorithm



CPR Quality

- Push hard (≥⅓ of anteroposterior diameter of chest) and fast (100-120/min) and allow complete chest recoil
- Minimize interruptions in compressions
- Change compressor every 2 minutes, or sooner if fatigued
- If no advanced airway, 15:2 compression-ventilation ratio
- If advanced airway, provide continuous compressions and give a breath every 2-3 seconds

Shock Energy for Defibrillation

- First shock 2 J/kg
- Second shock 4 J/kg
- Subsequent shocks ≥4 J/kg, maximum 10 J/kg or adult dose

Drug Therapy

- **Epinephrine IV/IO dose:** 0.01 mg/kg (0.1 mL/kg of the 0.1 mg/mL concentration). Max dose 1 mg. Repeat every 3-5 minutes. If no IV/IO access, may give endotracheal dose: 0.1 mg/kg (0.1 mL/kg of the 1 mg/mL concentration).
- **Amiodarone IV/IO dose:** 5 mg/kg bolus during cardiac arrest. May repeat up to 3 total doses for refractory VF/pulseless VT
  or
  Lidocaine IV/IO dose: Initial: 1 mg/kg loading dose

Advanced Airway

- Endotracheal intubation or supraglottic advanced airway
- Waveform capnography or capnometry to confirm and monitor ET tube placement

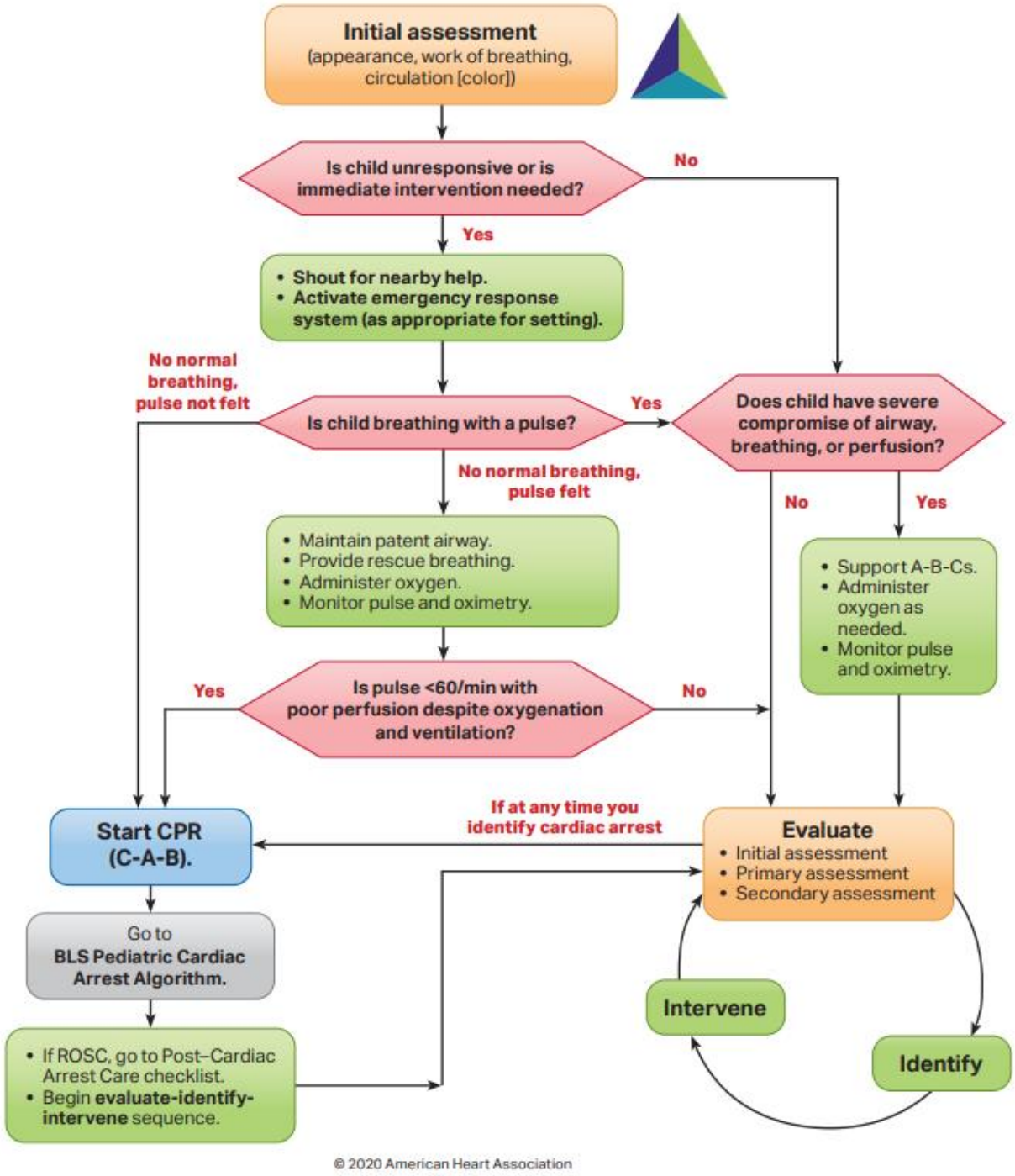
Reversible Causes

- **H**ypovolemia
- **H**ypoxia
- **H**ydrogen ion (acidosis)
- **H**ypoglycemia
- **H**ypo-/hyperkalemia
- **H**ypothermia
- **T**ension pneumothorax
- **T**amponade, cardiac
- **T**oxins
- **T**hrombosis, pulmonary
- **T**hrombosis, coronary

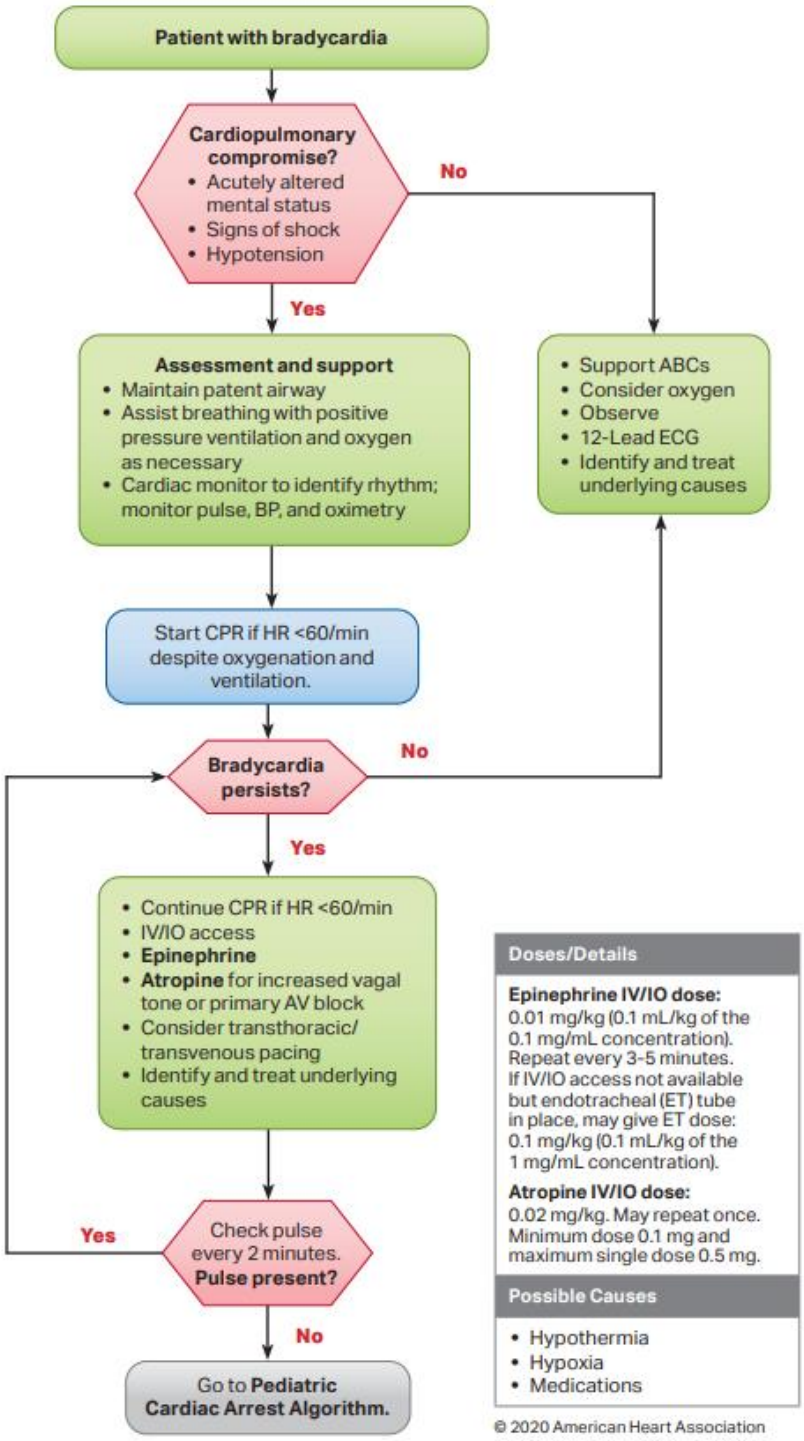
*Femoral IO is preferred

STANDING ORDERS

PALS Systematic Approach Algorithm



Pediatric Bradycardia With a Pulse Algorithm

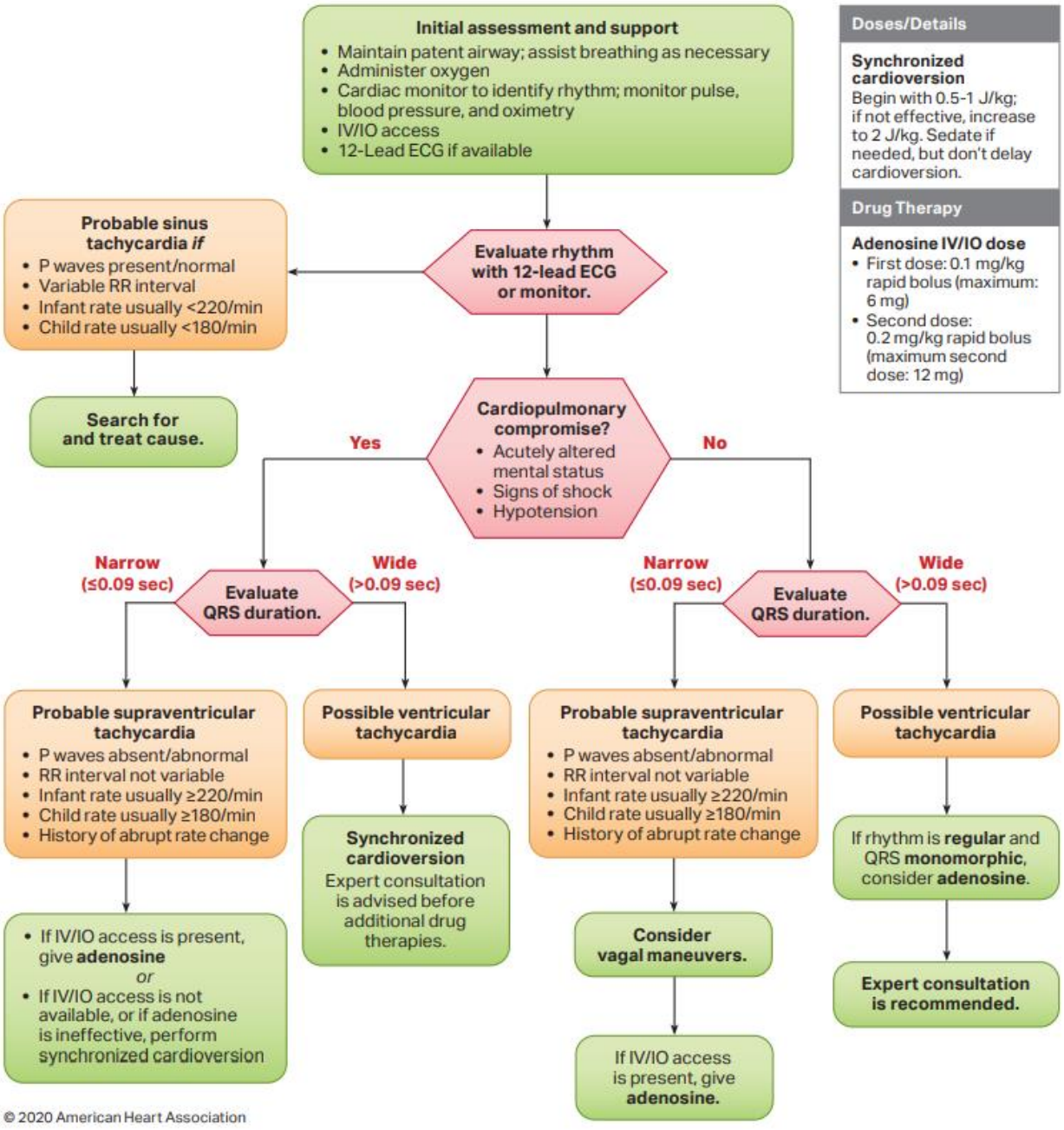


Tachycardia –Pediatric

P9

PARAMEDIC PROVIDERS

Pediatric Tachycardia With a Pulse Algorithm



Pediatric Respiratory: Suspected Bronchiolitis

P10

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
• Pediatric patient < 2 years of age with wheezing or diffuse rhonchi and suspected upper respiratory infection (URI)	• Alleviate respiratory distress • Promptly identify respiratory distress, failure, and or arrest, and intervene for patients who require escalation of therapy • Deliver appropriate therapy by differentiating other causes of pediatric respiratory distress

EXCLUSION CRITERIA

- Patients with the following known or suspected conditions:
  - -Anaphylaxis—see [M5: Allergic Reaction]
  - -Croup—see [P11: Croup]
  - -Epiglottitis—see [P12: Epiglottitis]
  - -Foreign body aspiration
  - -Submersion/drowning injury
  - -Trauma
  - -Known anatomic airway defects, neuromuscular disease

ALL EMS PROVIDERS

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- Obtain a full set of vitals to include pulse oximetry (continuous pulse oximetry is indicated)
- Evaluate airway and level of respiratory distress
  - A. Consider using validated Pediatric Respiratory Score (See Table 1)
  - B. Supplemental oxygen is indicated for sustained O2 sat < 90% awake or 88% asleep
    Escalate from blowby to nasal cannula to a simple face mask to a non-rebreather mask as needed, in order to maintain normal oxygenation.
  - C. Suction the nose and/or mouth (via bulb syringe, Yankauer®, or flexible suction catheter) if excessive secretions are present. Clearing and suctioning secretions aggressively may have the biggest impact on relieving respiratory distress.
  - D. Bag-valve mask ventilation should be utilized in children with respiratory failure

- When possible, attempt to obtain the following history components:
  - A. Identify the time of onset of symptoms
  - B. Evaluate for history of choking or potential foreign body exposure
  - C. Evaluate for concurrent symptoms (fever, cough, rhinorrhea, tongue/lip swelling, rash, labored breathing)
  - D. Evaluate for history of difficulty with feeding (indicator of level of distress)
  - E. Evaluate for history of apnea spells
  - F. Evaluate for recent known sick contacts
  - G. Evaluate for personal history of asthma, wheezing, or croup in the past
  - H. Evaluate for treatments given prior to arrival
  - I. Evaluate for history of prematurity (Prematurity and/or age <12 weeks are associated with a more severe course of illness)
- Recommended physical exam components include:
  - A. A description of breath sounds and level of respiratory distress
  - B. An evaluation for other signs of distress (grunting, nasal flaring, retracting, etc.)
  - C. A description of skill color (pallor, cyanosis, normal)
  - D. An evaluation of hydration status (+/- sunken eyes, delayed capillary refill, mucous membranes moist vs. tacky, fontanel flat vs sunken)
  - E. An evaluation of mental status and activity level (alert, tired, lethargic, unresponsive)

Pediatric Respiratory: Suspected Bronchiolitis (cont.)

P10

STANDING ORDERS

EMT AND ABOVE PROVIDERS

EMT w/ SGA Endorsement

- Supraglottic airway should be utilized only if BVM ventilation is not effective

EMT w/ IV Therapy Endorsement

- Consider establishing IV access
  - A. Most patients with croup do not require IV placement. IVs should only be placed in children with respiratory distress for clinical concerns of dehydration, or when administration of IV medications is anticipated.
  - B. In the setting of mild to moderate symptoms, it is appropriate to defer IV initially and gauge response to initial therapy

PARAMEDIC PROVIDERS

- Continuous positive airway pressure (CPAP) may be administered for severe respiratory distress
- Intubation should be utilized only if BVM ventilation is not effective. The airway should be managed in the least invasive way possible.
- No bronchodilator therapy has been demonstrated to be clearly beneficial in the setting of bronchiolitis. However, nebulized Albuterol may be administered to children in severe respiratory distress with bronchiolitis in the prehospital setting if other treatments (e.g., suctioning, oxygen) fail to result in clinical improvement.
  - A. ℞ ***Albuterol* Dose**: 2.5-5mg nebulized
  - B. Dose may be repeated as needed for ongoing severe distress, but if no clinical improvement with initial dose, benefit is unlikely
  - C. For patients without evidence of severe respiratory distress, inhaled medications may not be necessary

NOTES	DOCUMENTATION / KEY PERFORMANCE INDICATORS
• Suctioning can be a very effective intervention to alleviate distress, since infants are obligate nose breathers. • Supportive care (suctioning, hydration, supplemental oxygenation) remains the mainstay for treatment of bronchiolitis, a syndrome of illnesses often caused by a viral respiratory illness with Respiratory Syncytial Virus (RSV) being the most common cause.	• Document key aspects of the exam to assess for a change after each intervention: -Respiratory rate -Oxygen saturation -Use of accessory muscles or tracheal tugging -Breath sounds -Mental status -Skin color

Pediatric Respiratory: Suspected Bronchiolitis

TABLE 1—Pediatric Respiratory Score				
Variable	**0 Points**	**1 Point**	**2 Points**	**3 Points**
Respiratory Rate				
≤ 2 months of age		≤ 60	61-69	≥ 70
2-12 months of age		≤ 50	51-59	≥ 60
1-2 years		≤ 40	41-44	≥ 45
Retractions	None	subcostal or inter-costal	2 of the following: subcostal, intercostal, substernal, OR nasal flaring (infant)	3 of the following: subcostal, intercostal, substernal, supraclavicular OR nasal flaring/ head bobbing (infant)
Dyspnea				
0-2 years	Normal feeding, vocalizations, and activity	1 of the following: difficulty feeding, decreased vocalization or agitated	2 of the following: difficulty feeding, decreased vocalization or agitated	Stops feeding, no vocalization or drowsy and confused
Auscultation	Normal breathing, no wheezing present	End-expiratory wheeze only	Expiratory wheeze only (greater than end-expiratory wheeze)	Inspiratory and expiratory wheeze OR diminished breath sounds OR both
Score 1-4 **LOW** 5-8 **MODERATE** and 9-12 **HIGH**				

Pediatric Respiratory: Suspected Croup

P11

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
• Pediatric patient with suspected croup including a barking cough and/or stridor	• Alleviate respiratory distress • Promptly identify respiratory distress, failure, and or arrest, and intervene for patients who require escalation of therapy • Deliver appropriate therapy by differentiating other causes of pediatric respiratory distress
EXCLUSION CRITERIA	
• A presumed or identified alternate etiology that includes one of the following: -Anaphylaxis -Asthma -Suspected foreign body aspiration -Submersion/drowning -Trauma -Suspected epiglottitis	

ALL EMS PROVIDERS

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- Obtain a full set of vitals to include pulse oximetry and temperature
- Evaluate airway and breathing:
  - A. Give supplemental oxygen as indicated . Escalate from blowby to nasal cannula to simple face mask to a non-rebreather mask as needed in order to maintain oxygenation.
  - B. Suction the nose and/or mouth (via bulb syringe, Yankauer® or flexible suction catheter) if excessive secretions are present (not commonly required in croup)
  - C. Humidified oxygen or mist therapy is **not** indicated
  - D. Bag-valve mask ventilation should be utilized in children with respiratory failure
- When possible, attempt to obtain the following history components:
  - A. Identify the time of onset of symptoms
  - B. Evaluate for history of choking or potential foreign body exposure
  - C. Evaluate for concurrent symptoms (fever, cough, rhinorrhea, tongue/lip swelling, rash, labored breathing)
  - D. Evaluate for recent known sick contacts
  - E. Evaluate for personal history of asthma, wheezing, or croup in the past
  - F. Evaluate for treatments given prior to arrival
- Recommended physical exam components include:
  - A. A description of presents or absence of stridor, and if present—is stridor at rest or only when agitated
  - B. A description of level of respiratory distress
  - C. A description and evaluation of the cough (barking, seal-like, etc.)
  - D. An evaluation for other signs of distress (grunting, nasal flaring, retractions, etc.)
  - E. A description of color (pallor, cyanosis, normal)
  - F. An evaluation of hydration status
  - G. An evaluation of mental status and activity level (alert, tired, lethargic, or unresponsive)

EMT AND ABOVE PROVIDERS

EMT w/ SGA Endorsement

- Supraglottic airway should be utilized only if BVM ventilation is not effective

EMT w/ IV Therapy Endorsement

- Consider establishing IV access
  - A. Most patients with croup do not require IV placement. IVs should only be placed in children with respiratory distress for clinical concerns of dehydration, or when administration of IV medications is anticipated.

STANDING ORDERS

B. In the setting of mild to moderate symptoms, it is appropriate to defer IV initially and gauge response to initial therapy

PARAMEDIC PROVIDERS

- Without stridor at rest or other evidence of respiratory distress, inhaled medications may not be necessary

A. If stridor is present, consider administer nebulized ***Epinephrine***
   i. **Adult or Pediatric Dose**: Epinephrine 0.5mg—or 5ml of 1:10,000 nebulized
   ii. Nebulized epinephrine should be repeated at this dose with unlimited frequency as needed for ongoing distress
   iii. Patients who receive inhaled epinephrine should be transported to definitive care.

- Consider ***Dexamethasone*** Adult and Pediatric Dose: 0.6mg/kg (max 10mg) IV bolus

- Continuous positive airway pressure (CPAP) may be administered for severe respiratory distress.
- Supraglottic devices and intubation should be utilized only if bag-valve-mask ventilation fails. The airway should be managed in the least invasive way possible.

NOTES	DOCUMENTATION / KEY PERFORMANCE INDICATORS
• Upper airway obstruction can have inspiratory, expiratory, or biphasic stridor. • Foreign bodies can mimic croup, it is important to ask about a possible choking event. • Impeding respiratory failure can be indicated by: - A change in mental status such as fatigue and listlessness. - Development of pallor. - Dusky appearance. - A decrease in retractions, breath sounds, and/or stridor accompanied by visibly evident fatigue and listlessness	• Document key aspects of the exam to assess for a change after each intervention: -Respiratory rate -Oxygen saturation -Use of accessory muscles or tracheal tugging -Breath sounds -Mental status -Skin color

Pediatric Respiratory: Suspected Epiglottitis

P12

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
• Patient with suspected epiglottitis **Clinical Features:** • Most specific: Drooling/difficulty managing secretions • High fever • Severe sore throat • Muffled voice • Often positioned sitting forward with mouth open and chin thrust forward • Distressed appearance	• Alleviate respiratory distress • Promptly identify respiratory distress, failure, and or arrest, and intervene for patients who require escalation of therapy • Deliver appropriate therapy by differentiating other causes of pediatric respiratory distress

ALL EMS PROVIDERS

Epiglottis is now uncommon due to routine immunizations. It used to be most predominant in children age 2-8 years. It can be encountered in unvaccinated children, or even rarely in adults. This protocol may be used for adults with suspected epiglottis.

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
  - Evaluate airway and breathing.
    - -If epiglottis is clinically suspected, the throat should not be examined due to the risk of complete airway obstruction.
    - -Limit disturbances to patient (keep positioned upright, do no light lie down).
  - A. If possible without exacerbating anxiety, give supplemental oxygen as indicated. Escalate from a nasal cannula to a simple face mask to a non-breather mask as needed, in order to maintain normal oxygenation, and with attention to minimizing patient disturbance/anxiety.
- Obtain a full set of vitals to include pulse oximetry and when possible, temperature
- Prioritize rapid transfer and early hospital notification to hospital, with pediatric and operating room capability.
- Prioritize rapid transfer and early hospital notification to hospital, with pediatric and operating room capability.
- Bag-valve-mask ventilation should be utilized in children with respiratory failure.

PARAMEDIC PROVIDERS

A. If stridor is present, consider administer nebulized ***Epinephrine***
   i. **Adult or Pediatric Dose**: Epinephrine 0.5mg—or 5ml of 1:10,000 nebulized
   ii. Nebulized epinephrine should be repeated at this dose with unlimited frequency as needed for ongoing distress
   iii. Patients who receive inhaled epinephrine should be transported to definitive care.

Contact On-Line Medical Control if parent/guardian is refusing medical care and/or transport.

B. Humidified oxygen or mist therapy is **not** indicated.
C. Without stridor at rest or other evidence of respiratory distress, inhaled medications may not be necessary.
D. Bag-valve-mask ventilation should be utilized in children with respiratory failure
E. Supraglottic devices and intubation should be utilized only if bag-valve-mask ventilation fails. The airway should be managed in the least invasive way possible.

Pediatric Respiratory: Suspected Epiglottitis

P12

PARAMEDIC PROVIDERS (CONTINUED)

- Consider IV placement

F. May defer if concern may escalate anxiety and patient deemed likely to tolerate transport without

G. Consider ***Normal Saline*** Adult and Pediatric Dose: 10-20ml/kg IV bolus

H. Consider ***Dexamethasone*** Adult and Pediatric Dose: 0.6mg/kg (max 10mg) PO or IV bolus

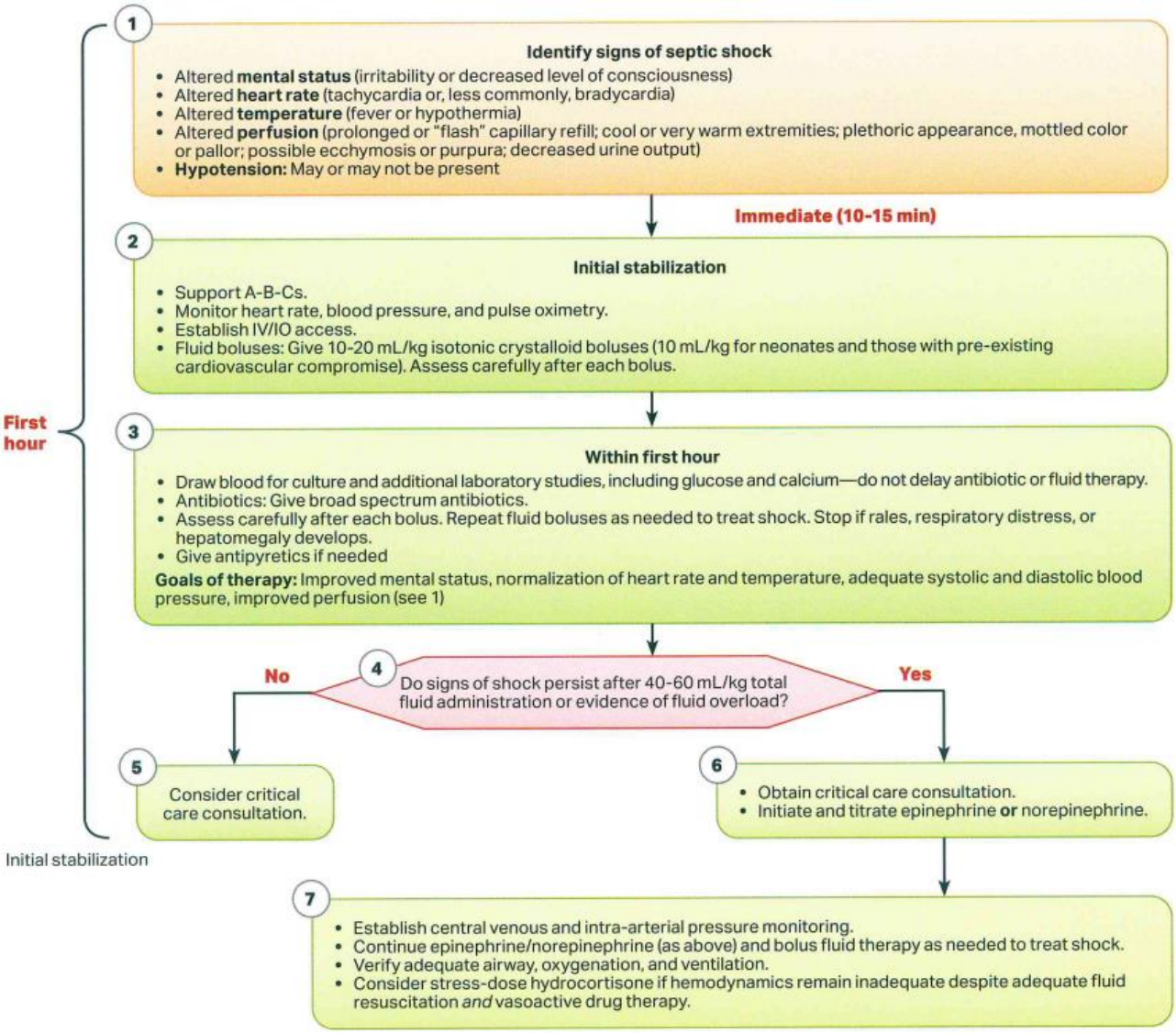
Differentiating Epiglottitis from Croup

Feature	Epiglottitis	Croup
Onset	Acute	More gradual
Age	Age 2-8 years (if not vaccinated), adults	Commonly 6-36 months
Cough	Uncommon	Characteristic (and barking)
Drooling	Common	Uncommon
Stridor	May be present	May be Present

Pediatric Septic Shock Algorithm

P13

PARAMEDIC PROVIDERS



Brierley J, Carcillo JA, Choong K, et al. Clinical practice parameters for hemodynamic support of pediatric and neonatal septic shock: 2007 update from the American College of Critical Care Medicine. *Crit Care Med.* 2009;37(2):666-688. Kissoon N, Orr RA, Carcillo JA. Updated American College of Critical Care Medicine—pediatric advanced life support guidelines for management of pediatric and neonatal septic shock: relevance to the emergency care clinician. *Pediatr Emerg Care.* 2010;26(11):867-869.

Pediatric Management of Shock after ROSC

P14

PARAMEDIC PROVIDERS

Optimize Ventilation and Oxygenation

- Titrate FIO_2 to maintain oxyhemoglobin saturation 94%-99% (or as appropriate to the patient's condition); if possible, wean FIO_2 if saturation is 100%.
- Consider advanced airway placement and waveform capnography.
- If possible, target a PCO_2 that is appropriate for the patient's condition and limit exposure to severe hypercapnia or hypocapnia.

Assess for and Treat Persistent Shock

- Identify and treat contributing factors.
- Consider 20 mL/kg IV/IO boluses of isotonic crystalloid. Consider smaller boluses (eg, 10 mL/kg) if poor cardiac function suspected.
- Consider the need for inotropic and/or vasopressor support for fluid-refractory shock.

Possible Contributing Factors

Hypovolemia
Hypoxia
Hydrogen ion (acidosis)
Hypoglycemia
Hypo-/hyperkalemia
Hypothermia
Tension pneumothorax
Tamponade, cardiac
Toxins
Thrombosis, pulmonary
Thrombosis, coronary
Trauma

Hypotensive Shock

- Epinephrine
- Norepinephrine*

Normotensive Shock

- Epinephrine
- Milrinone*

- Monitor for and treat agitation and seizures.
- Monitor for and treat hypoglycemia.
- Assess blood gas, serum electrolytes, and calcium.
- If patient remains comatose after resuscitation from cardiac arrest, maintain targeted temperature management, including aggressive treatment of fever.
- Consider consultation and patient transport to tertiary care center.

*Norepinephrine and Milrinone not utilized in Skagit County EMS system

Estimation of Maintenance Fluid Requirements

- **Infants <10 kg:** 4 mL/kg per hour

  Example: For an 8-kg infant, estimated maintenance fluid rate
  = 4 mL/kg per hour × 8 kg
  = 32 mL per hour

- **Children 10-20 kg:** 4 mL/kg per hour for the first 10 kg + 2 mL/kg per hour for each kg above 10 kg

  Example: For a 15-kg child, estimated maintenance fluid rate
  = (4 mL/kg per hour × 10 kg)
  + (2 mL/kg per hour × 5 kg)
  = 40 mL/hour + 10 mL/hour
  = 50 mL/hour

- **Children >20 kg:** 4 mL/kg per hour for the first 10 kg + 2 mL/kg per hour for 11-20 kg + 1 mL/kg per hour for each kg above 20 kg.

  Example: For a 28-kg child, estimated maintenance fluid rate
  = (4 mL/kg per hour × 10 kg)
  + (2 mL/kg per hour × 10 kg)
  + (1 mL/kg per hour × 8 kg)
  = 40 mL per hour + 20 mL per hour
  + 8 mL per hour
  = 68 mL per hour

After initial stabilization, adjust the rate and composition of intravenous fluids based on the patient's clinical condition and state of hydration. In general, provide a continuous infusion of a dextrose-containing solution for infants. Avoid hypotonic solutions in critically ill children; for most patients use isotonic fluid such as normal saline (0.9% NaCl) or lactated Ringer's solution with or without dextrose, based on the child's clinical status.

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SECTION 5:
TRAUMA EMERGENCIES

TABLE OF CONTENTS

Trauma Management—General

T1

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
Patients of all ages who are suspected or known to have sustained an injury as a result of mechanical trauma. This includes both blunt and penetrating injury and burns.	• Rapid assessment and management of life-threatening injuries. • Identify patients who meet trauma team activation criteria as early as possible and minimize scene time. • Safe movement of patient to prevent worsening injury severity. • Rapid and safe transport to the appropriate level of trauma care.

ALL EMS PROVIDERS

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- Assess scene safety:
  Evaluate for hazards to EMS personnel, patient, or bystanders. Perform scene size-up.
  A. Determine number of patients.
  B. Determine mechanism of injury.
  C. Request additional resources if needed including Air Transport.
  D. Consider declaration of mass casualty incident if needed.
- Don appropriate personal protective equipment.
- Perform Primary Survey Assessment and initiate treatment as clinically indicated.
- If patient meets trauma activation criteria, notify receiving facility as soon as practical. Note that patients with major hemorrhage, hemodynamic instability, penetrating torso trauma, or signs of traumatic brain injury often require rapid surgical intervention.
- Minimize scene time (goal for patients who meet Full Trauma Team Activation is under 10 minutes) and initiate rapid transport to the highest level of care within the trauma system. Decisions regarding transport destination should be based on the CDC Field Triage Guidelines for Trauma Patients.
- If patient is in traumatic cardiac arrest, got to Traumatic Arrest Protocol.

A. Assess for massive external hemorrhage.
- If present, initiate attempts to control hemorrhage.
- In the setting of multi-trauma, hemodynamic instability, the presence of altered mental status, or multiple patients, and early and temporary tourniquet application to a hemorrhage source thought otherwise likely to be manageable with direct pressure is appropriate. This is to allow further patient assessment and management of identified life threats, movement, or resource marshaling as needed.

B. Assess Airway
- Look for injuries that may lead to airway obstruction including unstable facial fractures, expanding neck hematoma, blood or vomitus in the airway, or facial burns/ inhalation injury.
- Evaluate mental status for ability to protect airway (GCS ≤ 8 likely to require airway protection).
  i. Establish airway with cervical precautions.
  ii. Assess airway patency, ask patient to talk to assess stridor and east of air movement.
  iii. Use [R1: Airway Management - General] & [T6: Spine Assessment & Spinal Motion Restriction] as indicated.

C. Assess Breathing
- Assess respiratory rate and pattern
- Assess symmetry of chest wall movement, presence or absence of visible or palpable evidence of injury
- Listen bilaterally on lateral chest wall for breath sounds and symmetry
- Assess pulse oximetry

STANDING ORDERS

D. Assess Circulation

- Assess blood pressure and heart rate
- Evaluate for signs of shock. Assess for *clinical findings of inadequate perfusion*. Signs of hemorrhagic shock include tachycardia, hypotension, pale, cool clammy skin, capillary refill > 2 seconds
- Address signs of ongoing or severe external hemorrhage
  - i. Control external hemorrhage per [T10: Extremity External Hemorrhage] If external hemorrhage is present but not related to an extremity, direct pressure as appropriate for anatomical site is indicated.
  - ii. If any concern for pelvic injury, if pelvis is unstable, and/or patient is hypotensive, place pelvic binder or sheet to stabilize pelvis.

E. Assess for Disability

- Assess neurologic status and evaluate for head injury and/or spinal injury.
- Protect spine from further injury during assessment, and manage as per [T6: Spine Assessment and Spinal Motion Restriction]**.** Maintain spine precautions as indicated.
- Perform neurologic status assessment (GCS).
- Assess gross motor movement of extremities.
- Evaluate for clinical signs of traumatic brain injury with herniation including: unequal pupils, lateralizing motor signs or posturing. Use [T4: Head Injuries] as indicated.

F. Obtain adequate Exposure to assess patient and monitor environmental exposure.

- Perform rapid evaluation of entire body to identify sites of penetrating wounds or other blunt injuries.
- Prevent hypothermia. Remove wet clothing. Cover patient to prevent further heat loss. If available, use warm IV fluids when administered.
- Perform Secondary Assessment and full exam after addressing conditions identified in the Primary Survey.

G. Attempt to obtain SAMPLE history and assess potential for alcohol or substance abuse involvement.

H. Perform head to toe rapid physical exam checking for injury/findings.

- Assess abdomen for findings of injury.
- Assess spine and back for findings of injury as possible.
- Assess peripheral pulses/capillary refill.
- Assess extremities for fracture/deformity and assess pulses/capillary refill.
- Splint obvious extremity fractures per [T11: Extremity Injuries].

Guideline for amputated parts:

- When possible, rinse debris off of amputated part with saline, and gently wrap in a clean, very lightly moist dressing/towel. Then place in a sealed plastic bag.
- If possible, packaged sealed bag in with a cold pack or ice water. (Do NOT place amputated part directly in water or on ice). Transport parts to the emergency department with patient.

EMT AND ABOVE PROVIDERS

EMT w/ IV Therapy Endorsement

- Obtain IV access. Large bore x 2 as clinically indicated

STANDING ORDERS

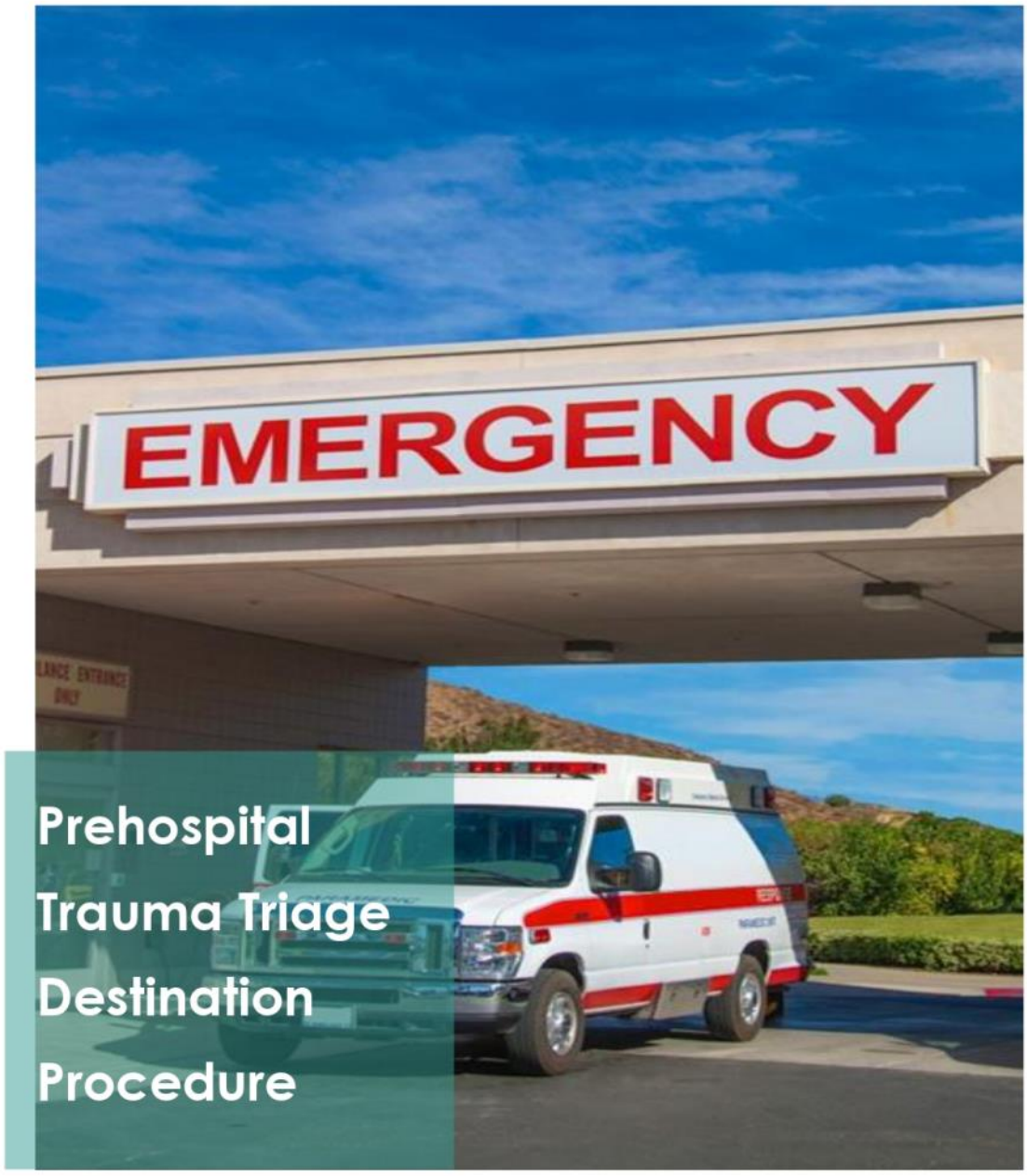
PARAMEDIC PROVIDERS (CONTINUED)

- Obtain IV access. Large bore x 2 as clinically indicated.
  Adults:
  - If SBP >90, no IV fluid administration is required
  - If there are clinical findings of inadequate perfusion and SBP >90, give bolus of 250ml crystalloid solution and reassess. Repeat bolus of crystalloids if SBP remains <90, up to 1 liter NS.
  - In setting of suspected head injury, target SBP >110 otherwise target is clinical signs of perfusion (e.g. mental status, palpable carotid or femoral pulse) rather than normotension.

  Pediatrics:
  - If child demonstrates clinical signs of poor perfusion (tachycardia for age, low blood pressure, >2 second capillary refill, altered mental status, hypoxia, mottled skin, and/or absence of palpable central or radial pulse): Give up to 20ml/kg bolus (Max: 250ml increment) crystalloid bolus and reassess. Target is clinical signs of perfusion and/or BP normal for age. In setting of prolonged transport unresponsive to 20ml/kg bolus, contact medical control. Current trauma fluid resuscitation favors early use of blood products over crystalloids. ⚠ **NOTE**: For list of pediatric vital signs, see reference in [G27: Universal Patient Care Guideline]
- Provide pain medication per [T18: Pain Management].
- Monitor patient for deterioration over time with serial vital signs and repeat assessments.
  - If patient develops difficulty with ventilation, reassess breath sounds for development of tension pneumothorax.
  - If extremity hemorrhage is controlled with pressure dressing or tourniquet, reassess for evidence of continued hemorrhage.
  - If mental status declines, reassess ABCs and repeat neurologic status assessment.

NOTES	DOCUMENTATION / KEY PERFORMANCE INDICATORS
• Life threatening injuries identified on primary survey should be managed immediately and rapidly transported to a trauma center. Secondary survey should be performed while en route. • Patients with compensated shock may not manifest hypotension until severe blood loss has occurred. • Anticipate potential for progressive airway compromise in patients with trauma to head and neck. • Consider helicopter transport for critical patients who have a prolonged ground transport time. See [S13: Helicopter Transport]. It is appropriate to request an air ambulance to meet the patient at the local trauma facility to expedite transfer to Level I care when indicated. • Previous iterations of trauma resuscitation guidelines have recommended aggressive crystalloid resuscitation, often recommending 1-2 liters of normal saline for the adult trauma patient. Current trauma trends recommend minimizing crystalloid use to resuscitate patients. Crystalloids should only be used in patients with clinical findings of hypoperfusion and delay to blood product access. Additionally, outside of the head injured patient, the target of therapy are clinical parameters of perfusion (e.g. adequate mentation, palpable pulses, etc…) and not a specific blood pressure or euvolemia. This may mean tolerate of hypotension if clinical signs of adequate perfusion are present.	• Mechanism of injury • Primary and secondary survey • Serial vital signs and neuro status assessments • Any delays to patient access (e.g., extrication from vehicle, difficult situation) • Scene time goal < 10 minutes (arrival-to-departure of ambulance) • Trauma Activation—Should be documented as YES for trauma patients transported by ground OR transferred to air transport provider.

2023 Washington State



Prehospital Trauma Triage Destination Procedure

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WASHINGTON STATE DEPARTMENT OF HEALTH
Prehospital Trauma Triage Destination Procedure
DOH 530-143 October 2023

Purpose

The National Guideline for Field Triage of Injured Patients was developed by a multidisciplinary panel led by the American College of Surgeons Committee on Trauma. The guideline has been adopted by the Department of Health (DOH) based on the recommendation of the State Emergency Medical Services (EMS) and Trauma Steering Committee in association with the Prehospital and Hospital Technical Advisory Committees.

The guideline represents the current best practice for the triage of trauma patients and allows EMS providers to quickly and accurately determine if the casualty is a major or moderate trauma patient. It also aids in decision making to determine the most appropriate transfer facility location.

The triage procedure is described below in Figure 1. It consolidates triage criteria into two main categories based on risk of serious injury: **High-Risk Criteria** (**red box**) includes Injury Patterns, Mental Status, and Vital Signs. **Moderate-Risk Criteria** (yellow box) includes Mechanism of Injury and EMS Judgment. Each risk category is aligned with recommendations for a destination trauma service. Figure 1. is intended to be read from top to bottom, left to right.

Any certified EMS provider can identify a major trauma patient and alert receiving hospitals. Hospitals will activate their trauma team based on their internal policies and procedures. EMS providers should follow regional Patient Care Procedures (PCPs) and County Operating Procedures (COPs) for engaging other system partners such as air ambulance and advanced level ground ambulance services to coordinate the most appropriate and expedient transport modality for a trauma patient.

Red Criteria / High Risk for Serious Injury

Assess Injury Patterns, Mental Status & Vital Signs

Assessment of injury patterns, mental status, and vital signs meeting red criteria should require alerting and rapidly transporting to the closest level I or II trauma service within 30 minutes transport time. If the transport time is greater than 30 minutes, transfer should be to the nearest most appropriate trauma service. If unable to maintain a patent airway, consider rendezvous with an Advanced Life Support (ALS) unit or transporting to the nearest facility capable of definitive airway management. The presence of specific injury patterns with normal vital signs, lack of pain, or normal levels of consciousness; requires calling medical control and alerting the receiving hospital. Pediatric patients meeting the red criteria should be preferentially triaged to designated pediatric trauma service.

Yellow Criteria / Moderate Risk for Serious Injury

Assess Mechanism of Injury and EMS Judgement

An assessment of the mechanism of injury meeting yellow criteria should require alerting and rapidly transporting to the closest appropriate trauma service within 30 minutes (air or ground). The destination trauma service need not be the highest-level trauma service. Risk factors coupled with "provider judgment" are reasons for the provider to contact Medical Control and discuss appropriate destinations for these patients. In some cases, the decision may be to transport to the nearest trauma service or a resource hospital. Patients with combined burns and trauma should be preferentially transported to a trauma center with burn care capability. Pediatric patients should be preferentially transported to a designated pediatric trauma service.

PCPs and local COPs provide additional details about the appropriate hospital destination. They are intended to further define how the system operates. The Prehospital Trauma Triage Destination Procedure and PCPs work in "hand in glove" fashion to address trauma patient care needs.

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DOH Trauma Triage Tool

T2

Figure 1: Trauma Triage Criteria and Categories

Red Criteria: High Risk for Serious Injury

Injury Patterns	Mental Status & Vital Signs
• Penetrating injuries to head, neck, torso, and proximal extremities • Skull deformity, suspected skull fracture • Suspected spinal injury with new motor or sensory loss • Chest wall instability, deformity, or suspected flail chest • Suspected pelvic fracture • Suspected fracture of two or more proximal long bones • Crushed, degloved, mangled, or pulseless extremity • Amputation proximal to wrist or ankle • Active bleeding requiring a tourniquet or wound packing with continuous pressure	**All Patients** • Unable to follow commands (motor GCS < 6) • RR < 10 or > 29 breaths/min • Respiratory distress or need for respiratory support • Room-air pulse oximetry < 90% **Age 0–9 years** • SBP < 70mm Hg + (2 x age in years) **Age 10–64 years** • SBP < 90 mmHg or • HR > SBP **Age ≥ 65 years** • SBP < 110 mmHg or • HR > SBP

Patients meeting any RED criteria should be transported to the closest level I or II trauma service within 30 minutes transport time (air or ground). Transport times greater than 30 minutes, take to the closest most appropriate trauma service.

Yellow Criteria: Moderate Risk for Serious Injury

Mechanism of Injury	EMS Judgement
• High-risk auto crash - Partial or complete ejection - Significant intrusion (including roof) ▪ >12 inches occupant site OR ▪ >18 inches any site OR ▪ Need for extrication for entrapped patient - Death in passenger compartment - Child (age 0-9 years) unrestrained or in unsecured child safety seat - Vehicle telemetry data consistent with severe injury • Rider separated from transport vehicle with significant impact (e.g., Motorcycle, ATV, horse, etc.) • Pedestrian/bicycle rider thrown, run over, or with significant impact • Fall from height > 10 feet (all ages)	**Consider risk factors, including:** • Low-level falls in young children (age ≤ 5 years) or older adults (age ≥ 65 years) with significant head impact • Anticoagulant use • Suspicion of child abuse • Special, high-resource healthcare needs • Pregnancy > 20 weeks • Burns in conjunction with trauma • Children should be triaged preferentially to pediatric capable centers **If concerned, take to a trauma service**

Patients meeting YELLOW criteria, WHO DO NOT MEET THE RED CRITERIA, should be transported to a designated trauma service, it need not be the highest level.

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Cardiac Arrest—Traumatic (Adult & Pediatric)

T3

STANDING ORDERS

CRITERIA	EXCLUSION CRITERIA
• Patient found in cardiac arrest from blunt or penetrating trauma in adult and pediatric patients	• Patients who are suspected to have a primary medical cardiac arrest followed by secondary trauma. Patients in cardiac arrest whose mechanism of injury is thought to have a low probability of significant trauma are likely medical cardiac arrest patients and should be treated as such. • Victims of lightning strike, hypothermia, and/or drowning. These should be treated as medical arrests given their higher chance of survival.

ALL EMS PROVIDERS

- Do NOT initiate resuscitation if any of the following exist:
  1. Patient meets criteria per [S5: Determination of Death / Withholding Resuscitation Efforts].
  2. The patient meets non-trauma criteria for [S17: Termination of Resuscitation Efforts]. such as valid advanced directive, hospice patient, or presence of terminal illness.
- CONSIDER resuscitation and transport ONLY if, transporting in a safe and prudent manner, it is estimated that patient can be delivered to a hospital within 15 minutes of the TIME OF ARREST
- If unable to meet these transport guidelines, DO NOT initiate resuscitation trauma patients who are apneic and pulseless.
- The above guidelines are intended to facilitate identification of patients who are not salvageable. They authorize EMS Personnel to not initiate or terminate resuscitation. EMS Personnel may initiate resuscitation in any patient whose specific circumstances that they believe might increase the probability of survival.

PARAMEDIC PROVIDERS

- If resuscitation is initiated:
  1. Follow trauma protocols
  2. Consider early pleural decompression of the chest
  3. Termination of resuscitation may be considered if ROSC is not obtained within 15 minutes of initial arrest

DOCUMENTATION / KEY PERFORMANCE INDICATORS

- Clinical / situational details that may be available from bystanders/ caregivers
- Documentation of details surrounding decision to determine death
- Time and name of contact with online medical control
- Time of death determination

Head Injuries

T4

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
• Adult or pediatric patient with suspected or known blunt or penetrating traumatic head injury (LOC or amnesia not required)	• Limit disability and mortality from head injury by: 1. Promoting adequate oxygenation (prevent desaturation/No O2 Sat <90%) 2. Promoting adequate cerebral perfusion (prevent hypotension) 3. Limiting development of increased intracranial pressure 4. Limiting secondary brain injury

ALL EMS PROVIDERS

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- Follow [T1: Trauma Management—General]
- Maintain cervical spine stabilization as needed in accordance with [T6: Spine Assessment and Spinal Motion Restriction]
- Assess neurologic status
  -Evaluate for other causes of altered mental status and treat as clinically indicated.
- Management components for the head injured patient:

A. Airway/Breathing:

i. Support oxygenation: goal is to prevent desaturation <90%; use supplemental oxygen as needed to maintain oxygen saturation >95%

-A single episode of hypoxia can have severe repercussions for the head injured patient

B. Circulation

i. Control bleeding with direct pressure (if no suspected open skull injury) and/or bandage as clinically indicated

C. Secondary survey:

i. Gently evaluate for depressed or open skull fracture.
ii. Evaluate pupils.
iii. Evaluate Ears Nose/Mouth or blood or fluid drainage.
iv. Evaluate Face for bony instability.

PARAMEDIC PROVIDERS

- Evaluate for antecedent or concomitant medical illness or problem (e.g. sepsis, dysrhythmia, etc.) Treat as clinically indicated
- Initiate pain control using [T18: Pain Management].
- Pillow splint patients lower extremities
  -Transport on long spine board is not indicated for hip fractures

A. Airway/Breathing:

- If intubation is indicated, careful attention to pre-oxygenation and supportive management to prevent desaturation is warranted
- Target normal ventilation, with ETCO2 of 35-40 mmHg in intubated patients. Hyperventilation can be deleterious.
- The ONLY indication for hyperventilation in the head injured patient are when clinical findings suggest active herniation: GCS of ≤5, one or both pupils are dilated and non-reactive to light, abnormal respiratory pattern, and abnormal posturing are present. In this setting ONLY, target end-tidal CO2 of 30-35 mmHg.

B. Circulation:

- A single episode of hypotension can have severe repercussions for the head injured patient.
- If intubation is indicated, careful attention is required to reduce chance of hemodynamic instability during or after procedure. See [PR8: Endotracheal Intubation: Video Laryngoscopy].
- Re-evaluate and trend neurologic assessments
- When clinically appropriate, elevate head of bed 30 degrees

Head Injuries (cont.)

T4

PARAMEDIC PROVIDERS (CONTINUED)

- When possible, assess for anti-coagulant use.
- Notify receiving hospital as soon as practical if any altered mental status or neurologic findings are present.
- Consider Helicopter Transport for head injuries requiring intubation, see [S13: Helicopter Transport].

NOTES	DOCUMENTATION / KEY PERFORMANCE INDICATORS
• Head injury severity guideline: a. Mild: GCS 13-15 / AVPU = (A) b. Moderate: GCS 9-12 / AVPU = (V) c. Severe: GCS 3-8 / AVPU = (P) or (U) • If endotracheal intubation or invasive airways are used, continuous waveform capnography is required to document proper tube placement and assure proper ventilation rate • Signs of herniation a. Decreasing mental status b. Abnormal respiratory pattern c. Asymmetric/unreactive pupils d. Decorticate posturing e. Cushing's response (bradycardia and hypertension) f. Decerebrate posturing	• Adequate oxygenation • Airway status and management • ETCO2 monitored and documented for moderate/severe head injury (avoidance of inappropriate hyperventilation) • Neurological status with vitals: AVPU, GCS • Exams: Neurological and mental status

Facial & Dental Injuries

T5

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
• Patient with facial injury, including trauma to the eyes, nose, ears, mid-face, mandible, and/or dentition	• Ensure patent airway • Preservation of vision • Preservation of dentition

ALL EMS PROVIDERS

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- Assess Airway:
  - A. Evaluate patient ability to maintain a stable airway
  - B. Evaluate stability of mid-face, mandible, and dentition
  - C. Assess and manage bleeding. Aggressive suctioning (and letting patient manage suction) may be required.
    - In setting of bleeding around the airway, if clinical situation permits or dictates, consider positioning patient upright to facilitate airway management and prevent aspiration.
- Perform standard trauma and medical assessment and manage per [T1: Trauma Management—General]
- Assess for anti-coagulant use

Specific Injury Considerations

- **Avulsed Tooth/Dental Injury:**
  - A. Avoid touching the root of the avulsed tooth. Do not wipe off tooth.
  - B. Pick up at crown end. If dirty, rinse off under cold water for 10 seconds.
  - C. Place in milk or saline as the storage medium. Alternatively patient can hold tooth in mouth using own saliva as storage medium.
- **Eye Injury:**
  - A. Consider eye shield for any significant eye trauma.
  - B. If globe is avulsed do not put back into socket: cover with moist saline dressings and then place cup over it.
  - C. If foreign body or puncture of globe, leave in place. Apply cup or eye shield - with no pressure to eye. Patch both eyes.
  - D. Chemicals (including pepper spray/mace): Flush with saline or water for at least 10-15 minutes (longer if alkali involved). Continue flushing en route.
  - E. Attempt to keep patient from rubbing eye.
  - F. Contact lenses:
    - i. Remove if there has been a chemical exposure to the eye.
    - ii. Leave in place if traumatic injury.
- **Mandible Injury:**
  - A. Expect patient cannot spit/swallow effectively. Have suction readily available.
  - B. When possible, transport sitting up.
- **Epistaxis:**
  - A. Paramedics: Administer oxymetazoline.
  - B. Squeeze nose, use nose clamp (or have patient do so) for 15 minutes continuously.
- **Nose/Ear Avulsion:**
  - A. Recover tissue if situation permits.
  - B. Transport amputated parts (see guidelines in [T1: Trauma Management—General])
  - C. Severe ear and nose lacerations can be addressed with a protective sterile dressing

STANDING ORDERS

ALL EMS PROVIDERS

Removing Soft Contact Lenses:
Soft contact lenses can cause damage if left in for a long time. They can also gradually dehydrate and shrink, adhering to the cornea and making removal difficult.

Soft lenses are slightly larger than a dime and cover all of the cornea and some of the sclera. One way to remove them is to place several drops of saline on the lens, then lift the lens off the eye by gently pinching the lens between your thumb and index finger.

Removing Hard Contact Lenses:
Hard contact lenses are less common than Soft and are about the size of a shirt button, they fit over the cornea. To remove:
A. Separate the eyelids.
B. Position the visible lens over the cornea by manipulating the eyelids.
C. Place your thumbs gently on the top and bottom eyelids, and open the eyelids wide.
D. Gently press the eyelids down and forward to the edges of the lens.
E. Press the lower eyelid slightly harder and move it under the bottom edge of the lens.
F. Moving the eyelids toward each other, slide the lens out between them.
G. You can also use a suction device with saline to remove hard contact lenses.
H. Lenses should be transported in a container with saline.

NOTES	DOCUMENTATION / KEY PERFORMANCE INDICATORS
• Airway may be compromised because of fractures or bleeding • After nasal fractures, epistaxis may be posterior and may not respond to direct pressure over the nares with bleeding running down posterior pharynx, potentially compromising airway • Protect avulsed tissue and teeth • Avulsed teeth may be successfully re-implanted if done so in a very short period after injury • Use sterile dressing for ear and nose cartilage	• Airway patency and reassessment • Degree and location of hemorrhage • Mental status • Technique used to transport tissue or teeth, when applicable • Eye exam documented, when applicable • Patient

Spine Assessment & Spinal Motion Restriction

T6

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
Any patient with either a mechanism of injury **OR** a complaint or findings indicative of a potential spinal cord injury.	• Identify patients for whom spinal motion restriction is indicated • Minimize secondary injury to spine in patients who have or may have an unstable spinal cord injury • Minimize patient morbidity from the use of immobilization devices

ALL EMS PROVIDERS

- Follow [G27: Universal Patient Care Protocol] as appropriate to scope of practice
- Evaluate scene for significant mechanism of injury
- Assess patient in position found for findings associated with spine injury:
  a. Altered mental status
  b. Neurological deficits
  c. Spinal pain or tenderness
  d. Any evidence of clinical intoxication
  e. Other severe injuries, particularly associated torso injuries
- Establish and maintain manual cervical spine immobilization (as resources allow) until full evaluation and clearance OR spinal motion restriction are complete. The default is to immobilize the cervical spine, and if there is any doubt or concern during evaluation, immobilization should be maintained.

EMT AND ABOVE PROVIDERS

• Evaluate using trauma—spine assessment algorithm
  A. Is the patient **alert and evaluable** with a **normal mental status**?
  B. Is there any evidence of **intoxication**?
  C. Is the patient complaining of **symptoms** of spinal injury?
  D. Is there a **focal deficit** on neurologic injury?
  E. Does the patient have a clinically **distracting injury**?
  F. Does the patient have **point tenderness** over the cervical spine?
  G. ONLY if the answer to question A is **"YES" and** questions B-F is **"NO"** the patient does not require spinal motion restriction.

• If patient requires immobilization, categorize patient into high risk or low risk.
  - **Low risk** patients include an evaluable patient with pain ± tenderness, but no neurological deficits.
  - **High risk** patients include a patient with neurologic symptoms or deficits and/or a high risk mechanism of injury who requires immobilization. In Skagit County, high risk mechanisms include:
    • Vehicular ejection
    • Long falls (>15 ft or clinical concern)
    • Motorcycle accidents with separation from the bike
    • Diving injuries
    • Falls with suspected axial loading involving non-ground level fall from distance and impact directly on head should generally be considered high risk

• Spinal motion restriction for **non-ambulatory** patients:
  A. Place cervical C-collar.
    • If an appropriately sized C-collar is not available, use towel rolls and tape to immobilize the head. (Do not apply tape over chin or throat.)
  B. Use rigid extrication device (e.g., long board) as needed to move patient.
    • Rigid long spine boards shall be used primarily as a patient movement device, such as in patient extrication from difficult or dangerous conditions. They may be used in patients requiring CPR, who are clinically unstable (e.g., intubated), who are uncooperative, and/ or for whom expedited transfer is indicated.

STANDING ORDERS

EMT AND ABOVE PROVIDERS (CONTINUED)

- Patients should be removed from rigid extrication device as soon as possible unless removing the patient interferes with critical treatment or interventions.
- Infants and children found in car seats may remain in their car seats to facilitate transport if other injuries do not preclude need for further access/intervention.

C. High risk patients should be carefully immobilized.

- If situation permits and splint is available, a full body vacuum splint is the preferred immobilization device for high-risk patients.
- If a vacuum splint is not available, providers should make efforts to reduce secondary injuries as a result of immobilization (e.g., padding) as immobilization is known to cause pressure injuries seen within relatively short periods. D. Low risk patients may be moved to the gurney using a rigid extrication device, but if possible, the device should be removed once the patient is on the gurney.
- The head may be supported with head block or similar device to limit rotation.
- Secure patient with seatbelt in position of comfort if situation permits.

- Immobilization for **ambulatory** patients:

A. Place cervical C-collar.

- If an appropriately sized C-collar is not available, use towel rolls and tape to immobilize the head. (Do not apply tape over chin or throat.)

B. Allow self-extrication and assist to gurney.

- The head may be supported with head block or similar device to limit rotation.
- Secure patient with seatbelt in position of comfort if situation permits.

- The C-collar may be removed if it is interfering with airway or airway placement, or if it is causing extreme distress to the point of potentially increasing patient movement.
  - The C-collar must be opened and manual stabilization should be maintained when a supraglottic airway or intubation is performed.
  - If the collar is removed due to patient distress, document reason.
- Special Circumstances:

A. Helmet removal considerations:

- Football and ice hockey helmet may be left in place as on as long as the airway is not affected and the spine can be secured in a neutral, in-line position, and the shoulder pads are left on.
- Motorcycle helmets come in various types. Some may fit the same criteria and allowed to remain in place as long as the spine can be secured in a neutral, in-line position. If not, removal is indicated. (See **Appendix - Helmet Removal**)

B. Suspected cervical injury with non-alignment:

- Perform one attempt to gently realign neck to the neutral, in-line position. Stop if resistance or new/worsening symptoms are encountered.
- In unable to re-align then secure in original position.

A note about terminology: Immobilization & Spinal Motion Restriction

While current techniques limit or reduce undesired motion of the spine, they do not provide true spinal immobilization. For this reason, in recent years the term “spinal motion restriction (SMR)” has gained favor over “spinal immobilization,” although both terms refer to the same concept and for the purposes of this protocol the terms are interchangeable. The goal of both SMR and spinal immobilization in the trauma patient is to minimize unwanted movement of the potentially injured spine.

See Next Page for Notes on Spine Assessment

Spine Assessment & Spinal Motion Restriction (Cont.)

T6

STANDING ORDERS

1. Is the patient **alert and evaluable** with a **normal mental status**?
   - Is the patient calm, alert, and cooperative with a GCS of 15?
   - Can I communicate conversationally with the patient?
   - Any altered level of consciousness or abnormal mentation indicates the patient is not evaluable.
   - Acute stress reactions, language barriers, and distracting injuries are all causes for the patient to not be evaluable.
   - Is there any clinical evidence of intoxication (any substance)? An intoxicated patient is not evaluable.
   - Immobilization is indicated if the patient is not alert, evaluable, or without a normal mental status.

2. Is there any evidence of **intoxication**? (Any substance)
   - Any clinical findings of intoxication present on exam?
   - If there is clinical suspicion by the provider, assume intoxication is present (confirmatory testing not indicated)
   - An assessment for intoxication is related to the patient being alert and evaluable, but is kept as an independent question as a cognitive forcing strategy (used formally in C-spine immobilization studies).
   - Immobilization is indicated if the patient is intoxicated (any substance) as they are no longer an evaluable patient.

3. Is the patient complaining of symptoms?
   - Is there a complaint of new neck or back pain?
   - Is there a complaint of new numbness or weakness?
   - Immobilization is indicated if the patient has new symptoms.

4. Does the patient have a clinically distracting injury?
   - Long bone fractures are an example of a distracting injury.
   - Clinical judgement is required to determine if an injury is distracting. If in doubt, immobilize the spine.
   - Immobilization is indicated if the patient has a clinically distracting injury.

5. Is there a focal deficit on neurologic exam?
   - Check wrist flexion and extension against resistance
   - Check dorsal and plantar flexion of the feet against resistance
   - If injuries preclude the above exams, acceptable alternatives are flexion and extension of the great toes against resistance, and spreading of the fingers against resistance.
   - Check for sensation to light touch and sharp sensation on all limbs.
   - Immobilization is indicated if the patient has a focal deficit

6. Does the patient have point tenderness over the cervical spine?
   - Spine tenderness is assessed with palpation. The exam needs to be done with the fingers on the skin or light clothing, and should include palpation of all vertebrae.

7. Any pain with range of motion? **(NOTE: THE RANGE OF MOTION TEST IS ALWAYS THE LAST STEP OF A SPINE ASSESSMENT)**
   - Assess the range of motion by asking the patient to move the head slowly through a full range of motion. The patient should be informed to stop any movement at the first sign of pain.
   - Immobilization is indicated if the patient has either tenderness or pain with range of motion

DOCUMENTATION / KEY PERFORMANCE INDICATORS

- MOI
- Spine tenderness
- Neuro findings
- Evidence of intoxication

STANDING ORDERS

TRAUMA - SPINE ASSESSMENT ALGORITHM

Is there a mechanism of injury?* → **NO** → **NO immobilization**

Yes

Maintain manual stabilization during initial assessment

- When evaluating a patient be aware there may be an increased risk of injury if A) Age ≥ 65 years or ≤ 3 years or B) History of rheumatoid arthritis, cancer, or underlying spinal/bone disease

High Risk Mechanisms include:

- **Vehicular ejection, motorcycle crash with separation, long falls (>15 ft or clinical concern), and diving injuries**

Is the patient evaluable? (Calm, alert, sober, normal) → **NO**

Is there clinical evidence of intoxication? → **Yes**

Does patient have signs or symptoms of spinal injury? (numbness, weakness, new deficits) → **Yes**

Does patient have a distracting injury? → **Yes**

Is there spinal tenderness? → **Yes**

Is there pain on range of motion? (NOTE: This question is ALWAYS LAST) → **Yes**

Immobilization Indicated

Place C-collar

Low risk? (e.g. - alert, symptoms, no neuromotor deficits)

- **Includes alert, reliable patients with spine pain and or tenderness but no neuromotor deficits.**
- **Allow self-extrication if situation permits**
- **No "standing take-downs"**
- **Rigid backboard use not required**
- **Secure to gurney**

High risk? (e.g., not evaluable, neuromotor deficits, high risk mechanism)

- **Use rigid extrication device for patient movement**
- **When available, use full-body vacuum splint**

Remove helmets as needed for airway access or to maintain in-line, neutral spinal alignment

NO

If the patient is alert and evaluable, all subsequent questions must be NO. If in doubt, immobilize. Document assessment.

Spinal Immobilization is **NOT** Required

***Patients with penetrating trauma and no clinical signs, symptoms, or exam findings of spinal injury do not require spinal immobilization**

Chest Trauma

T7

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
• Patient with known or suspected chest trauma	• Establish and maintain airway • Full spinal immobilization if head or neck injury present, altered LOC, or MOI suggests • Control any external bleeding

ALL EMS PROVIDERS

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- Apply oxygen as appropriate (high-flow by NRB if severe trauma or critically ill)
- Support respiratory status using positive pressure ventilation with BVM, if indicated
- For impaled objects: Do not remove if it is possible to extract/transport patient without removal. Secure in place with bulky dressings as best possible.
- For open chest wound(s):
  -May apply chest seal, if available
- Do not attempt to splint or brace ribs flail segments
- Monitor for tension pneumothorax

PARAMEDIC PROVIDERS

- Apply cardiac monitor
- Establish IV access
  -If SBP >90, no IV fluid administration is required
  -If there are clinical findings of inadequate perfusion and SBP <90, give bolus of crystalloid solution Adult: 250ml Pediatric: 5mL/kg and reassess. Repeat bolus of crystalloids if SBP remains <90 up to **Adult:** 1 liter **Pediatric**: 20mL/kg.
  -In setting of suspected concomitant head injury, target SBP <110 otherwise target is clinical signs of perfusion (e.g. mental status, palpable carotid or femoral pulse) rather than normotension
- Monitor for tension pneumothorax
  -Perform pleural decompression in setting of suspected tension pneumothorax
  -Careful reassessment and ongoing monitoring is warranted in the setting of suspected simple pneumothorax where transition to positive pressure ventilation occurs as patient at increased risk for development of tension pneumothorax

Abdominal/Pelvis Trauma

T8

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
• Patient with known or suspected abdominal or pelvis trauma	• Establish and maintain airway • Full spinal immobilization if head or neck injury present, altered LOC, or MOI suggests • Control any external bleeding

ALL EMS PROVIDERS

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- Follow [T1: Trauma Management—General]
- In setting of evisceration:
  - -Do not attempt to push or place tissue back into the body
  - -Cover the eviscerated tissue with a loose, warm, and moist dressing
- For any suspected pelvic fracture identified on initial physical exam, communicate finding to incoming providers and *attempt to eliminate repeat or serial evaluations of pelvis for instability by EMS*
- For any suspected pelvic fracture with hemodynamic instability (include high energy mechanism patients with concern for possible pelvic fracture), place Skagit County approved pelvic binder (SAM Pelvic Sling), centering the binder on the greater trochanters (See [PR41: Pelvic Binder]).
  - -Minimize rolling of the patient greater than 15 degrees to avoid pressure on a potentially unstable pelvis
  - -If a Skagit County approved pelvic binder is not available, a sheet wrap may be used as an alternative

EMT AND ABOVE PROVIDERS (CONTINUED)

EMT w/ IV Therapy Endorsement

- If high concern for abdominal or pelvic injury, Obtain IV access and initiate 2 large bore IVs

PARAMEDIC PROVIDERS

- If SBP>90 no IV fluid administration is required
  - -If there are clinical findings of inadequate perfusion and SBP <90, give bolus of crystalloid solution Adult: 250ml Pediatric: 5mL/kg and reassess. Repeat bolus of crystalloids if SBP remains <90 up to **Adult:** 1 liter **Pediatric**: 20mL/kg.
  - -In setting of suspected concomitant head injury, target SBP>110 otherwise target is clinical signs of perfusion (e.g. mental status, palpable carotid or femoral pulse) rather than normotension.
- Pain control as needed, see [T18: Pain Management].

Hip Injuries

T9

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
• Patient with suspected or identified hip fracture **AND** Age >55 **OR** severe medical fragility/comorbidity	• Rapid assessment and management of life-threatening injuries • Safe movement of patient to prevent worsening injury severity • Rapid and safe transport to the appropriate level of trauma care

ALL EMS PROVIDERS

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- All patients complaining of hip pain following trauma should have the hip immobilized (pillow splint) and should be non-weight bearing
  - -Elderly patients who fall and have hip pain but who can subsequently ambulate may have a non-displaced fracture that can collapse later. Always treat as if fracture is present.
- Assess for anticoagulant use
- Evaluate for additional injury. Treat as clinically indicated.
- Treat as gently as possible
- Due to the severe pain often involved with hip fractures, ALS evaluation, intervention, and transport is strongly recommended

PARAMEDIC PROVIDERS

- Evaluate for antecedent or concomitant medical illness or problem (e.g. sepsis, dysrhythmia, etc.) Treat as clinically indicated
- Initiate pain control using [T18: Pain Management]
- Pillow splint patients lower extremities
  - -Transport on long spine board is not indicated for hip fractures

NOTES	DOCUMENTATION / KEY PERFORMANCE INDICATORS
• Suspected hip fracture may be accompanied by hemodynamic instability and/or severe pain.	• Anticoagulant use, if applicable • Pain scale assessment before and after immobilization/splinting

Extremity External Hemorrhage

T10

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
• Patient with traumatic extremity injury with external hemorrhage	• Minimize blood loss from extremity hemorrhage. • Avoid hemorrhagic shock as a result of extremity hemorrhage. • Minimize pain in potential fractures or dislocations

ALL EMS PROVIDERS

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- Follow [T1: Trauma Management—General]
- Evaluate for shock and manage as clinically indicated
- Evaluation of involved extremity should include:
  - A. Evaluation for obvious deformity, shortening, rotation, or instability.
  - B. Brief evaluation of neuro status of extremity (e.g., light touch, distal movement).
  - C. Evaluation of vascular status of extremity (e.g. pulse, pallor, capillary refill)
  - D. Evaluation of the degree of bleeding/blood loss and potential origin (e.g., venous vs arterial)
- Manage bleeding:
  - A. Apply direct pressure to bleeding site, followed by pressure dressing
  - B. If direct pressure/pressure dressing is ineffective or impractical:
    - i. If the bleeding site is amenable to tourniquet placement, apply tourniquet to extremity. Document time of application.
      - Tourniquet should be placed 2-3 cm proximal to wound, not over a joint, and tightened until bleeding stops. If bleeding continues, place a second tourniquet proximal to the first.
      - For thigh wounds, consider placement of two tourniquets, side-by-side, and tighten sequentially to eliminate distal pulse. ii. If the bleeding site is not amenable to tourniquet placement (i.e. junctional injury), manage with direct manual pressure. If a topical hemostatic agent is available it may be used.
      - If still bleeding, pack wound tightly with gauze and continue direct pressure.
    - ii. If needed, early TQ application can be initiated to allow assessment of poly trauma patient or in the setting of multiple patients or limited resources
- Stabilize suspected fractures/dislocations.
  - -See [T11: Extremity Injuries]

PARAMEDIC PROVIDERS

- Follow [T18: Pain Management]

NOTES

- If a tourniquet is used, ensure that it is well marked and visible and that all subsequent providers are aware of the presence of the tourniquet. Do not cover with clothing or dressings.
- Time of tourniquet placement should be prominently marked on the patient.
- If pressure dressing or tourniquet used, frequently re-check to determine if bleeding has restarted. Check for blood soaking through the dressing or continued bleeding distal to the tourniquet. Do NOT remove tourniquet or dressing in order to assess bleeding
- Tourniquet may be placed initially to stop obvious severe hemorrhage, then replaced later with pressure dressing after stabilization of ABC's and packaging of patient. Tourniquet should NOT be removed if: - Transport time short (less than 30 minutes) - Amputation or near-amputation - Unstable or complex multiple-trauma patient - Unstable clinical or tactical situation

Extremity Injuries

T11

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
• Patient with traumatic extremity injury If suspected hip injury: See [T9: Hip Injuries] If amputation: See [T12: Amputations]	• Minimize blood loss from extremity hemorrhage. • Avoid hemorrhagic shock as a result of extremity hemorrhage. • Minimize pain in potential fractures or dislocations

ALL EMS PROVIDERS

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- Follow [T1: Trauma Management—General]
- Address bleeding: See [T10: Extremity External Hemorrhage]
- Aside from external hemorrhage control, prioritize identification and stabilization of any hemodynamic instability or life-threatening condition prior to specific extremity limb management after:

1. Assessing for life-threatening or unstable conditions
2. Identifying extremity injury as an isolated injury and/or
3. Having adequate personnel on scene to address extremity while resuscitative or critical interventions being performed by others:
    - Check distal pulses, and if situation appropriate, check motor function and sensation (before and after any splinting)
    - In general, splint injuries in position found
        - -If extremity must be moved for extrication or transport, and if patient tolerates, gentle movement to straighten to a more anatomically correct position is appropriate. Where possible, for more severe injuries, involve ALS for pain control prior to movement.
        - -If extremity or joint is severely angulated with either absent pulses or loss of sensation, gently straighten to anatomically correct position and re-assess circulation and sensation.
        - -If open fracture is present, gently cover/protect with moistened saline gauze. Communicate to receiving facility any suspicion for open fracture.

- Where time and conditions permit, in setting of suspected sprain or fracture, apply covered ice or instant cold pack (do not place ice or cold pack directly against skin), consider ACE elastic wrap (assess after application and loosen if needed) and elevate extremity.
- Most isolated hip, acetabular, and femur fractures are best managed *without* a traction splint:
    - -Carefully place the patient on a soft gurney or vacuum spine board. Consider pillow splinting.

NOTES

- If a tourniquet is used, ensure that it is well marked and visible and that all subsequent providers are aware of the presence of the tourniquet. Do not cover with clothing or dressings.
- Time of tourniquet placement should be prominently marked on the patient.
- If pressure dressing or tourniquet used, frequently re-check to determine if bleeding has restarted. Check for blood soaking through the dressing or continued bleeding distal to the tourniquet. Do NOT remove tourniquet or dressing in order to assess bleeding
- Tourniquet may be placed initially to stop obvious severe hemorrhage, then replaced later with pressure dressing after stabilization of ABC's and packaging of patient. Tourniquet should NOT be removed if: - Transport time short (less than 30 minutes) - Amputation or near-amputation - Unstable or complex multiple-trauma patient - Unstable clinical or tactical situation

Amputations

T12

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
• Patient with amputated parts	• Minimize blood loss from extremity hemorrhage. • Avoid hemorrhagic shock as a result of extremity hemorrhage.

ALL EMS PROVIDERS

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- Follow [T1: Trauma Management—General]
- Address bleeding: See [T10: Extremity External Hemorrhage]
- When possible, rinse debris off of amputated part with normal saline and gently wrap in a clean, very lightly moist dressing/towel. Then place in a sealed plastic bag.
- If possible, place sealed bag in with a cold pack or ice water. (Do NOT place amputated part directly in water or on ice).
- Transport amputated parts to the emergency department with patient.

Blast Injuries

T13

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
• Patients exposed to explosive forces	• Ensuring scene safety is especially important at the scene of an explosion. Consider possibility of subsequent explosions, structural safety, possible toxic chemical contamination, the presence of noxious gasses, and the like. In a possible terrorist event, consider the possibility of secondary explosive devices. • Remove patient from the scene as soon as is practical and safe. • If the patient has sustained burns (thermal, chemical, or airway), consider facilitating transport to specialized burn center by direct Airlift transfer and/or early receiving hospital notification.

ALL EMS PROVIDERS

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- Ensure provider and scene safety
- Follow [T1: Trauma Management—General]
- Perform Assessment and Management of Blast Injuries:
  - A. Airway: Assess airway patency. Consider possible thermal or chemical burns to airway
  - B. Breathing: Evaluate adequacy of respiratory effort, oxygenation, quality of lung sounds, and chest wall integrity. Consider possible pneumothorax or tension pneumothorax (as a result of penetrating/blunt trauma or barotrauma)
    - -Cover any open chest wounds with semi-occlusive dressing
  - C. Circulation: Look for evidence of external hemorrhage. Assess BP, pulse, skin color/character, and distal capillary refill for signs of shock
    - -Hemorrhage control: Assess for and treat external hemorrhage if present (See [T10: Extremity External Hemorrhage]).
  - D. Disability: Assess patient responsiveness (AVPU) and level of consciousness (GCS) Assess pupils. Assess gross motor movement of extremities.
  - E. Exposure: Rapid evaluation of entire skin surface, including back to identify blunt or penetrating injuries.

EMT AND ABOVE PROVIDERS

EMT w/ IV Therapy Endorsement

- Obtain IV access. Large bore x2 IV or IO as clinically indicated
- Administer NS or LR as per [T1: Trauma Management—General]
- If burned, administer NS or LR as per [T14: Burns]
- Minimize IV fluid resuscitation in patients without signs of shock

PARAMEDIC PROVIDERS

- Consideration of airway injury, particularly airway burns, should prompt early and aggressive airway management
- Monitor for pneumothorax

DOCUMENTATION / KEY PERFORMANCE INDICATORS

- Blast type (if known)
- Approximate distance from blast
- Number of other patients
- Other impacts (blast causing secondary and tertiary impacts/surface contact)

Burns

T14

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
• Patient with thermal burn(s)	• Minimize tissue damage and patient morbidity from burns

ALL EMS PROVIDERS

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- Ensure provider and scene safety
- Assess for additional injury or medical problem and treat as clinically indicated
- Stop the burning
  - A. Soak clothing and skin with water if burning or smoldering, then remove clothing if not stuck to patient
  - B. Remove jewelry carefully, it may be hot
  - C. Leave blisters intact
- Evaluate the airway
  - A. Evaluate for stridor, hoarseness
  - B. Observe for redness, blisters, soot, singed hairs around in the mouth/nose as these are indicators for potential thermal injury to the airway. If evidence of airway burn, consider aggressive airway management
- Evaluate Breathing/respiratory status
  - A. Obtain pulse oximetry and CO monitoring, if available
- Estimate total body surface area (TBSA) involved as well as depth (partial vs. full thickness) (do not include areas of superficial/1st degree burns).
- Assess for circumferential burns and risk for eschar formation
  - A. Consider Rule of Nines (see chart) for assistance with estimating TBSA
- Minimize burn wound contamination. Cover burns with dry sterile dressing or burn sheet.

EMT AND ABOVE PROVIDERS

- Transport to appropriate trauma facility (consider air transport to Harborview for significant burns)

EMT w/ IV Therapy Endorsement

- Obtain IV access for ALS pain management in all burns.
  - Large bore if TBSA >10% preferably in upper extremities. Placement through burned tissue is acceptable. Obtain large bore x2 if TBSA >40%.
  - Rapid volume resuscitation is not generally required for burn injury itself and volume depletion can be deferred to the hospital absent alternative indications for IV fluids.

PARAMEDIC PROVIDERS

- When calculating TBSA involvement for purposes of calculating fluid resuscitation for major burns, do not include areas of superficial/1st degree burns
- Consider Carbon Monoxide oximetry and treatment as indicated
- Consider ETCO2 as clinically indicated
  - -Consider potential for exposure to Cyanide. Development of metabolic acidosis with low end-tidal CO2 (<25mmHg) may be indicative of potential exposure
- Consider pain management

Special Treatment Considerations

- Airway burns can rapidly lead to upper airway obstruction and respiratory failure. Onset of stridor and change in voice are sentinel signs of potentially significant airway burns, which may rapidly lead to airway obstruction or respiratory failure.
- Have a high index of suspicion for cyanide poisoning in patient with depressed GCS, respiratory difficulty and cardiovascular collapse in the setting of enclosed-space fire. See [E3: Cyanide Exposure]

STANDING ORDERS

PARAMEDIC PROVIDERS (CONT.)

- Particularly in enclosed space fires, carbon monoxide toxicity is a consideration; pulse oximetry may not be accurate; See [E2: Carbon Monoxide Poisoning]
- Consider contamination and notification of receiving facility of potentially contaminated patient (e.g. meth lab incident)
- Early notification of receiving facility is warranted if need for escharotomy is anticipated

NOTES

For Educational Purposes Only:

Burn Patient Fluid calculation (indicated for TBSA >15%, not including areas of first degree):

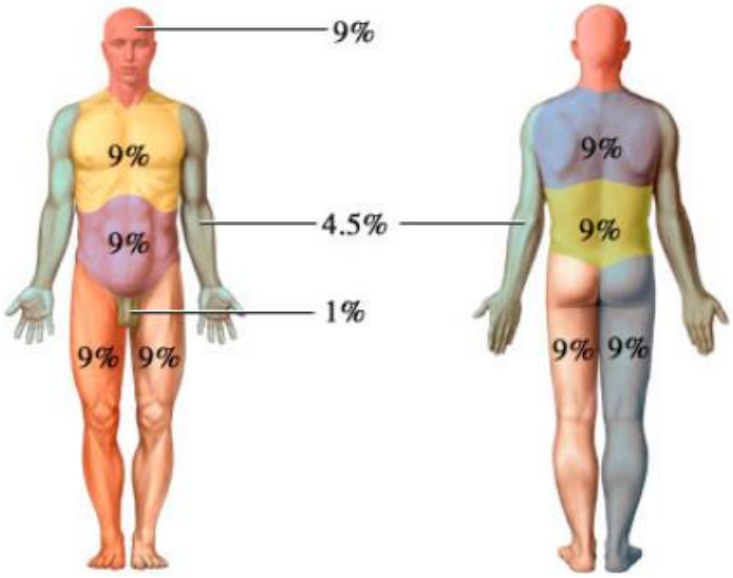
2 ml x weight in kg x % TBSA = IV NS volume for first 24 hours. One half of this volume should be administered in the first 8 hours. (Pediatric patients <30kg, (use 3ml x kg x TBSA)

⚠ **NOTE:** There are a variety of formulas available for fluid calculation. This is the one used by Harborview.

Burn injuries for which transfer to a Burn Center can be considered:

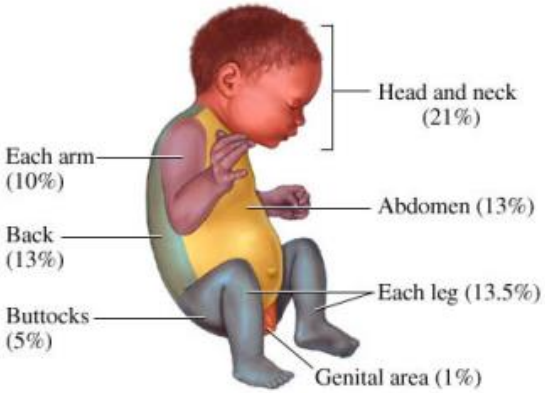
Partial thickness burns > 10% TBSA	Inhalation injuries
Severe burns involving face, hands, feet, genitalia, perineum, or major joints	Burn patient with complex co-morbidities
Third degree (full thickness) burns	Any patient with burns and concomitant trauma
Chemical Burns	Burn patients with special rehab needs
Severe electrical burns	

ADULT RULE OF NINES FOR CALCULATING TBSA



PEDIATRIC RULE OF NINES FOR CALCULATING TBSA

⚠ **NOTE:** There are several variations for estimation pediatric burn surface areas. The general concept is that the heads are relatively larger, and the extremities smaller.



Conducted Electrical Weapon Injury (Taser®)

T15

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
• Patient received either a weapon's direct-contact discharge or struck by the barbed dart of a conducted electrical weapon (e.g., TASER®)	• Manage the condition that triggered the application of the conducted electrical weapon (e.g., agitation • Ensure patient is appropriately secured or restrained with assistance of law enforcement to protect the patient and clinicians. See [M8: Behavioral Emergencies: Agitated or Violent] • Evaluate for other trauma or medical conditions • If discharged from a distance, assess for direct (barb, electrical) and indirect (e.g. fall) injuries.

ALL EMS PROVIDERS

- Confirm law enforcement on scene and scene security prior to arrival
- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- If patient is agitated or combative, See [M8: Behavioral Emergency: Agitated or Violent]
- Evaluate patient for trauma or medical conditions and manage per applicable protocol(s)
- Request ALS for cardiac monitoring and possible taser dart removal
- Evaluate patient for direct TASER® injury
  - -If discharged from a distance, up to two single barbed darts (~13mm in length) per TASER® discharge may be embedded in patient or clothing. Ascertain if more than one TASER® cartridge was used. Attempt to identify these dart locations.
  - -Do NOT removed darts from sensitive locations: Face, neck, hands, feet, or genitals.
  - -Darts NOT in sensitive locations may be removed by an ALS provider at the discretion of the provider, or removal may be deferred to receiving hospital
  - -Before removal of the barbed dart, make sure the cartridge has been removed from the conducted electrical weapon.
- Emergency Department evaluation is indicated

⚠ **NOTE:** EMS personnel may NOT perform "medical clearance" for law enforcement transport to jail or other non-medical facility.

Patient Safety Considerations

- Patients should not be restrained in the prone, face down, or hog-tied position as respiratory compromise is a serious risk.
- Consider that patient may have medical or traumatic pathology prior to, or as a result of, the Taser® application

PARAMEDIC PROVIDERS

- Apply cardiac monitor and obtain 3-lead EKG rhythm strip, and consider a 12-lead EKG

NOTES	DOCUMENTATION / KEY PERFORMANCE INDICATORS
Conducted electrical weapon can be discharged in three fashions: -Direct contact without the use of the darts -A single dart with addition contact by direct contact of weapon -From a distance up to ~35 feet with two darts The device delivers 19 pulses per second with an average current per pulse of 2.1 milliamps which, in combination with toxins drugs, patient's underlying diseases, excessive physical exertion, and trauma, may precipitate arrhythmias. Thus cardiac monitoring is indicated.	• If darts are removed, document the removal location • Physical exam trauma findings • Cardiac rhythm and changes • Neurologic status assessment findings

Crush Syndrome

T16

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
• Entrapped and/or crushed under heavy load > 30 minutes with crush injury apparent to extremity or body	• Limit/address risk of potential hemodynamic instability and hyperkalemia resulting from revascularization following prolonged crush injury

ALL EMS PROVIDERS

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- Ensure provider and scene safety
- Follow [T1: Trauma Management—General]

EMT AND ABOVE PROVIDERS

EMT w/ IV Therapy Endorsement

- Obtain IV access (if possible)

PARAMEDIC PROVIDERS

- Administer IV fluids
  Adult: 1 L NS bolus
  Pediatric: 20 ml/kg
- Obtain cardiac monitor/EKG (if possible)
  -Obtain 12 lead EKG and evaluate for findings of hyperkalemia (QRS >0.12 sec, Peaked T waves, loss of P wave)
- If signs of hyperkalemia or hemodynamic instability prior to extrication administer:
  - Rx ***Calcium gluconate*** **Adult**:1500mg IV **Pediatric**: 30mg/kg (up to 1500mg) IV
  - Rx ***Sodium bicarbonate*** **Adult**: 50mEq IV **Pediatric**: 1 mEq/kg (up to 50mEq) IV
  - Rx ***Albuterol*** nebulizer 5mg repeated x3

- If no signs of hyperkalemia or hemodynamic instability, and if practical, administer immediately prior to extrication:
  - Rx ***Sodium Bicarbonate*** **Adult**: 50mEq IV **Pediatric:** 1 mEq/kg (up to 50mEq) IV
- Consider analgesia as needed (See [T18: Pain Management])
- Continuous cardiac monitoring is warranted
- Monitor and reassess

NOTES	DOCUMENTATION / KEY PERFORMANCE INDICATORS
• Rapid extrication and evacuation to a definitive care facility (trauma center preferred) • A patient with a crush injury may initially present with very few signs and symptoms therefore, maintain a high index of suspicion for any patient with a compressive mechanism of injury • A fatal medical complication of crush syndrome is hyperkalemia. Suspect hyperkalemia if T-waves become peaked, QRS becomes prolonged (> 0.12 sec), absent P wave, or prolonged QTc • Avoid lactated ringer's solution as it contains potassium • Continue fluid resuscitation through extrication and transport	• Time of tourniquet application if applicable • Neurovascular status of any crushed extremity • EKG findings consistent with Hyperkalemia • Amount of IV fluid administered • Any scene delays including extended extrication

Electrical Injuries

T17

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
• Exposure to electrical current (AC or DC)	• Prevent additional harm to patient • Identify life threatening issues such as dysrhythmias and cardiac arrest • Identify characteristics of electrical source to communicate to receiving facility (voltage, amperage, alternating current (AC) versus direct current (DC)) • Understand that deep tissue injury can be far greater than external appearance • Have high index of suspicion for associated trauma due to patient being thrown • Determine most appropriate disposition for the patient as many will require burn center care and some may require trauma center care

ALL EMS PROVIDERS

- Evaluate scene safety—Ensure electrical source is disabled/locked out prior to patient contact
- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- Follow [T1: Trauma Management—General]
- Assessment notes for electrical injuries:
  - A. Conduct primary survey with specific focus on potential for cardiac arrest
  - B. Identify all sites of burn injury. If patient became part of the circuit, there will often be an additional site near the contact with ground. Electrical burns are often full thickness and involve significant deep tissue damage.
  - C. Assess for potential associated trauma and note if the patient was thrown from contact point.
    - If patient has altered mental status, assume trauma was involved and treat accordingly
    - Assess for potential compartment syndrome from significant extremity tissue damage
  - D. Determine characteristics of source if possible – AC or DC, voltage, amperage and also time of injury.
- Treatment notes for electrical injuries:
  - A. Identify dysrhythmias or cardiac arrest. Resuscitation attempts are generally indicated for most patients, as even patients who appear dead (particularly dilated pupils) may have good outcomes with prompt intervention. Remember that external appearance may underestimate the degree of tissue injury.
  - B. Immobilize if indicated per [T6: Spine Assessment & Spinal Motion Restriction]
  - C. Apply dry dressing to any wounds
  - D. Remove constricting clothing and jewelry since additional swelling is possible

PARAMEDIC PROVIDERS

- Assess primary survey with specific focus on dysrhythmias or cardiac arrest
- Apply a cardiac monitor
- Administer fluid resuscitation per [T14: Burns] if indicated

Electrical Injuries (Cont.)

T17

NOTES

1. Electrical current causes injury through three main mechanisms:
   - Direct tissue damage, altering cell membrane resting potential, and eliciting tetany in skeletal and/or cardiac muscles.
   - Conversion of electrical energy into thermal energy, causing massive tissue destruction and coagulative necrosis.
   - Mechanical injury with direct trauma resulting from falls or violent muscle contraction.
2. Anticipate atrial and/or ventricular dysrhythmias as well as cardiac arrest.
3. The mortality related to electrical injuries is impacted by several factors:
   A. Route current takes through the body – current traversing the heart has higher mortality
   B. Type of current: AC vs. DC.
   - AC is more likely to cause cardiac dysrhythmias while DC is more likely to cause deep tissue burns however either type of current can cause any injury.

• DC typically causes one muscle contraction while AC can cause repeated contractions • Both types of current can cause involuntary muscle contractions that do not allow the victim to let go of the electrical source.

• AC is more likely to cause ventricular fibrillation while DC is more likely to cause asystole. C. The amount of current impacts mortality more than the voltage.

Current level (Milliamperes)	Probable Effect on Human Body of 120 V, 60 Hz AC for 1 second
1 mA	Perception level. Slight tingling sensation. Still dangerous if wet conditions.
5mA	Slight shock felt; not painful but disturbing. Average individual can let go. However, strong involuntary reactions to shocks in this range may lead to injuries.
6mA - 16mA	Painful shock, begin to lose muscular control. Commonly referred to as the freezing current or "let-go" range.
17mA - 99mA	Extreme pain, respiratory arrest, severe muscular contractions. Individual cannot let go. Death is possible.
100mA - 2000mA	Ventricular fibrillation (uneven, uncoordinated pumping of the heart.) Muscular contraction and nerve damage begins to occur. Death is likely.
> 2,000mA	Cardiac arrest, internal organ damage, and severe burns. Death is probable.

Source: https://www.osha.gov/SLTC/etools/construction/electrical_incidents/eleccurrent.html

DOCUMENTATION / KEY PERFORMANCE INDICATORS

- Vital signs and vascular status of extremity after placement of tourniquet, pressure dressing or splint
- Documentation of elimination of distal pulse after tourniquet placement
- Time of tourniquet placement

Pain Management
(Identical to Medical Protocol M19)

T18

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
Patients who are experiencing pain.	The practice of prehospital emergency medicine requires expertise in a wide variety of pharmacological and non-pharmacological techniques to treat acute pain resulting from myriad injuries and illnesses. One of the most essential missions for all healthcare providers should be the relief and/or prevention of pain and suffering. Approaches to pain relief must be designed to be safe and effective in the organized chaos of the prehospital environment. The degree of pain and the hemodynamic status of the patient will determine the rapidity of care.

ALL EMS PROVIDERS

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- If situation permits, determine patients pain score assessment using standardized pain scale
  - A. Age < 4 years: Observational Scale (FLACC scale—See [Pediatric Pain Assessment Scale])
  - B. Age 4 - 12 years: Self-report scale (Wong Baker Faces—See [Pediatric Pain Assessment Scale])
  - C. Age > 12 years: Self-report scale (Numeric Rating Scale)
- Consider use of non-pharmaceutical pain management techniques:
  - A. Place in position of comfort
  - B. Apply ice packs, splint, elevation if clinically indicated
  - C. Verbal reassurance to ease anxiety

EMT AND ABOVE PROVIDERS

EMT w/ IV Therapy Endorsement

- Consider obtaining IV access if ALS pharmaceutical pain management is anticipated

PARAMEDIC PROVIDERS

- Consider use of analgesics:
  - A. ***Acetaminophen:*** 15mg/kg PO up to 1 gram if no contraindications to oral medications
  - B. ***Fentanyl:***
    - i. Best used for both critically ill patients and for initial trauma patients due to neutral hemodynamic properties and rapid metabolism. Can be used for those with a reported morphine allergy. The key to analgesia with fentanyl is frequent patient assessment and titration to effect. Pain scale measurement is a component of pain assessment, but in determining opiate dosage, clinical judgement of the totality of the clinical presentation is required.
    - ii. **Adult Dose**: Up to 1 - 2 mcg/kg slow IV push over 1 minute
      - a. For most patients start with 25-100mcg slow IV initial dose.
      - b. For patients with moderate/severe pain (most patients), give subsequent titrated doses up to every 5 minutes as needed with up to 0.5mcg/kg slow IV push (max 100mcg increments). CTD: 200mcg
      - c. In cases of extreme pain (select population), repeat doses up to 1-2 mcg/kg slow IV dose up to every 3-5 minutes are permitted. Pulse oximetry monitoring is mandatory.
      - d. In the intubated patient with a suspected painful condition, titrate in 100-200mcg IV increments.
      - e. Intranasal administration up to 100mcg doses can be used in adults.

iii. Pediatric dose: ⚠ **NOTE: Fentanyl is contraindicated in neonates/infants < 1 month due to bradycardia.** Age >1 month consider up to 1 mcg/kg (maximum of 100mcg increment slow IV push over 1 minute or intranasal. Consider giving initial dose intranasal, then establishing IV for subsequent doses.

iv. For most patients start with 25mcg IV or IN.

v. For patients with moderate/severe pain, give subsequent titrated doses up to 0.5mcg/ kg slow IV or IN up to every 5 minutes as needed. CTD: 100mcg.

vi. For patients in extreme pain (select population), repeat doses of up to 1mcg/kg IV or IN (up to 100mcg increment) every 3-5 minutes are permitted. Pulse oximetry monitoring is mandatory.

vii. In the intubated patient, titrate in 1mcg/kg IV increments.

C. Morphine:

i. Best used for hemodynamically stable or non-trauma patients. Has longer duration of action than fentanyl, but more histamine release

ii. ⚠ **NOTE:** There is wide variability in dose response to morphine. Multiple studies indicate that a single 0.1mg/kg IV dose of morphine can result in inadequate pain relief in a sizeable percentage (>50% in some studies) of patients. The key to analgesia with morphine is frequent patient assessment and titration to effect. Pain scale measurement is a component of pain assessment, but in determining opiate dosage, clinical judgement of the totality of the clinical presentation is required

iii. ℞ ***Morphine*** **Adult dose**: up to 0.1mg/kg IV slow IV push (maximum of 15mg incremental dose), with clinical judgement determining dose.

- For most patients start with 2-10mg IV initial dose.
- For patients with moderate/severe pain (most patients), give subsequent titrated doses up to every 5 minutes as needed with up to 0.05mg/kg slow IV push (maximum 7.5mg increments). CTD: 20mg.
- In patients in extreme pain (select population), repeat doses of up to 0.1mg/kg (up to 15mg increment) every 3-5 minutes are permitted. Pulse oximetry monitoring is mandatory.
- Generally a decreasing dose is recommended as pain improves. Adjust increments of dosing based on clinical situation and response.

iv. ℞ ***Morphine*** **Pediatric dose**: up to 0.1mg/kg slow IV push (maximum of 5mg incremental dose), with clinical judgement determining dose

- For most patients start with 1-2mg IV initial dose.
- For patients with moderate/severe pain (most patients) give subsequent titrated doses up to every 5 minutes as needed with up to 0.05 mg/kg slow IV push (maximum 5mg increments). CTD: 10mg.
- In patients in extreme pain (select population), repeat doses of up to 0.1mg/kg (up to 15mg increment) every 3-5 minutes are permitted. Pulse oximetry monitoring is mandatory.
- Generally a decreasing dose is recommended as pain improves. Adjust increments of dosing based on clinical situation and response.

v. Consider anti-emetic administration if situation permits (current literature does not support routine use)

℞ ***Ondansetron*** **Adult dose:** 4-8 mg IV **Pediatric dose**: 0.15 mg/kg IV up to 8mg

vi. Administer diphenhydramine if needed for pruritus or urticaria (common effect of histamine release with morphine)

℞ ***Diphenhydramine*** **Adult dose:** 12.5-50 mg IV (use lower dose if age >65)
Pediatric dose: 0.5-2mg/kg IV

STANDING ORDERS

Pain Management
(Identical to Medical Protocol M19)

T18

PARAMEDIC PROVIDERS (CONTINUED)

D. Ketamine

i. For most patients, Ketamine is not recommended as the primary medication used in pain management. Other non-sedating medications should be used preferentially.

ii. While Ketamine can be an effective analgesic, it can completely obliterate the clinical exam.

iii. Ketamine may be combined with other analgesics and used with sub-dissociative dosing (see adjunctive medications below for dosing recommendations).

iv. Ketamine may be used as initial analgesic in the entrapped and/or critically ill (e.g. polytrauma) patient with limited/impaired access by the EMS provider, or in a critical patient for whom intubation is anticipated. In the setting of limited access, monitoring should be applied to the extent possible, and standard monitoring applied as soon as access is obtained. In this setting ℞ ***Ketamine*** **Adult Dose**: If reasonable airway access 0.5-2mg/kg IV/IO up to 250mg IV, and may follow with 0.25mg/kg IV IO up to 125mg every 10-15 minutes as needed. If IV/IO access is unable to be secured, or extremely limited access for monitoring may give 50mg IM and repeat every 5 minutes as needed up to 500mg IM. **Pediatric dose**: 0.5-2mg/kg IV/IO up to 200mg and may follow with 0.25mg/kg IV/IO up to 100mg every 10-15 minutes. If IV/IO access is unable to be secured, or limited access for monitoring may give 2-5mg/kg IM up to 50mg and repeat dose up to every 5 minutes as needed max dose 250mg IM.

- Adjunctive medications

A. Adjunctive medications are an option for refractory pain management in the non-intubated patient. In general it is best to titrate analgesics to effect, rather than add adjunctive medications as the cross interactivity rate - specifically with precipitating respiratory depression can be very high, and is not always clinically apparent.

B. ℞ ***Midazolam*** 1-2mg IV in the adult may be initiated in the setting of severe pain and anxiety not adequately managed by initial titration of narcotics. Cardiopulmonary monitoring is mandatory. Contact online medical control for subsequent dosing or if pediatric administration is being considered. (Midazolam can have a paradoxical reaction and increase activity/anxiety in pediatric patients.)

C. ℞ ***Ketamine*** **Adult and Pediatric Dose**: 0.1-0.15mg/kg up to 100mg (slow IV or added to 50 or 100ml NS and infused over ~15 minutes is a sub-dissociative dose that may potentiate the effect of analgesia without obliteration of awareness. However, it can still cause alterations of perception and complicate subsequent assessment, particularly if administered rapidly. Given the lack of adverse hemodynamic effects, early use of sub-dissociative ketamine for pain management in setting of trauma is appropriate. Limited evidence suggests retreatment with fentanyl may potentiate effects.

D. Cardiopulmonary monitoring

E. Continuous pulse oximetry is recommended if tolerated if potential respiratory depressants are administered.

F. Continuous pulse oximetry monitoring is mandatory and ETCO2 monitoring is recommended:

- If a combination of potential respiratory depressants (e.g., narcotics & benzodiazepines) are used.
- If the patient is clinically intoxicated.
- If the patient has known pulmonary disease (e.g., COPD).
- Or if more than (2) doses of a potential respiratory depressant administered.

G. For non-intubated patients, side-stream ETCO2 monitoring is indicated if clinically evident sedation occurs following administration.

NOTES	DOCUMENTATION / KEY PERFORMANCE INDICATORS
•Pain scale assessment should be recorded before and after analgesic medication administration and upon arrival at destination. • All patients should have drug allergies identified prior to administration of pain medication	• Vital signs with pulse oximetry • Acquisition of patient allergies prior to medication administration • Initial pain scale assessment • Medication administration with dose and route • Reassessment with repeat vitals and pain scale assessment • ETCO2 monitoring

PEDIATRIC PAIN ASSESSMENT SCALES

Age <4 **FLACC SCALE**

	SCORING		
Category	**0**	**1**	**2**
FACE	No particular expression, or smiling	Occasional grimace or frown, withdrawn, disinterested	Freqent to constant quivering chin, clenched jaw
LEGS	Normal or relaxed	Uneasy, restless, tense	Kicking or legs drawn up
ACTIVITY	Lying Quietly, normal position, moves easily	Squirming, shifting back and forth, tense	Arched, rigid, or jerking
CRY	no cry (awake or asleep)	Moans or whimpers, occasional complaint	Crying steadily, screams or sobs, frequent complaints
CONSOLABILITY	Content, relaxed	Reassured by occasional touching, hugging, or being talked to, distractable	Difficult to console or comfort

Age ~4 to ~12

Wong-Baker FACES® Pain Rating Scale

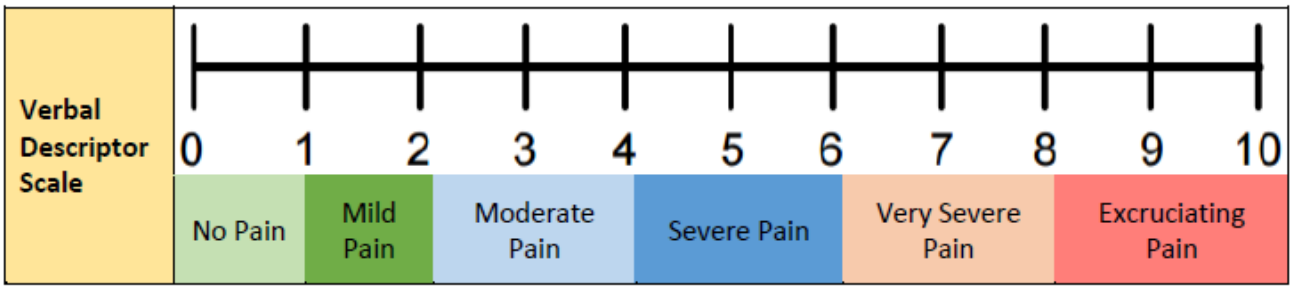
Instructions for Usage

Explain to the person that each face represents a person who has no pain (hurt), or some, or a lot of pain.

Face 0 doesn't hurt at all. Face 2 hurts just a little bit. Face 4 hurts a little bit more. Face 6 hurts even more. Face 8 hurt a whole lot. Face 10 hurts as much as you can imagine, although you don't have to be crying to have this worst pain.

Ask the person to choose the face that best depicts the pain they are experiencing.

Universal Pain Assessment Tool



Sexual Assault

T19

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
• Patient with alleged sexual assault/rape	• Take appropriate steps to protect the safety of the patient, responders, and bystanders • Remove the patient from the environment if possible • Attempt to preserve evidence whenever possible, however the overriding concern should be providing appropriate emergency care and transport of the patient

Documentation is essential. Protect and preserve evidence and the scene. Comfort and reassure the victim. History taking should be limited to establishing the extent of injuries associated with the assault and/or other medical issues immediately relevant to the situation. Discussions regarding the details of a sexual assault/abuse may be construed as evidence tampering by the courts and therefore compromise potential prosecution of an assailant. This is especially true when gathering information from abused/assaulted children or gathering such information in a child's presence. This is an important exception to the general idea that more information is always better when it comes to patient care documentation.

ALL EMS PROVIDERS

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- In the event of hostile family or caregivers, avoid confrontations that might interfere with removing the patient from the environment
- Notify law enforcement if not already present
- History taking should focus on establishing the extent of injuries from the assault and/or other medical issues immediately relevant to the situation
- Treat injuries as clinically appropriate
- Transport for Emergency Department evaluation should always be recommended. In addition to medical treatment, resources such as rape crisis, domestic abuse, and protective services are available
- Attempt to preserve any potential evidence if possible
  -Collect any pertinent items in an unused biohazard bag and transport wit the patient. Any blankets or sheets used by or on patient during transport should accompany patient into receiving facility.
- Offer reassurance and emotional support
- Discourage the patient from bathing, changing clothes, or using the restroom
- External vaginal and anal examinations are not appropriate unless uncontrolled life-threatening external hemorrhage is suspected
- Notify hospital for activation of Sexual Assault Nurse Examiner (SANE) if available

Tactical EMS Support / High Risk & Active Threat Scenes

AGENCY OPTIONAL

T20

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
• High threat environment – when greater than normal conditions exist that are likely to cause injury or danger to provider or patient	• Assess scene • Maintain situational awareness • Mitigate further harm

DEFINITIONS

Hot Zone (Direct Threat Zone): an area within the inner perimeter of an incident scene where active threat and known or potential hazards exist.

Warm Zone (Indirect Threat Zone): an area within the inner perimeter of an incident scene where security and safety measures are in place. This zone may have potential hazards but active danger has been mitigated.

⚠ **NOTE:** Zone delineation in an active threat scenario may be difficult! Only authorized EMS personnel should be permitted to operate in close proximity to high-risk situations under the direction and direct supervision of the law enforcement jurisdiction in command of the incident.

Safety Considerations:

1. Anticipate threats based on situation
2. During high-threat situations, provider safety should be considered in balancing the risks and benefits of patient treatment
3. Defer to law enforcement for direction of tactical operations and scene security issues

ALL EMS PROVIDERS

- Consider establishment of Unified Command with Law Enforcement / Fire / EMS representation.
- Don ballistic personal protective equipment (vests, helmets, etc.) if available in accordance with agency policy
- Maintain situational awareness
- DO NOT DELAY patient extraction and evacuation for non-life-saving interventions
- Consider establishing a casualty collection point if multiple patients are encountered/anticipated
- Perform patient care based on threat perception as outlined below:

Hot Zone Care Considerations

- Defer in-depth medical interventions if engaged in ongoing direct threat (e.g. active shooter, unstable building collapse, bomb threat, hazardous material threat, etc.)
- Threat mitigation techniques will minimize risk to patients and providers
- Triage should be deferred to a later phase of care
- Prioritization for extraction is based on resources available and the situation at hand
- Minimal interventions are warranted in this environment
- Encourage patients to provide self-aid or instruct aid from uninjured bystander when possible
- Consider hemorrhage control:
  - i. Tourniquet application is the primary intervention to be considered in the hot zone when indicated
  - ii. Consider instruction patient to apply direct pressure to would if no tourniquet available or if tourniquet application is not feasible).
  - iii. Consider quickly placing or directing patient be placed in a position to protect airway, if not immediately moving patient.

Tactical EMS Support / High Risk & Active Threat Scenes

T20

STANDING ORDERS

Warm Zone Care Considerations

- Conduct primary survey per [T1: Trauma Management—General] and initiate appropriate life saving interventions:
  - i. Hemorrhage control:
    - -Tourniquet
    - -Wound packing if feasible
  - ii. Maintain airway and support ventilation as possible
- Unless in a fixed casualty collection point, triage in this phase of care should be limited to the following categories:
  - i. Uninjured and/or capable of self-extraction
  - ii. Deceased
  - iii. All others

NOTES

- During high-risk situations, novel risk assessment should be considered. EMS provider and patient safety will need to be considered simultaneously.
- During high-risk situations an integrated response and Unified Command structure is likely warranted
- Depending on the situation, a little risk may reap significant benefits to patient safety and outcome
- During high-risk situations, maintaining communications and incident command concepts will be crucial to maximizing efficiency and mitigating danger
- Traditional patient care documentation may not be appropriate during Hot Zone and Warm Zone care and should be deferred to later phase of care when the scene has been stabilized

DOCUMENTATION / KEY PERFORMANCE INDICATORS

- Any delays to patient access/ scene safety issues
- Time of tourniquet application when applicable

AGENCY OPTIONAL

TXA for Hemorrhagic Shock

T21

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
• Traumatic injury with potentially life-threatening hemorrhage with signs of shock including as least one episode of hemodynamic instability (SBP <90) **AND** • TXA administration can be accomplished within 3 hours of injury **AND** • Transport time and resources allow for initiation of TXA	• Identify and manage life threats • Defer TXA until other resuscitative/transport priorities have been addressed to the extent possible

PARAMEDIC PROVIDERS (CONTINUED)

⚠ **NOTE**: This protocol is a) AGENCY OPTIONAL and requires b) that individual EMS personnel complete MPD-approved specialized training and authorization prior to use.

- Administration of TXA in the prehospital trauma patient is not a critical priority and should be deferred until all other resuscitative/transport priorities have been addressed to the extent possible per protocol guidance.
  -Patients who meet criteria for TXA use also meet potential for aeromedical transfer. Administration of TXA may be deferred to aeromedical transport providers

Adult Dose: TXA is given as a 2 gram IV bolus over 1-2 minutes
- Communicate at patient hand off that a **2 gram (and not 1 gram)** bolus has been given, so that in patients who have received this dose, a 1 gram infusion is **not** accidentally initiated by receiving agency or facility
- EMS Providers may continue a previously initiated infusion for inter-facility transfers.

Pediatric Bolus Dose: 30mg/kg IV over 1-2 minutes (up to a maximum of 2000mg)
- Communicate at patient hand off that a **30mg/kg (and not 15mg/kg)** bolus has been given, so that in patients who have received this dose, a subsequent infusion is **not** accidentally initiated by receiving agency or facility
- EMS Providers may continue a previously initiated infusion for inter-facility transfers

SECTION 6:
ENVIRONMENTAL EMERGENCIES

TABLE OF CONTENTS

Bites & Stings

E1

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
• Patient with an injury caused by a bite or sting	• Assure adequate ventilation and oxygenation and correction of hypoperfusion • Pain control which includes limited external interventions to reduce pain/improve comfort

1. Bites, stings, and envenomations can come from a variety of marine and terrestrial animals and insects causing local or systemic effects
2. Patients may present with toxin specific reactions which may include:

- Site pain
- Swelling
- Muscle pain (hallmark of black widow spider bites)
- Erythema
- Discoloration
- Bleeding
- Nausea
- Abdominal pain
- Hypotension
- Tachycardia
- Tachypnea
- Muscle incoordination
- Confusion
- Anaphylaxis/allergic reaction

ALL EMS PROVIDERS

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- Evaluate for shock and manage as clinically indicated
- Most bites, except in rare instances, are not immediately life or limb threatening. Inappropriate treatment with ice and/or tourniquets can cause more damage than the bite itself.
- Remove constrictive clothing
- When practical, gently irrigate would with sterile saline and apply a clean dressing
- Notify Animal Control if appropriate
- Recommend same-day physician evaluation for all bites that break the skin

Specific Circumstances

Human bites
- High potential for infection. Expeditious evaluation by Physician recommended

Cats & Dogs
- High potential for infection. Expeditious evaluation by Physician recommended

Snakes
- When possible, identify species of snake and do not delay transport
- When possible, bring dead snake to hospital
- Do not apply tourniquets

Bats
- When possible, the bat in question should be safely collected and brought to hospital or evaluated by Skagit County Public Health

Other Animals
- **Contact On-Line Medical Control** for guidance if transport is being refused

Carbon Monoxide Poisoning

E2

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
Patient with a known or suspected carbon monoxide (CO) exposure **OR** Patient with symptoms suggesting an evaluation for carbon monoxide exposure is indicated including:	• Remove patient from toxic environment • Assure adequate ventilation, oxygenation and correction of hypoperfusion

Mild	Moderate to Severe
-Nausea	-Altered mental status
-Fatigue	-Tachypnea
-Headache	-Tachycardia
-Vertigo	-Convulsion/seizure
-Lightheadedness	-Cardiopulmonary arrest

ALL EMS PROVIDERS

- Scene Safety - Protect personnel and patient from CO further exposure if source is identified.
- Remove patient and personal from toxic environment.
- Follow [G27: Universal Care Guideline] as appropriate to scope of practice
- Measure carbon monoxide level using co-oximeter. ⚠ **NOTE:** a standard pulse oximeter will not measure CO, a specialty device is required.
  - A. 0-5 is normal
  - B. 6-10 is seen with smokers, mild exposures (pregnant patients - initiate treatment)
  - C. > 10 is elevated and treatment is indicated.
  - D. ≥ 25 is often an indication for hyperbaric therapy. Notify receiving hospital as early as possible.
- Apply oxygen if indicated via non-rebreather mask at 15 lpm
- Treat other clinical findings (altered mental status, seizures, trauma etc…) per appropriate protocol
- If one patient is identified with carbon monoxide exposure, evaluate scene for others who might have been exposed.
- If co-oximetry is not available and there is suspicion of CO exposure, initiate treatment
- If patient is pregnant, and there is suspicion of CO exposure, initiate treatment

  ⚠ **NOTE:** Maternal co-oximetry does not reflect fetal carboxyhemoglobin levels/exposure. Pregnant patients with CO exposure have a lower threshold for hyperbaric therapy.
- Attempt to determine and document exposure history (time/route/duration of exposure)

PARAMEDIC PROVIDERS

- Apply cardiac monitor
- Consider 12-lead EKG

NOTES

Carbon monoxide is a colorless, odorless gas which has a high affinity for binding to red cell hemoglobin, thus preventing the binding of oxygen to the hemoglobin, leading to hypoxia (pulse oximetry less than 94%). A significant reduction in oxygen delivery to tissues and organs occurs with carbon monoxide poisoning. Carbon monoxide is also a cellular toxin which can result in delayed or persistent neurologic sequelae in significant exposures. With any form of combustion (fire/ smoke [e.g. propane, kerosene, or charcoal stoves or heaters], combustion engines [e.g. generators, lawn mowers, motor vehicles, home heating systems]), carbon monoxide will be generated. People in a fire may also be exposed to cyanide from the combustion of some synthetic materials. Cyanide toxicity may need to be considered in the hemodynamically unstable patient removed from a fire.

DOCUMENTATION / KEY PERFORMANCE INDICATORS

- CO level
- Evidence of soot or burns around face, nares, or pharynx
- Early and repeat assessment of mental status and neuro function
- Signs and symptoms of other patients encountered at same location, if present
- Blood glucose level

Cyanide Exposure

E3

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
Known or suspected cyanide exposure. The rapidity of onset is related to the severity of exposure (inhalation or ingestion) and may have dramatic, immediate effects causing early hypertension with subsequent hypotension, sudden cardiovascular collapse or seizure/coma <u>High concentrations of Cyanide will produce:</u> • Markedly altered level of consciousness • Seizure • Respiratory depression or arrest • Cardiac dysrhythmia (other than sinus tachycardia) • Cardiovascular collapse	• Remove patient from toxic environment • Assure adequate ventilation, oxygenation and correction of hypoperfusion • Notify receiving facility as soon as practical

⚠ **NOTE:** Depending on its form, cyanide can enter the body through inhalation, ingestion, or absorption through the skin. Cyanide should be suspected in occupational or smoke exposures (e.g. firefighting), industrial accidents, natural catastrophes, suicide and murder attempts, chemical warfare, and terrorism (whenever there are multiple casualties of an unclear etiology). Non-specific and early signs of cyanide exposure (inhalation, ingestion, or absorption) include: anxiety, vertigo, weakness, headache, tachypnea, nausea, dyspnea, vomiting, and tachycardia.

ALL EMS PROVIDERS

- Scene safety precautions:
  - A. In the event of multiple casualties, remain within your scope of training and if involved in rescue, wear appropriate PPE during rescue evacuation from the toxic environment.
  - B. If patient has ingested cyanide liquid or crystals, the cyanide will react with the stomach acids to generate hydrogen cyanide gas which may be released into provider breathing air with belching, vomiting or gastric lavage.
  - C. Do not use nitrites in conjunction with suspected carbon monoxide poisoning as it worsens the hemoglobin oxygen carrying capacity even more than carbon monoxide.
  - D. Hydroxocobalamin is only agent safe for treatment of cyanide poison in pregnant patient.
- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- Remove patient and personnel from further potential toxic exposure
- Obtain vital signs including temperature, when possible
- Assess and evaluate for additional injury and/or exposures, treat per applicable protocols as needed
- Apply 100% oxygen via non-rebreather mask or BVM
- If possible, attempt to determine:
  - A. Identify exposure history as applicable: specific agent exposed to, time of ingestion/inhalation, and quantity/duration of exposure
  - B. Identify past medical history to determine relevant co-morbidities and pregnancy status

EMT AND ABOVE PROVIDERS

- Obtain blood glucose level if altered mental status

EMT w/ IV Therapy Endorsement

- Establish IV access

Cyanide Exposure

E3

STANDING ORDERS

PARAMEDIC PROVIDERS

- Apply cardiac monitor
  A. Obtain 12-Lead EKG when possible
- Obtain carbon monoxide level if equipped with capable CO monitoring device (>10 likely to have symptoms)
- Monitor pulse oximetry and ETCO2 for respiratory decompensation
  A. Monitor for increasing ETCO2 for respiratory failure AND
  B. Monitor for tachypnea and decreasing ETCO2 (<25 is potentially concerning)
- Treatment decisions must be made on the basis of clinical history/suspicion and signs and symptoms of cyanide intoxication. If situation permits, contact **Poison Control EMS Line 1-800-222-1222** prior to administration for expert advise. For patient with an appropriate history and manifesting one or more high concentrations of cyanide signs or symptoms, if cyanide treatment kit available* treat with:
  A. *Cyanide Kits are not stocked on the ambulance, but may be available at certain industrial sites where risk of cyanide exposure is higher. There are currently two types of cyanide kits available.
    - NOTE: The "standard" kit contains: an ampule of amyl nitrate, a vial or vials of sodium nitrite, and a vial or vial(s) of sodium thiosulfate - and treatment involves sequential administration of these medications - with exceptions/contraindications below.
    - A separate kit containing only the medication hydroxocobalamin also exists, but is substantially more expensive and consequently less available
    - **IF access to the kit containing hydroxocobalamin exists, use preferentially over the "standard" kit. Do NOT combine kits.**

  B. Collect a pre-treatment blood sample in the appropriate tube for lactate and cyanide levels
  C. STANDARD CYANIDE KIT **1st Medication: Only in adults, and only if no carbon monoxide exposure**, administer ℞ ***Amyl Nitrate***:
    i. Adult dose: Amyl Nitrite inhaled ampule, one ampule (0.3mL) inhaled.
    ii. Pediatric dose: **NOT** approved for pediatric use.
  D. STANDARD CYANIDE KIT **2nd Medication: Only if no carbon monoxide exposure**, administer ℞ ***Sodium Nitrite***.
    i. Adult dose - Sodium Nitrate 300 mg (10 ml of 3%) slow IV over 2-4 minutes
    ii. Pediatric dose: 6 mg/kg [(up to 300mg) or 0.2 ml/kg (up to 10ml) of 3%] slow IV over 2-4 minutes
  E. STANDARD CYANIDE KIT **3rd Medication**: Administer ℞ ***Sodium Thiosulfate***.
    i. Adult dose - Sodium Thiosulfate: 12.5 g slow IV push (50 ml of 25% solution).
    ii. Pediatric dose -Sodium Thiosulfate: 0.5 g/kg (up to 12.5g) slow IV push (2 ml/kg of 25% solution).
  F. IF ACCESS to kit containing only hydroxocobalamin is available, USE THE ℞ ***HYDOXOCOBALAMIN*** KIT:
    i. Adult Dose hydroxocobalamin: Initial dose is 5 gm administered over 15 minutes slow IV. Each 5 gm vial of hydroxocobalamin for injection is to be reconstituted with 200 ml of LR (25 mg/ ml) and administered at 10 - 15 ml/minute. An additional 5 gm dose may be administered with on-line medical control consultation.
    ii. Pediatric dose hydroxocobalamin: Administer hydroxocobalamin 70 mg/kg (reconstitute concentration is 25 mg/ml). Each 5 gm vial of hydroxocobalamin for injection is to be reconstituted with 200 ml of LR (25 mg/ml) and administered at 10 - 15 ml/minute. Maximum single dose is 5 gm.

  G. If seizures occur, treat per [M21: Seizure]

Cyanide Exposure (cont.)

NOTES

- Pulse oximetry accurately reflects serum levels of oxygen but does not accurately reflect tissue oxygen levels and therefore should not be relied upon.
- Furthermore, after hydroxocobalamin has been administered, pulse oximetry levels are no longer accurate.
- If the patient has taken an oral ingestion of cyanide salt, the cyanide salt will react to the acids in the stomach generating hydrogen cyanide. Be sure to maximize air circulation in closed space (back compartment of ambulance) as the patient's gastric contents may contain hydrogen cyanide gases when released with vomiting or belching.
- Continuous monitoring and reassessment are indicated
- The "Standard Cyanide Kit" works by converting hemoglobin to methemoglobin (Amyl Nitrate, Sodium Nitrate) for which cyanide has a high affinity. This is an attempt to have cyanide bind to methemoglobin instead of critical molecules. The Sodium thiosulfate helps covert cyanide to a less toxic metabolite, thiocyanate, which is readily excreted in the urine.
- The hydoxocobalamin cyanide kit contains a form of vitamin B12 compounds and similarly preferentially binds to cyanide to form the less toxic and excreted metabolite cyanocobalamin.

DOCUMENTATION / KEY PERFORMANCE INDICATORS

- Repeat evaluation and documentation of signs and symptoms of the patients clinical condition
- Identification of possible etiology of poisoning if obtainable
- Time of symptom onset and time of initiation of exposure-specific treatments
- Therapy and response to therapy

Drowning & Submersion

E4

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
• Patients suffering from a drowning event independent of presence or absence of initial symptoms.	• Rescue from water-based environment • Rapid assessment and management of life-threatening injuries • Transport patients suffering from drowning unless field arrest resuscitation termination guidelines apply

ALL EMS PROVIDERS

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- Follow [T1: Trauma Management—General]
- Ensure scene safety for patient and rescuers.
  - -Request specialized water rescue resources as needed
  - -Remove patient from water as soon as possible (within your scope of training).
  - -If applicable, practice the safest water rescue technique possible, given circumstances on scene.
  - -Evacuate patient(s) to land or a water craft as soon as possible. If there is a delay to accessing shore or a rescue boat, initiate in-water basic life support consisting of ventilation only
- When possible, attempt to determine:
  - A. Circumstances leading to the submersion
  - B. Details of mechanism of injury
  - C. Time under water
  - D. Water temperature (if available)
- Primary Survey should include aggressive airway management with a focus of restoration of adequate oxygenation and ventilation
- Consider mechanism for potential C-spine injury. If any history of or suspicion for diving, initial C-spine immobilization and careful management and/or evaluation are indicated.
  - -Mechanisms of injury highly suggestive of cervical spine injury include: diving, water skiing, surfing or watercraft accidents.
- Assess for other associated injury such as injury to the head, other traumatic injury, or dive-related emergency.
- If O_2 saturations are less than 92%, provide supplemental oxygen to maintain saturation $\geq$ 94%. Consider positive pressure ventilation in patients with signs or symptoms of respiratory difficulty.
- Consider hypothermia and treat per [E7: Hypothermia] as indicated.
  - ⚠ **NOTE:** In cold water drowning, be aware that the pulse may not be palpable despite acceptable core perfusion.
  - ⚠ **NOTE:** In the severely hypothermic patient, handle very carefully as rough handling may help precipitate ventricular fibrillation.
- Due to risk of delayed-onset respiratory distress following a drowning injury, transport is indicated for all drowning patients.
- If patient was involved in underwater diving with diving equipment and uncertainty exists regarding the most appropriate therapy, consider contacting incoming Paramedic unit or **Contact On-Line Medical Control** to discuss potential need for hyperbaric treatment. Include discussion regarding:
  - -Submersion time.
  - -Greatest depth achieved
  - -Ascent rate.

Drowning & Submersion (Cont.)

E4

EMT AND ABOVE PROVIDERS

EMT w/ IV Therapy Endorsement

- Consider establishing IV access

PARAMEDIC PROVIDERS

- Apply cardiac monitor
  - ⚠ **NOTE:** In the cold water drowning patient, if the patient has spontaneous respirations, do NOT initiate CPR unless a lethal dysrhythmia is evident on cardiac monitor
- Consider 12-lead EKG
- Consider CPAP early in awake patients with respiratory distress

NOTES	DOCUMENTATION / KEY PERFORMANCE INDICATORS
• The World Health Organization definition of drowning is "the process of experiencing respiratory impairment from submersion/immersion in liquid" • Drowning is further defined in the following categories: Non-fatal drowning – patients rescued from drowning Fatal drowning – any death, acutely or subacutely, resultant from drowning • Submersion refers to situations in which the patient's airway is underwater. Immersion refers to situations in which the patient's body is in water but the patient's airway remains out of the water. • Drowning is a common cause of death in children • Rescue efforts should be coordinated between all responding agencies to ensure patient is rapidly accessed and removed from the water. • Initiation of in-water ventilations may increase survival. In-water chest compressions are futile. • Active efforts to expel water from the airway (by abdominal thrusts or other means) should be avoided as they delay resuscitative efforts and increase the potential for vomiting and aspiration. • Uncertainty exists regarding survival in cold water drowning, however, recent literature suggests the following: 1. If water temperature is less than 43° F (6° C) and the patient is submerged with evidence of cardiac arrest: A. Survival is possible for submersion time less than 90 minutes and resuscitative efforts should be initiated B. Survival is not likely for submersion time greater than 90 minutes and providers may consider not initiating resuscitation or termination of resuscitation on scene 2. If water temperature is greater than 43° F (6° C) and the patient is submerged with evidence of cardiac arrest: A. Survival is possible for submersion time less than 30 minutes and resuscitative efforts should be initiated B. Survival is not likely for submersion time greater than 30 minutes and providers may consider not initiating resuscitation or termination of resuscitation on scene • Patients may develop subacute respiratory difficulty after drowning and therefore all victims of drowning should be transported for observation.	• Mechanism of injury or history suggesting cervical spine injury • Submersion time • Water temperature • Activities leading to drowning

Heat Related Illness

E5

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
Suspected or known exposure to heat and/or humidity **AND** Hyperpyrexia (elevated temperature) **OR** CNS dysfunction, muscle cramps, abdominal cramps, or nausea/vomiting	• Cooling and rehydration • Mitigate high risk for decompensation • Mitigate high risk for agitation and uncooperative behavior

ALL EMS PROVIDERS

- Follow [G27: Universal Care Guideline] as appropriate to scope of practice
- Remove patient from warm environment and provide rapid cooling measures:
  - -Remove clothing
  - -Cover patient with light sheet soaked in tepid water
  - -If available, fanning and misting may be used
- Obtain temperature, rectal temperature is preferred
  - -For patients with temp >105° F (40.5° C) initial goal is to 102° F (39° C)
  - Provide supportive measures as needed
  - If seizures occur, see [M21: Seizure]

EMT AND ABOVE PROVIDERS

- Obtain blood glucose level

EMT w/ IV Therapy Endorsement

- Consider establishing IV access

PARAMEDIC PROVIDERS

- Consider IV bolus NS 500-1000ml if adult, 20ml/kg for pediatric patients
  - -Repeat as needed for hemodynamic instability
- Apply cardiac monitor
- All patients suffering from life threatening heat illness (including heat stroke) should be transported to the hospital

NOTES

Definitions

1. Heat cramps are minor muscle cramps usually in the legs and abdominal wall. Temperature is normal
2. Heat exhaustion has both salt and water depletion usually of a gradual onset. As it progresses tachycardia, hypotension, elevated temperature, and very painful cramps occur. Symptoms of headache, nausea and vomiting occur. Heat exhaustion can progress to heat stroke
3. Heat stroke occurs when the cooling mechanism of the body (sweating) ceases due to temperature overload and or electrolyte imbalances. Temperature is usually > 104 F. When no thermometer is available, it is distinguished from heat exhaustion by altered level of consciousness

Do not forget to look for other causes of altered mental status such as low blood glucose level, or, in the proper circumstances (e.g. endurance exercise events), consider exercise associated hyponatremia (EAH), especially in the patient with altered mental status, normal blood glucose, and normal temperature.

DOCUMENTATION / KEY PERFORMANCE INDICATORS

- Patient assessment includes all types of medication/drug use and detailed past medical history
- Environmental assessment performed
- Cooling interventions considered and implemented
- Patient response to cooling interventions

Hydrogen Fluoride Exposure

E6

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
• Known or suspected hydrogen fluoride exposure Clinical symptoms and findings: 1. Irritation of eyes, eyelids, nose, and skin 2. Coughing, choking 3. If ingested: salivation, nausea, vomiting, diarrhea, abdominal pain 4. Painful burns 5. Cardiovascular collapse is possible	• Rapid recognition of the signs and symptoms of exposure to hydrogen fluoride

ALL EMS PROVIDERS

****CAUTION****: Hydrogen fluoride (HF) is used in many industrial processes such as glass etching, aluminum refining, and rodenticides, and has a sharp and irritating odor. HF is highly toxic for rescuers. Extreme caution must be taken. HF is intensely toxic to skin, eyes, mucous membranes, and the respiratory system. Exposure to high concentrations of fluorine is usually fatal due to pulmonary edema and respiratory damage. Severe burns can be caused within seconds. Consider PPE and SCBA.

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- Remove patient from contaminated area to fresh air as soon as possible
- Irrigate contaminated skin with water for at least 15 minutes
- Consider oxygen, if indicated

EMT AND ABOVE PROVIDERS

- ***EMT w/ IV Therapy Endorsement***
- Establish IV access

PARAMEDIC PROVIDERS

- For eye burns, irrigate with water for 5 minutes. Contain continuous irrigation with NS during transport
  - -As soon as possible, mix 5ml of 10% calcium gluconate per 40ml NS in 60ml syringe and flush eyes. Repeat as needed.
- Use calcium gel as may be provided for skin burns. Hand burns may have calcium gel inside of a vinyl glove
  - -Use gel if provided, or can create: mix 2ml of 10% calcium gluconate per 1 ounce KY jelly, and coat/massage affected area
- If respiratory symptoms and/or exposure, administer calcium nebulizer:
  - -Mix 1ml of 10% calcium gluconate with 3ml NS in nebulizer and administer nebulized
  - -Repeat as needed
- NS IV/IO—Administer fluid bolus (20ml/kg) for circulatory collapse
- If ingested, give soluble calcium such as milk and large amounts of IV fluids. In addition, administer Calcium Gluconate 1500mg-3000mg IV/IO
- Observe for pulmonary edema
  - -If pulmonary edema is present, consider use of CPAP
- Cardiac and oximetry monitoring are indicated, consider ETCO2 monitoring
- Rapid transport is indicated

Hypothermia

E7

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
Patient with suspected cold exposure **AND** core temperature <35°C (95°F) *Mild hypothermia is 32-35°C* *Moderate hypothermia is 28-32°C* *Severe hypothermia is < 28°C*	• Maintain hemodynamic stability • Prevent further heat loss • Rewarm the patient in a safe manner • Appropriate management of hypothermia-induced cardiac arrest • Prevent loss of limbs in the setting of frostbite.

ALL EMS PROVIDERS

- Follow [G27: Universal Care Guideline] as appropriate to scope of practice
- Maintain patient and rescuer safety - prevent cold injury to rescuers
- Handle gently
- Obtain a temperature
- Begin passive re-warming
  - Cover torso with warm blankets (rewarm trunk prior to extremities)
  - Heat packs to under arms, groin, and posterior neck (use barrier cloth to prevent burns)
- See NOTES regarding hypothermic cardiac arrest
- Evaluate for co-existing injury (e.g. trauma, drowning, etc…) and treat per appropriate protocols
- If any pulse is detected, do not perform CPR
- Administer warm humidified oxygen, if available
- Do not allow patients with moderate-severe hypothermia to stand as this may precipitate circulatory collapse
- Fight heat loss
  - Radiation (55-65%): Cover with warm blankets. Cover the head (not the face)
  - Conduction (15%): Separate the patient from cold surfaces
  - Convection (15%): REMOVE WET CLOTHING
  - Evaporation (15%): Cover with warm blankets. Cover the head (not the face)
- Handle patient gently; at core body temperatures less than 30°C (86°F) rough handling can precipitate lethal cardiac dysrhythmias
- Remove patient from cold environment if possible

EMT AND ABOVE PROVIDERS

- Obtain blood glucose and treat as indicated
- Notify receiving hospital as soon as practical

EMT w/ IV Therapy Endorsement

- Consider establishing IV access and provide warmed NS bolus when possible.

PARAMEDIC PROVIDERS

- Apply cardiac monitor
- If monitor reveals asystole, CPR alone is the mainstay of therapy
- If monitoring reveals an organized rhythm (other than VF or VT), but no pulses are detected, do not start CPR, but continue to monitor
- While this may represent Pulseless Electrical Activity (PEA), this may also represent situations in which the patient's pulses are not detectable, but remain effective due to decreased metabolic needs. In the case of PEA, the rhythm will deteriorate rapidly to asystole, in which case, CPR should be initiated. Given the potential to cause VF with chest compressions it may be better to maintain effective cardiac activity than to start CPR and cause VF .
- Upon ROSC, follow the standard Adult Post-ROSC protocol

NOTES

- For hypothermic patients in cardiac arrest, the following are contraindications for the initiation of resuscitation:
  - -Obvious fatal injuries (e.g. decapitation
  - -The patient exhibits signs of being frozen (such as ice in the airway)
  - -Chest wall rigidity such that compressions are impossible
  - -Danger to rescuers or rescuer exhaustion
  - -Avalanche victims buried ≥ 35 minutes with airway obstruction by ice or snow
  - -If a hypothermic patient clearly suffered cardiac arrest first and subsequently became hypothermic afterward with prolonged downtime between arrest and rescue, there is no rationale for initiating resuscitation and rewarming.

⚠ **NOTE:** Fixed and dilated pupils, apparent rigor mortis, and dependent lividity are not absolute contraindications to the initiation of resuscitation in the severely hypothermic patient.

HYPOTHERMIA: STAGES

Normal Cold Response (>35°C)
- Feels cold
- Shivering
- Vasoconstriction

Mild Hypothermia (35-32 °C)
- Maximum shivering at 35°C (95°F)
- Cold, pale skin (vasoconstriction)
- Pulse and BP may be normal or elevated
- Faster breathing
- Mild confusion, slurred speech, unsteady gait
- Amnesia

Moderate (32-28 °C) to Severe Hypothermia (<28 °C)
- Shivering stops
- Pulse slows
- Breathing slows
- Risk of cardiac arrhythmia (AFib)
- Intense vasoconstriction; surface pooling promotes "afterdrop"
- Decreased LOC
- Increased mortality in major trauma by 40-50%

Severe Hypothermia (<28 °C)
- Intense vasoconstriction—surface pooling promotes "afterdrop"
- As core temp drops, the risk of cardiac arrest increases
- Lethal cardiac dysrhythmias
- Non-cardiac pulmonary edema

STANDING ORDERS

STANDING ORDERS

HYPOTHERMIA

ENSURE SCENE SAFETY

Handle gently. Keep horizontal.

Stabilize injuries. Consider causes of altered mental status other than hypothermia.

SUSPECT HYPOTHERMIA

Normal mental status?

NO → **Shivering?**

YES → **Shivering?**

NO → **NOT HYPOTHERMIC**

YES → **Functioning normally/able to care for self?**

YES → **COLD STRESSED - NOT HYPOTHERMIC >35°C**

Reduce heat loss, increase heat production.

NO → **MILD HYPOTHERMIA 35-32°C**

Protect from further cooling using insulation and vapor barrier.
Seek shelter. Remove (cut off) wet clothing only with shelter.
Measure temperature if possible.
Passive warming: Support shivering with calorie replacement. After protected from heat loss: **No standing or walking for 30 min.**
Active warming is beneficial. (See moderate hypothermia, below.)

Uninjured, alert and shivering: may not need hospital.
Trauma patients: active rewarming, trauma center.
Asphyxiated patients: closest hospital for observation.

Shivering? YES → **MODERATE HYPOTHERMIA 32-28°C**

NO → **Conscious?** YES →

Treat as above

Active warming: apply heat to upper torso: chest, axilla and back. Use large heat pads, HPMK, Norwegian Heat Pac, forced-air.
Monitor. Circulatory access: peripheral IV or IO or femoral line.
Volume replacement: 40-42°C saline boluses. IV or IO **glucose.**
No standing or walking.

Hemodynamically stable: closest hospital.
Otherwise: hospital with ICU. Hospital with ICU and ECC capabilities if possible.

NO → **Signs of life** or **organized rhythm on ECG?** Respiration/pulse. Check for up to 1 min. YES → **SEVERE/PROFOUND HYPOTHERMIA <28°C**

Treat as above

Intubate or use supraglottic device.
Anesthetic and paralytic drugs: Lower dosage and extend dosing interval below 30°C.
- **Ventilation:** With advanced airway, ventilate at half standard (normothermic) rate.
- Without advanced airway, ventilate at standard rate or use $ETCO_2$ to guide ventilation.
- Use supplemental O_2, especially above 2500 m.
- Naso/orogastric tube if advanced airway in place.

CPR if no signs of life. (Can use cardiac monitor, $ETCO_2$, US to confirm)
- Chest compressions at standard normothermic rate.
- If <30°C VT or VF or AED advises shock: one shock at max power.
- Warm 1-2°C or >30°C prior to additional shocks.
- No vasoactive drugs until 30°C or above. From 30-35°C, increase dosing interval to twice as long as normal.
- CPR may be delayed or given intermittently if necessary to accomplish evacuation.
- No temperature cut-off for CPR

No CPR if signs of life or perfusing rhythm (unless no cardiac activity on US)
Consider transcutaneous pacing if bradycardic with hypotension.
Terminate CPR if potassium >12.

Hospital with ICU and ECC capabilities if possible.

NO → **Lethal injury?** or **Chest too stiff for CPR?** or **Avalanche burial >35 min** and **airway obstructed by snow?**

YES → **DEATH**

Do not resuscitate.

DURING TRANSPORT

Handle gently.
Keep horizontal.
Continue rewarming.
Warm ambulance or helicopter to 24°C if possible.

Local Cold Injury (Frostbite)

E8

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
Patient with localized cold injury such as frostbite For hypothermia: See [E7: Hypothermia]	• Prevent further heat loss • Rewarm the patient in a safe manner • Prevent loss of limbs in the setting of frostbite.

ALL EMS PROVIDERS

- Follow [G27: Universal Care Guideline] as appropriate to scope of practice
- Maintain patient and rescuer safety - prevent cold injury to rescuers
- Remove patient from cold environment
- Handle gently
- If the patient has evidence of frostbite, and ambulation/travel is necessary for evacuation or safety, avoid rewarming of extremities until definitive treatment is possible. Additive injury occurs when the area of frostbite is rewarmed then inadvertently refrozen. Only initiate rewarming if refreezing is absolutely preventable.
  -Protect area from further injury
  -Do not rub area of injury due to risk of exacerbating physical trauma
  -In general, field rewarming of a frostbite injury is **not** indicated.

PARAMEDIC PROVIDERS

- Pain management as clinically indicated

Riot Control Agents (Tear Gas / Pepper Spray)

E9

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
• Exposure to identifiable chemical agents (mostly used by law enforcement) such as pepper spray and/or tear gas are not intended to cause significant injury or fatality.	• Address side effects of exposed individuals • Decontamination of affected individuals • Minimize effect to EMS personnel

EXCLUSION CRITERIA

• This protocol is for commonly used, non-lethal riot control chemical agents. If the exposure does not fall in that category, or if the exposure is to an unknown agent, do not use this protocol. Note: This protocol is for chemical agent exposure. Should use of rubber projectiles be involved, refer to trauma protocols.

ALL EMS PROVIDERS

- Confirm law enforcement on scene and scene security prior to arrival
- Assess scene safety: Evaluate for hazards to EMS personnel, patient, or bystanders.
- If possible, assess/identify and document riot control agent used.
  - -If indicated, don appropriate PPE (Note: it is preferable to request LE assistance to move patient from contaminated environment to fresh air if possible).
  - -If indicated, determine number of patients and needed resources.
- Move affected individuals from contaminated environment into fresh air if possible.
- Remove contaminated clothing as able.
- Have patient remove contact lenses, if appropriate.
- Irrigation with water or saline is recommended when practical. Irrigation may facilitate resolution of symptoms and is recommended for dermal and/or ocular exposure.
  - -Do NOT irrigate with milk, baby shampoo, or other agents.
  - -Commercially available chemical agent decontamination wipes such as Sudecon® may be used on skin (not eyes), if available
- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- If patient is in respiratory distress, use [R2: Shortness of Breath—General]
- Exposed individuals with complete resolution of systems do not require transport. Patients with persistent symptoms warrant transport.
- EMS Personnel may also contact **WA Poison Center at 1-800-222-1222** for supplemental guidance.

Patient Safety Considerations

- Toxicity is related to duration of exposure and concentration of agent used
- Patients with pre-existing pulmonary conditions (e.g., asthma/COPD) may be prone to more severe respiratory effects.

NOTES	DOCUMENTATION / KEY PERFORMANCE INDICATORS
Symptoms most commonly experienced after exposure include: Eyes: tearing, pain, conjunctivitis, blurred vision Nose/Throat/Mouth: rhino rhea, burning/pain, trouble swallowing, drooling Lungs: Chest tightness, coughing, choking sensation, wheezing, dyspnea Skin: Burning, redness, irritation GI: Nausea and vomiting are rare (may be post-tussive)	• Type of riot control ageny (if known) • Symptoms being treated • Treatment provided • Response to treatment • Pre-existing respiratory conditions

SCUBA Diving Emergencies

E10

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
Patients with history of recent (within 48 hours) SCUBA diving activity who are exhibiting potential signs and/or symptoms of dive related illness/ injury, regardless of dive table compliance. This protocol is for SCUBA diving specific emergencies. If suspected drowning or submersion: See [E4: Drowning & Submersion]	• Rapid assessment and management of life-threatening injuries • Rescue from water-based environment • Transport to appropriate receiving facility

ALL EMS PROVIDERS

⚠ **NOTE:** SCUBA-related complications may occur anywhere, particularly when divers travel by air within 24-hours of diving.

SAFETY CONSIDERATIONS

- If patient is still in the water, seek safest and most rapid means of removal (within your scope of training) while minimizing risk of injury.
- Request specialized water rescue resources early, if needed
- If applicable, check for multiple patients (e.g. group dive table calculation error(s) or contaminated dive gases)

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- If in cardiopulmonary arrest, follow standard BLS/ACLS guidelines with careful clinical assessment for possible pneumothorax/tension pneumothorax
- Apply high flow oxygen (e.g. 15 lpm by non-rebreather) regardless of oxygen saturation
- If air embolism is suspected, if/when possible, place in left lateral recumbent position (patient lying with the left side down, knees drawn upward, and flat)
- If neurologic symptoms are present, obtain blood glucose. Perform and document a neuro exam
- Examine skin for rashes (may occur with decompression illness)
- If applicable, do not attempt to disassemble, turn off, or modify any of the dive equipment. The dive computer may provide information about the patients exposure to depth.

EMT AND ABOVE PROVIDERS

EMT w/ IV Therapy Endorsement

- Obtain IV access
- Consider IV bolus (**Adult:** up to 1 liter NS 1000ml, **Pediatric:** up to 20mL/kg)

PARAMEDIC PROVIDERS

- Apply cardiac monitor
- Use CPAP only with extreme caution and careful ongoing monitoring in setting of suspected SCUBA diving emergency due to risk of barotrauma/pneumothorax
- If diving injury (air embolism or decompression illness) suspected, rapid transport to a facility with decompression (hyperbaric chamber) therapy is indicated. Nearest facility is Virginia Mason.
- If possible obtain dive history and call Virginia Mason Transfer Center **206-341-1141** and communicate notification of plan to send patient for hyperbaric treatment.
- Additional available resources for consultation is the Divers Alert Network (DAN) Emergency Hotline available at **919-684-9111**
- **Contact On-Line Medical Control** for guidance as needed.

STANDING ORDERS

PARAMEDIC PROVIDERS (CONT.)

- Consider aeromedical transport to Virginia Mason if dive emergency (decompression illness or air embolism suspected
- Consider / assess for barotrauma
- Attempt to obtain and document dive history where possible
  - -Number of dives in recent history (days)
  - -"Bottom time" in dives
  - -Dive profiles
  - -Maximum depth
  - -Rate of ascent
  - -Safety stops utilized, if any
  - -Dive gas (i.e. air vs. mixed gases such as Nitrox, Heliox, or Trimix)
  - -Timing of onset of symptoms
  - -History of altitude exposure after diving (air travel)

NOTES

Summary of Diving Related Emergencies:

- Decompression illness may have a variety of presentations depending on system affected (e.g., skin, joint(s), pulmonary, neurologic), and can occur even when a diver does not exceed dive table limits

Arterial Gas Embolism (AGE)

- If a diver ascends without exhaling, air trapped in the lungs expands and may rupture lung tissue. This injury, called pulmonary barotrauma, involves release of gas bubbles into the arterial circulation. Circulation distributes them to body tissues in proportion to the blood flow. Since the brain receives the highest proportion of blood flow, it is the main organ in which bubbles may interrupt circulation if they become lodged in small arteries.
- Consider if a diver surfaces unconscious and remain so or loses consciousness within 10 minutes of surfacing.
- AGE may involve minor symptoms of neurological dysfunction, such as sensations of tingling or numbness, weakness without obvious paralysis, or complaints of difficulty in thinking but no apparent confusion. In these cases, there is time for a more thorough evaluation by a diving medical specialist to rule out other causes.
- See table for list of signs and symptoms

Table 1 (Signs and Symptoms)

Arterial Gas Embolism	Decompression Sickness
Cardiac Arrest	Pain in joints or arm, leg or torso muscles
Unconsciousness	Numbness, tingling and/or paralysis
Apnea	Muscle weakness or paralysis
Seizures	Difficulty urinating
Paralysis or weakness	Confusion, personality changes or bizarre behavior
Dizziness	Amnesia
Disorientation	Shortness of breath
Visual blurring	Dizziness or vertigo
Chest pain	Coughing up bloody, frothy sputum
Decreased Sensation	A blotchy rash
Bloody froth from mouth or nose	Skin itch
	Unusual fatigue

SECTION 7:
RESPIRATORY EMERGENCIES

TABLE OF CONTENTS

Airway Management—General

R1

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
Patients with failure to oxygenate, ventilate, or protect their airway due to a decreased level of consciousness or respiratory failure.	• Provide effective oxygenation and ventilation • Recognize and alleviate respiratory distress • Provide the least invasive necessary interventions to patients in need of respiratory support • Identify a potentially difficult airway in a timely manner

ALL EMS PROVIDERS

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- Ensure airway patency using head-tilt/chin-lift or jaw thrust technique as appropriate
- Initiate oxygen administration as appropriate with target SPO2 > 94%
- Assist ventilations with bag-valve mask (BVM) using two-person technique (when possible), if indicated
- Consider oropharyngeal airway placement
- Suction airway, as needed

EMT AND ABOVE PROVIDERS

- Consider nasopharyngeal airway placement

EMT w/ SGA Endorsement

- Consider Supraglottic Airway (i-Gel) placement

PARAMEDIC PROVIDERS

- Confirm placement of existing airway adjuncts and consider leaving in place if effective
- If less invasive methods are ineffective, consider:
  - ⇒ Continuous Positive Airway Pressure (CPAP)
  - ⇒ Endotracheal intubation
    - -Video laryngoscopy should be used for all laryngoscopies
    - - Cuffed endotracheal tubes are recommended for patients of all ages who require endotracheal intubation provided that attention is paid to ET tube size, position, and cuff inflation pressure.
- Perform continuous SPO2, ETCO2, and cardiac monitoring
- Refer to appropriate medication dosing protocols
- Consider gastric decompression to improve oxygenation and ventilation when there is obvious gastric distention
- Surgical cricothyroidotomy should be considered when a patient cannot be oxygenated/ventilated effectively by previously mentioned interventions
- If there is an inability to establish either an adequate airway or achieve adequate ventilation the patient should be transported to the nearest emergency department

Airway Management—General (Cont.)

R1

NOTES

Patient Safety Considerations

- Avoid excessive pressures or volumes during Bag-valve mask ventilation
- Where possible, limit endotracheal intubation, unless less invasive methods fail, since it can be associated with aspiration, oral trauma, worsening of cervical spine injury, malposition of the ET tube (right mainstem intubation, esophageal intubation), or adverse effects of sedation, especially in children
- Once a successful SGA/Endotracheal tube has been placed, obstruction or displacement of the tube can have deleterious effects on patient outcome
- Tubes should be secured with either a commercial tube holder device or tape

Key Considerations

- When compared to the management of adults with cardiac arrest, paramedics are less likely to attempt endotracheal intubation in children with cardiac arrest. Further, paramedics are more likely to be unsuccessful when intubating children in cardiac arrest and complications such as malposition of the ET tube or aspiration can be nearly three times as common in children as compared to adults.
- Supraglottic airway placement is preferred for the initial management of the pediatric airway.
- Supraglottic airway placement is appropriate for management of cardiac arrest
- Use continuous waveform capnography to detect end-tidal carbon dioxide (ETCO2). This is an important adjunct in the monitoring of patients with respiratory distress, respiratory failure, and those treated with positive pressure ventilation. It should also be used as the standard to confirm successful SGA and endotracheal tube placement.

DIFFERENTIAL DIAGNOSIS CONSIDERATIONS

- Pulmonary embolism
- Asthma
- Airway obstruction
- Hypoxia
- Respiratory failure
- Croup
- Epiglottitis
- Tension/Pneumothorax

DOCUMENTATION / KEY PERFORMANCE INDICATORS

- Respiratory rate
- SPO2 and ETCO2
- Presence of peri-intubation hypoxia, bradycardia, hypotension
- Document ETCO2 value and capnograph waveform initially after intubation, with each set of vital signs, when the patient is moved, and at the time of transfer of care in the ED

Shortness of Breath—General

R2

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
Patient with shortness of breath	• Evaluation for acute coronary syndrome • If specific underlying cause is suspected, refer to the applicable protocol

ALL EMS PROVIDERS

Commonly, it is difficult with the tools available EMS clinicians to reliably determine the specific cause of shortness of breath (dyspnea). Therefore, all patients should have transport for emergency medical evaluation recommended. Shortness of breath has a wide differential diagnosis. A focussed clinical history, exam, and evaluation are warranted and the provider should choose the protocol(s) that best matches the clinical and exam findings. Both the bedside report and the documented Patient Care Report (PCR) should describe the clinical assessment and thought process involved in patient management.

Suspected Foreign Body

Procedure PR6

Suspected Bronchiolitis

Protocol P10

Suspected Croup

Protocol P11

Suspected Epiglottitis

Protocol P12

Uncertain Etiology

Protocol R4

Suspected Traumatic / Chest Injury

Protocol T7

SHORTNESS OF BREATH

Suspected Asthma/COPD

Protocol R3

Suspected Anaphylaxis

Protocol M5

Suspected Cardiac Origin

Protocol C9

Shortness of Breath—Suspected Bronchospasm and/or Respiratory Infection

R3

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
Respiratory symptoms or distress with wheezing or decreased air entry thought to be from bronchospasm from reactive airway disease, asthma, COPD, or similar process **OR** Symptoms and/or exam findings of a respiratory infection.	• Alleviate respiratory distress due to bronchospasm • Promptly identify and intervene for patients who require escalation of therapy • Deliver appropriate therapy by differentiating other causes of respiratory distress/SOB

ALL EMS PROVIDERS

- Follow [G27: Universal Care Guideline] as appropriate to scope of practice
- Clinically evaluate patient to guide management pathway
- When possible, attempt to obtain history including:
  - A. Onset of symptoms
  - B. Concurrent symptoms (fever, cough, rhinorrhea, tongue/lip swelling, rash, foreign body, etc.)
  - C. Usual triggers of symptoms (smoke exposure, URI, sick contacts, etc.)
  - D. Identify if previous history of hospitalization, CPAP/Bi-PAP use, ICU admission, or prior intubation
- Focused physical exam should include:
  - A. Full set of vitals including pulse oximetry and respiratory rate
    - i. Consider temperature
  - B. Air entry and movement
  - C. Breath sounds (wheezes, rhonchi, rales, diminished, etc.)
  - D. Additional signs of distress (grunting, nasal flaring, retractions, stridor, or inability to speak full sentences)
  - E. Color (pallor, cyanosis)
  - F. Mental status (alert, tired, altered, unresponsive) - be aware that apprehension, anxiety, and combativeness may be early signs of impending respiratory failure
- Apply oxygen as indicated
  - -Escalate nasal cannula > simple face mask > non-rebreather > BVM as indicated
  - -Patients with hypoxia and respiratory distress should receive oxygen to maintain an oxygen saturation goal of ≥ 94% (or higher if need for intubation with full preoxygenation anticipated)
  - -Patients with chronic lung disease (e.g. COPD/emphysema) who are not in respiratory distress and who are at risk for loss of hypoxic drive/CO2 retention should be titrated to an O2 saturation of 89-91% when possible.
  - -When indicated, particularly in pediatric patients, suction the nose and or mouth if excessive secretions are present.

EMT AND ABOVE PROVIDERS

EMT w/ IV Therapy Endorsement

- Consider establishing IV access

PARAMEDIC PROVIDERS

- Consider monitoring end-tidal CO2 as clinically indicated
- Consider 12-Lead EKG as clinically indicated based on suspicion for cardiac pathology or component.
- Rx Consider nebulized ***Albuterol*** (2.5-10mg). ***Albuterol*** should be administered to all patients in respiratory distress with clear signs of bronchospasm - particularly in the setting of known asthmatics.
  - A. Repeat PRN titrated to ongoing level of distress and bronchospasm.
  - B. Rx Co-administer ***Ipratropium*** (0.5mg) independently or in form of DuoNeb™ in setting of moderate to severe distress and/or history of COPD. May repeat x1 in 20 minutes.

Shortness of Breath—Suspected Bronchospasm and/or Respiratory Infection

R3

STANDING ORDERS

PARAMEDIC PROVIDERS

- For moderate or severe asthma/COPD only: If situation permits, consider
  Magnesium
  -**Adult dose**: 2 grams
  -**Pediatric dose:** (age >2 years) 40-50mg/kg up to 2 grams IV over 10 minutes
- In setting of impending respiratory failure consider
  Epinephrine (1mg/mL concentration)
  -**Adult dose**: 0.3mg IM
  -**Pediatric dose:** 0.01mg/kg IM (minimum dose 0.15mg, maximum dose 0.3mg)

- Consider Non-invasive Ventilation (C-PAP, Bi-PAP) for severe respiratory distress or impending respiratory failure.
- In the critically ill asthmatic, consider ***Epinephrine*** drip
- To create an Epinephrine drip, take 1mg ***Epinephrine*** (either 1mg/mL, formerly 1:1,000 or 0.1mg/mL, formerly 1:10,000) and inject into a 1 L bag of normal saline. (**NOTE:** LABEL BAG). This creates a concentration of ~1mcg/ml. Administer up to Adult: 10mL min (10mcg/min) IV.
- Proceed with intubation in setting of respiratory failure.
  NOTE: In the patient with severe asthma and/or COPD, the patient is at risk for airtrapping and subsequent barotrauma. Careful management post intubation is indicated.
- Consider ***Acetaminophen*** in the setting of fever.
  -**Adult dose**: 1 gram PO
  -**Pediatric dose:** 15mg/kg PO
- Transport in position of comfort

NOTES

Shortness of breath has a wide differential diagnosis. It is not always possible to definitively identify a specific etiology of shortness of breath in the prehospital environment, and sometimes multi-factorial components may be present. A focused clinical history, exam, and evaluation are warranted and the provider should choose the protocol(s) that best matches the clinical and exam findings. Both the bedside report and the documented Electronic Patient Care Report (ePCR) should describe the clinical assessment and thought process involved in patient management.

Key Considerations

- Nebulizer droplets can carry viral particles, so additional PPE should be considered, including placement of a surgical mask over the nebulizer to limit droplet spread
- In the asthmatic patient, pharmacologic intervention should take priority over CPAP/BiPAP and be given in line with CPAP/BiPAP

DIFFERENTIAL DIAGNOSIS CONSIDERATIONS

- Anaphylaxis
- Bronchiolitis
- Coup
- Epiglottitis
- Foreign body aspiration
- Submersion/drowning
- Congestive heart failure
- Trauma
- COPD
- Asthma

DOCUMENTATION / KEY PERFORMANCE INDICATORS

- Respiratory rate
- Oxygen saturation
- End-tidal CO2
- Use of accessory muscles
- Breath sounds
- Air entry
- Mental status
- Skin signs / color

Shortness of Breath—Uncertain Etiology

R4

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
Shortness of breath without a clinically identified or suspected etiology.	• Alleviate respiratory distress due to clinically identified causes • Promptly identify and intervene for patients who require escalation of therapy • Deliver appropriate therapy by differentiating other causes of respiratory distress/SOB

EXCLUSION CRITERIA

Anaphylaxis—See [M5: Allergic Reaction]
Suspected Croup—See [P11: Croup]
Suspected Epiglottitis—
See [P12: Epiglottitis]
Suspected Foreign Body—
See [PR6: Foreign Body Airway]
Suspected Cardiac-Chest Pain—
See [C9: Chest Pain– Suspected Cardiac]
Suspected Cardiac-STEMI—See [C11: STEMI]
Suspected Cardiac-ADHF— See [C1: ADHF]

ALL EMS PROVIDERS

- Follow [G27: Universal Care Guideline] as appropriate to scope of practice
- Clinically evaluate patient to guide management pathway
- When possible, attempt to obtain history including:
  - A. Onset of symptoms
  - B. Concurrent symptoms (fever, cough, rhinorrhea, tongue/lip swelling, rash, foreign body, etc.)
  - C. Usual triggers of symptoms (smoke exposure, URI, sick contacts, etc.)
  - D. Identify if previous history of hospitalization, CPAP/Bi-PAP use, ICU admission, or prior intubation
- Focused physical exam should include:
  - A. Full set of vitals including pulse oximetry and respiratory rate
    - i. Consider temperature
  - B. Air entry and movement
  - C. Breath sounds (wheezes, rhonchi, rales, diminished, etc.)
  - D. Additional signs of distress (grunting, nasal flaring, retractions, stridor, or inability to speak full sentences)
  - E. Color (pallor, cyanosis)
  - F. Mental status (alert, tired, altered, unresponsive) - be aware that apprehension, anxiety, and combativeness may be early signs of impending respiratory failure
- Apply oxygen as indicated
  - -Escalate nasal cannula > simple face mask > non-rebreather > BVM as indicated
  - -Patients with hypoxia and respiratory distress should receive oxygen to maintain an oxygen saturation goal of ≥ 94% (or higher if need for intubation with full preoxygenation anticipated)
  - -Patients with chronic lung disease (e.g. COPD/emphysema) who are not in respiratory distress and who are at risk for loss of hypoxic drive/CO2 retention should be titrated to an O2 saturation of 89-91% when possible.
  - -When indicated, particularly in pediatric patients, suction the nose and or mouth if excessive secretions are present.

EMT AND ABOVE PROVIDERS

EMT w/ IV Therapy Endorsement

- Consider establishing IV access

Shortness of Breath—Uncertain Etiology (Cont.)

R4

STANDING ORDERS

PARAMEDIC PROVIDERS

- If situation permits, consider 12-Lead EKG as clinically indicated based on suspicion for cardiac pathology or component.
- Consider Non-invasive Ventilation (C-PAP, Bi-PAP) for severe respiratory distress or impending respiratory failure.
- Proceed with intubation in setting of respiratory failure. See **Intubation Protocol**.

⚠ **NOTE:** In the patient with severe asthma and/or COPD, the patient is at risk for air-trapping and subsequent barotrauma. Careful management post intubation is indicated. (See Special Circumstances section of the Intubation Protocol).

℞ Consider ***Acetaminophen*** in the setting of fever.
Adult Dose: 1 gram PO
Pediatric Dose: 15mg/kg PO

- Transport in a position of comfort

NOTES

Shortness of breath has a wide differential diagnosis. It is not always possible to definitively identify a specific etiology of shortness of breath in the prehospital environment, and sometimes multi-factorial components may be present. A focused clinical history, exam, and evaluation are warranted and the provider should choose the protocol(s) that best matches the clinical and exam findings. Both the bedside report and the documented Electronic Patient Care Report (ePCR) should describe the clinical assessment and thought process involved in patient management.

Key Considerations

• Nebulizer droplets can carry viral particles, so additional PPE should be considered, including placement of a surgical mask over the nebulizer to limit droplet spread

• In the asthmatic patient, pharmacologic intervention should take priority over CPAP/BiPAP and be given in line with CPAP/BiPAP

DIFFERENTIAL DIAGNOSIS CONSIDERATIONS

- Anaphylaxis
- Bronchiolitis
- Coup
- Epiglottitis
- Foreign body aspiration
- Submersion/drowning
- Congestive heart failure
- Trauma
- COPD
- Asthma

DOCUMENTATION / KEY PERFORMANCE INDICATORS

- Respiratory rate
- Oxygen saturation
- End-tidal CO2
- Use of accessory muscles
- Breath sounds
- Air entry
- Mental status
- Skin signs / color

Tracheostomy Emergencies

R5

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
• Any adult or pediatric patient with an existing tracheostomy greater than 7 days post placement and a mature stoma tract with a respiratory/ventilator emergency	• Obtain and maintain adequate oxygenation and ventilation • Understand how to troubleshoot a tracheostomy emergency
EXCLUSION CRITERIA	
• Patients without tracheostomies and patients with a tracheostomy less than 7 days post placement (i.e. no mature stoma tract)	

ALL EMS PROVIDERS

Patient Management (Respiratory Complaint)

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- Monitoring of pulse oximetry and end tidal CO2 is indicated for patients on a ventilator
- If patient is in respiratory distress or hypoxic on ventilator, immediately disconnect from ventilator circuit and attempt to ventilate with BVM while assessing/troubleshooting
- If unable to ventilate through tracheostomy tube, attempt to ventilate with BVM sealed over mouth and nose while occluding tracheostomy tube
- If airway obstruction is encountered, suction tracheostomy with appropriate size suction catheter (To determine appropriate size suction catheter, double the size of the tracheotomy number on the collar of the tracheostomy tube):
  -Advance catheter gently until resistance is felt
  -Withdraw about 2cm and then apply continuous suction while withdrawing
  -Suction procedure should not exceed 10 seconds
- If obstruction persists, remove tracheostomy tube and attempt to ventilate through stoma using BVM with pediatric mask

PARAMEDIC PROVIDERS

- Adequate oxygenation without respiratory distress suggests that the tracheostomy is patent and functioning correctly
- Inadequate oxygenation or ventilation, respiratory distress, or air hunger in a patient with a tracheostomy should first be assessed as potentially having a tracheostomy obstruction.
- Neck or chest crepitus on palpation suggests tracheostomy obstruction
- Evaluate for Dislodgement, Obstruction, Pneumothorax, and/or Equipment Problems (mnemonic DOPE):
  - A. Dislodgement of misplaced tracheostomy (e.g. decannulation)
    - Assess of subcutaneous air which may indicate the tracheostomy is not in the trachea
    - Directly visualize the tracheotomy and the stoma (remove any bandages/clothing/etc…) to assure tracheostomy cannula is properly seated in the stoma.
  - B. Obstruction or secretions in tracheostomy
    - Assure tracheostomy is patent. Especially in pediatric tracheostomy patients with significant respiratory distress, plugging or dislodgement/decannulation of the tracheotomy is the most likely problem until proven otherwise.
    - Auscultate breath sounds.
  - C. Pneumothorax
    - See [T1: Trauma Management—General]
  - D. Equipment connection problems
    - Verify all connections
    - Verify status of oxygen tank
- For patients with mild respiratory distress and adequate oxygenation:
  - E. Suction to clear any obstructions
    - If the patient is not on a ventilator, remove any cap, filter, or speaking valve that may be connected to the tracheostomy

- Provide passive oxygenation with high flow oxygen over nose/mouth and stoma to avoid hypoxia during procedure
- Remove inner cannula if present
- If needed, use 1–3 mL sterile saline directly into the tracheostomy to loosen secretions and help clear obstruction
- Pass appropriately sized suction catheter through tracheostomy (To determine appropriate size suction catheter, double the size of the tracheotomy number on the collar of the tracheostomy tube).
- Once obstruction is cleared, assist ventilations as needed with BVM to tracheostomy tube, provide passive oxygenation or return patient to ventilator if patient on chronic ventilator via tracheostomy

• For patients with **significant/severe respiratory distress and/or inadequate oxygenation:**

F. If the patient is on ventilator, remove from vent and attempt BVM ventilation.

G Suction to clear any obstructions:

- If the patient is not on a ventilator, remove any cap, filter, or speaking valve that may be connected to the tracheostomy.
- Provide passive oxygenation with high flow oxygen over nose/mouth and stoma to avoid hypoxia during procedure
- Remove inner cannula if present
- Attempt to pass appropriately sized suction catheter through tracheostomy (To determine appropriate size suction catheter, double the size of the tracheotomy number on the collar of the tracheostomy tube).
- If needed, use 1–3 mL sterile saline directly into the tracheostomy to loosen secretions and help clear obstruction
- If suction catheter will not pass, the tracheostomy needs to be changed emergently due to obstruction. (See below)
- Once obstruction is cleared, assist ventilations as needed with BVM to tracheostomy tube, provide passive oxygenation or return patient to ventilator if patient on chronic ventilator via tracheostomy tube.

H. Perform Emergent Tracheostomy change

- Determine size of tracheostomy needed from imprint on existing tracheostomy flange/collar. If no replacement tracheostomy is available, an endotracheal tube of the same size or smaller may be used.
- Ventilate or provide passive oxygenation during procedure. Attempt to ventilate from the upper airway or direct high flow O2 to stoma during attempts.
- Deflate cuff (if present)
- Remove ties and obstructed tracheostomy
- Immediately replace with new (lubricated) tracheostomy, remove obturator, and begin BVM ventilation. Never use force.

  For difficult replacement, the following strategies can be attempted:

  -Reposition patient with neck extended

  -Ensure proper lubrication and re-attempt approach at a 90-degree angle from long axis of neck (i.e., from the side) to enter the stoma and then rotate back along the long axis to complete insertion

  -Attempt reinsertion with a smaller sized tracheostomy or endotracheal tube
- Confirm correct placement with waveform capnography, breath sounds, oxygen saturation, chest rise
- Secure tracheostomy with tracheostomy ties or tube with appropriate holder

• Consider the use of humidified air or oxygen in any patient with tracheostomy, if available

• Tracheostomy cuff may need to be inflated to provide adequate oxygenation and ventilation when positive pressure ventilation is required. However, cuff should never be inflated if positive pressure ventilation is not being performed, or in patients with a Passy-Muir (teal colored) speaking valve in place

Tracheostomy Emergencies

R5

PARAMEDIC PROVIDERS (CONT.)

Patient Safety Considerations:

1. Especially in pediatric tracheostomy patients with significant respiratory distress, plugging or dislodgement of the tracheostomy is the problem until proven otherwise. Signs and symptoms of respiratory distress, cyanosis, ventilator alarms sounding, decreased level of consciousness, decreased SpO2 or cardiac arrest in patients with a tracheostomy, as well as bradycardia in pediatric tracheostomy patients should be presumed due to a tracheostomy obstruction.
2. Laryngectomy patients and some patients with congenital or surgical airway abnormalities cannot be orally intubated. Patients with tracheostomy alone (e.g., for mechanical ventilation) and no airway abnormalities should be able to be orally intubated.
3. For recent tracheostomy patients who present with bleeding from the tracheostomy in the early (up to 3 weeks) postoperative period, a tracheoinnominate arterial bleed is an uncommon and life-threatening complication (0.7% incidence and a 90% mortality rate)
    - 50% of these patients present initially with a smaller sentinel bleed/hemoptysis which appears to have stopped
    - Inflation of the tracheostomy balloon to the maximum is a potential temporizing measure until definitive care can be provided, even overinflation may be needed. If the tracheostomy is uncuffed, it can be replaced with a cuffed endotracheal tube and the balloon maximally inflated
    - Any patient in the early postoperative period (within a month of surgery) with hemoptysis or bleeding from a tracheostomy should be transported for evaluation, even if bleeding has stopped
4. Prompt tracheostomy replacement is important. Delays allow for narrowing of the stoma and can make recannulation more difficult

NOTES

- Tracheostomy tube components
    a. Outer cannula: the tracheostomy size is stamped on the collar
    b. Inner cannula: not found in all tracheostomies
        -Not commonly used in pediatric patients.
        -Removed by gently twisting a quarter turn to the left and pulling out.
    c. Balloon cuff: protects lower airway from secretions/blood from above, allows for better mechanical ventilation .
    d. Collar: includes imprint of tube size and attachment for umbilical tape/tracheostomy ties .
    e. Obturator: stiffens and provides shape to tracheostomy tube to facilitate insertion. Must be removed for ventilation.

- A bougie may aid in the placement of an endotracheal tube into a mature stoma.
- An inner cannula may be required to ventilate through the tracheostomy tube
- Uncuffed and fenestrated cuffed tracheostomy tubes may not protect the patient from aspiration
- If transporting a patient with a tracheostomy either in an emergency or routine transport, the patients home tracheostomy equipment (e.g., “Go bag”) should accompany them. The equipment that needs to be at the bedside to ensure safety includes appropriately sized French suction catheters, operating suction system, and spare tracheostomy tubes. Sterile saline, sterile gloves and water-soluble medical lubrication packets should also be available. Most tracheostomy patients will maintain a kit with these supplies to travel with
- Inadvertent tracheostomy decannulation incidence is the second most frequent life- threatening pediatric tracheostomy complication, occurring at rates of 0.35–15%, with the vast majority occurring more than 7 days postoperatively
- Tracheostomy obstruction can occur for several reasons, including mucus plugging, abnormal/excess granulation tissue, tracheomalacia causing collapse of the tracheal wall around the tube
- IF applicate (home ventilator set up): Do not replace a heat moisture exchange (HME) filter cap if soiled or wet as it can impede airflow

SECTION 8:
TEMPORARY & PILOT PROTOCOLS

TABLE OF CONTENTS

Community Assistance Referral and Education Services (CARES) Programs

TM1

STANDING ORDERS

Introduction

Under the community assistance referral and education services program established by RCW 35.21.930, a fire department may provide outreach and assistance to the residents of its jurisdiction in order to improve population health and advance injury and illness prevention. The medical oversight for these programs is provided by the EMS medical program director as authorized in RCW 35.21.930, 18.71, 18.73, 70.168, and WAC 246.976.

Skagit County residents may be eligible to receive services from the local community assistance referral and education services program if they have:

1. Been identified as a high utilizer of the 911 system. A high utilizer is defined as a patient with a call volume that may overwhelm the local EMS resources.
2. A referral from local community agencies. Community partners who request additional outreach help for their clients.
3. Been identified as a risk for hospital readmission. Patients who are recently released from hospital needing assistance to follow-up appointments, medication compliance, or fall risk assessment.

Overview

In Skagit County, a CARES provider is an individual, who may be affiliated with a Community Paramedic or Mobile Integrated Health Services program, who in addition to utilizing all standard basic or advanced life support EMS protocols, has completed MPD specialized training under WAC 246-976-024. CARES Providers may perform duties through assignment to an emergency response-capable vehicle equipped with BLS or ALS equipment appropriate to the providers level of certification.

Activities will be focused on those residents whose needs, and/or EMS utilization, may best be served by a more focused approach. Activities may include the administration of medications, picking up and delivering medications to people who lack transportation, or performing various skills and procedures within current scope of practice and in accordance with established protocols under the direction of the Skagit County Medical Program Director. CARES Providers may also transport people who do not require ambulance transport to destinations other than a hospital emergency department.

CARES providers may work with other community partners trained to conduct activities that may include intensive care management of the social and logistical needs of the client. This partnership facilitates patient use of, and integration with social/medical support services with a primary goal of decreasing 911 utilization for non-emergent purposes and connecting patients to appropriate resources.

Licensed ambulance or aid agencies in Skagit County who wish to engage in Community Paramedic / Mobile Integrated Health programs utilizing certified EMS personnel (EMR, EMT, or Paramedic) must provide a program outline/proposal for approval by the MPD. Agencies will be required to document self-generated patient encounters using the approved CAD nature code “MIH VISIT” and complete a patient care record in ESO using the call type “MIH VISIT” and the impression “Patient Assist Only” and to meet the performance measurement and annual reporting requirements in RCW 35.21.930

Naloxone Leave Behind Program

TM2

STANDING ORDERS

CRITERIA

Patients who are reversed from Opioid overdose and refuse transport to the Emergency Department

AND/OR

Patients or community members who are at risk of experiencing or witnessing an opioid overdose

ALL EMS PROVIDERS

Background

The use of "leave behind" Naloxone kits may decrease patient mortality and morbidity related to Opioid use by reducing the "down-time" of overdose patients, decreasing rates of hospitalization and the incidence of costly long-term care related to anoxic brain injury. The Naloxone "Leave Behind" Program provides a kit that can be offered by EMS personnel to those who are close to someone who is at risk of overdose. By offering a "Leave Behind" Naloxone kit to the patient or family during an Opioid Overdose encounter by EMS, EMT's and Paramedics might have an opportunity to talk about the danger of the overdose as well as where and individual or family may go to get help if they are interested.

After EMS patient care is complete, while on the scene with the patient or bystanders, EMS personnel can offer a Naloxone Kit that contains two doses of naloxone nasal spray and information to seek recovery help and social services. It is important to keep in mind that the distribution of the kit is not the solution to the opioid epidemic, but it serves as a mechanism to begin the conversation of access to care, treatment, and recovery. Skagit County Public Health will also continue to follow-up with individuals after an overdose encounter and assist with providing them available resources.

Distribution

- Skagit County EMS will stock and re-supply the Naloxone Kits for agencies depending on availability from the Department of Health
- Naloxone Kits may be carried on ALS and/or BLS units of those agencies approved to participate in the program
- Naloxone Kits may be provided to the patient or family only after appropriate patient assessment and treatment of an opioid overdose
- If Naloxone was administered by a bystander or family member/friend on scene prior to EMS arrival, a Naloxone Kit can be given for resupply
- EMS personnel are required to track and report to Skagit County EMS any time a Naloxone Kit is distributed via this program. Documentation will be completed in the electronic patient care report.
- Additional kits will be provided for storage at fire stations for the restocking of apparatus and to offer to the public that may ask about the program
- To obtain replacement Naloxone Kits, agencies should utilize the Skagit County EMS electronic, web-based request form

Naloxone Leave Behind Program (Cont.)

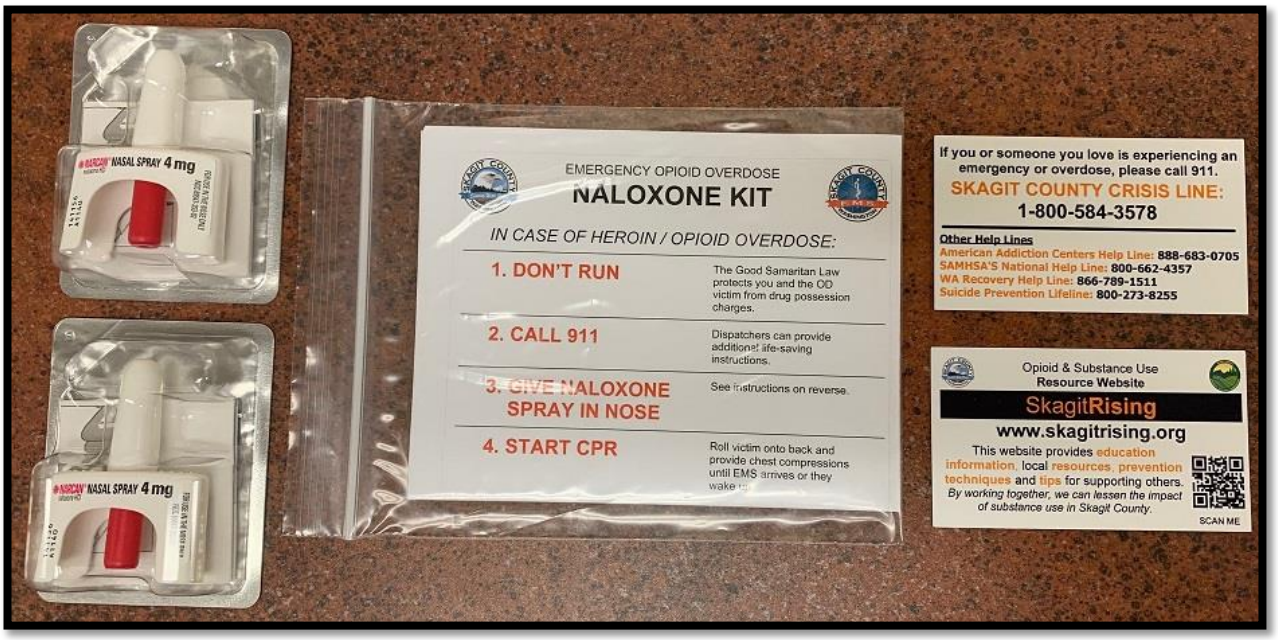
TM2

Procedure

- The Naloxone Kit shall not be used by EMS to reverse an opioid overdose (except in extenuating circumstances where no other EMS Naloxone is available). The Naloxone Kits are not meant to replace EMS stock but rather to "Leave Behind" at the scene of an Opioid overdose for high risk patients.
- The kits can be offered to a parent, family member or concerned house/room mate who is living with someone at risk. In this case, please document in ESO for that call, the required reporting questions for the naloxone "leave behind" program using the "**Syndromic Surveillance - Overdose**" Form.
- Ideally, the Skagit County EMS MPD wants all overdose patients to be transported to the Emergency Department however, if a patient chooses to AMA, please provide detailed documentation of the encounter in the narrative. If a naloxone kit is left with the patient, obtain as much information as possible for the required reporting data. The reporting questions are provided in ESO under the using the "**Syndromic Surveillance - Overdose**" Form. This required information will be prompted from that form.

Packaging

Each Naloxone Kit contains (2) two doses of 4mg of Naloxone/Narcan given as a spray in the nose. The kit also contains instructions on the outside of the kit and a two-sided resource card inside the plastic bag with information about local
outreach services offering opioid/chemical dependency counseling, medical assisted withdrawal and addiction treatment.



Skagit County EMS in partnership with Skagit County Public Health will continue to request Naloxone supplies through the State Department of Health as long as this program continues. However, part of the agreement is to provide prompt reporting to the State in an effort to gauge the effectiveness of the program. It's also important to know how EMS can help prevent deaths and to participate in this public health epidemic from this data. Please be diligent in the reporting requirements and in the description of events with the narratives when distributing the Naloxone "Leave Behind" Kits.

Medication Shortage Approved Alternatives

TM3

Medication	Approved Use	Alternative Medications	Approved Indication, Route & Dosage
Rapid Sequence Induction (RSI)			
Succinylcholine	Induce Paralysis during RSI	Non-Depolarizing Neuromuscular Blocker (Rocuronium, Vecuronium)	Induce Paralysis during RSI; IV/IO only 1. **Rocuronium**- 1-1.2 mg/kg 2. **Vecuronium**- 0.3-0.4 mg/kg
Pancuronium	Maintain Paralysis after intubation	Other long acting Non-Depolarizing Neuromuscular Blocker (Rocuronium, Vecuronium) THIS IS LAST CHOICE. INFORM MPD IF NEEDING TO ORDER PANCURONIOUM (require special education/QA prior to deployment)	Maintain Paralysis; IV only 1. **Rocuronium**-0.1-0.2 mg/kg q 20-30 min. 2. **Vecuronium**- 0.1mg/kg q 20-30 min. 3. **Pancuronium**-0.015-0.1 mg/kg q 30-60 min.
Vecuronium	Maintain Paralysis after intubation	Other long acting Non-Depolarizing Neuromuscular Blocker (Rocuronium, Pancuronium) USE ONLY IF SUCCINYLCHOLINE OR ROCURONIUM BOTH UNAVAILABLE	Maintain Paralysis; IV/IO only 1. **Rocuronium**-0.1-0.2 mg/kg q 20-30 min. 3. **Pancuronium**-0.015-0.1 mg/kg q 30-60 min.
Rocuronium	Maintain Paralysis after intubation	Other long acting Non-Depolarizing Neuromuscular Blocker (Vecuronium, Pancuronium)	Maintain Paralysis; IV/IO only 1. **Vecuronium**- 0.1mg/kg q 20-30 min. 2. **Pancuronium**- 0.015-0.1mg/kg q 30-60 min.
Etomidate	Sedative agent during RSI;	Benzodiazepines, if available. Ketamine Fentanyl USE KETAMINE 1st, FENTANYL 2nd	1. **Midazolam** 3-5 mg IV/IO 2. **Diazepam** 5 – 10 mg IV/IO 3. **Ketamine*** 1-2 mg/kg IV/IO 4. **Fentanyl** 300 mcg IV/IO *Peds 1-2 mcg/kg IV/IO*
Anticonvulsant; Sedation			
Diazepam	Anticonvulsant; Sedation during RSI except head injury & trauma; Excited delirium or severe agitation; Sedation prior to cardioversion;	Other available Benzodiazepines; In order of preference: Midazolam, Lorazepam. Ketamine (may be used for sedation, not for anticonvulsant)	1. **Midazolam**- 3-5 mg IV/IO, IM; *Peds-0.1-0.2 mg/kg IV/IO, IM* 2. **Lorazepam**- 1-2 mg IV/IO, IM; *Peds-0.1 mg/kg IV/IO, IM, PR*
Midazolam	Anticonvulsant; Sedation during RSI; Excited delirium or severe agitation; Sedation prior to cardioversion	Other available Benzodiazepines (Diazepam, Lorazepam); Ketamine (may be used for sedation, not for anticonvulsant)	1 . **Lorazepam**- 1-2 mg IV/IO, IM; *Peds-0.1 mg/kg IV/IO, IM, PR* 2. **Diazepam**- 5-10 mg IV/IO, IM, PR; *Peds-0.2-0.5mg/kg IV/IO*
Lorazepam	Anticonvulsant; Sedation during RSI; Excited delirium or severe agitation; Sedation prior to cardioversion	Other available Benzodiazepines (Diazepam, Lorazepam); Ketamine (may be used for sedation, not for anticonvulsant)	1. **Midazolam**- 3-5 mg IV/IO, IM; *Peds-0.1-0.2 mg/kg IV/IO, IM* 2. **Diazepam**- 5-10 mg IV/IO, IM, PR; *Peds-0.2-0.5mg/kg IV/IO*
Pain Management			
Morphine	Acute pain control	Fentanyl (1st choice if available); Dilaudid Ketorolac (Notify MPD if needed to order, will require special education prior to deployment) Ketamine	1. **Fentanyl**- 25-50mcg IV/IO, IM max 3mcg/kg; *Peds 1-2 mcg/kg IV/IO, IM max of 3 mcg/kg.* 2. **Dilaudid**- 0.2-0.6 mg q 2-3 hrs.; give slowly over 2-3 min. *Peds 0.015 mg/kg slow IV/IM q 4-6 hrs.* 3. **Ketorolac**- 10mg IV/IO, 10mg IM. ½ dose if >65y/o OR <50kg. Repeat prn Max 60mg; *Peds >2y/o- 0.5mg/kg IV/IO, 0.1mg/kg IM. Repeat prn Max 10mg IV, 10mg IM* 4. Ketamine 0.1-0.15mg/kg (slow IV or added to 50 or 100ml NS and infused over ~15 minutes) May repeat q15 min x3 PRN Max 100mg IV

Medication Shortage Approved Alternatives (Cont.)

TM3

Pain Management (cont.)			
Fentanyl	Acute pain control	Morphine (1st choice if available); Dilaudid Ketorolac Ketamine (sub-dissociative dosing)	1. **Morphine**- 5-10 mg IV/IO, IM q 5 min prn; *Peds- 0.1-0.2mg/kg IV/IO, IM* 2. **Dilaudid**-0.2-0.6 mg q 2-3 hrs give slowly over 2-3 min. Peds 0.015 mg/kg slow IV/IM q 4-6 hrs. 3. **Ketorolac**- 10mg IV/IO, 10mg IM. ½ dose if >65y/o OR <50kg. Repeat prn Max 60mg; *Peds >2y/o- 0.5mg/kg IV/IO, 0.1mg/kg IM. Repeat prn Max 15mg IV, 30mg IM* 4. Ketamine 0.1-0.15mg/kg (slow IV or added to 50 or 100ml NS and infused over ~15 minutes) May repeat q15 min x3 PRN Max 100mg IV
Cardiac Medications			
Atropine	Bradycardia	Transcutaneous Pacing Epinephrine infusion Dopamine infusion	1. **Transcutaneous Pacing** 2. **Epinephrine**[†]- 2-10mcg/min IV infusion; *Peds 0.1mcg/kg/min* 3. **Dopamine**- 2-10mcg/kg/min
Amiodarone	Ventricular dysrhythmias	Lidocaine Procainamide- *Peds use limited to SVT, A-flutter and VT w/ pulses* (Notify MPD if needed to order procainamide, will require special education prior to deployment)	1. **Lidocaine**- 1-1.5 mg/kg, repeat 0.5-0.75 prn max 3mg/kg; *Peds- 1mg/kg max 3mg/kg* 2. **Procainamide**[††]- 20mg/min IV/IO, max 17mg/kg; *Peds 15mg/kg IV/IO over 30-60 mins*
Lidocaine	Ventricular dysrhythmias	Amiodarone Procainamide- *Peds use limited to SVT, A-flutter and VT w/ pulses* (Notify MPD if needed to order procainamide, will require special education prior to deployment)	1. **Amiodarone:** Recurrent V-Fib/pulseless V-Tach: 300mg IV/IO repeat 150mg x 1 prn. V-Tach/WCT: 150mg over 10 mins IV/IO x 2 prn; *Peds- 5.0 mg/kg IV/IO* 2. 2. **Procainamide**[††]- 20mg/min IV/IO, max 17mg/kg; *Peds 15mg/kg IV/IO over 30-60 mins*
Diltiazem	Narrow complex supraventricular tachycardia	Verapamil ~~Propranolol~~	1. **Verapamil**-2.5-5.0 mg IV repeat prn 5-10mg in 15-30 mins to max of 20mg; *Peds- 0.1-0.3mg/kg max 5mg. Repeat x 1 prn max 10mg.* ~~2. **Propranolol** 0.5-1mg/min, repeat prn max 0.1mg/kg; *Peds 0.01-0.1mg/kg over 10mins*~~
Dopamine	Cardiogenic shock; hypotension not related to hypovolemia	Epinephrine infusion ~~Norepinephrine: Drug of choice for cardiogenic and septic shock~~	**Epinephrine**[†]- 2-10mcg/min IV infusion; *Peds 0.1mcg/kg/min* ~~Norepinephrine 8-12mcg/min infusion~~
Furosemide	Pulmonary Edema; Hypertensive Crisis	Nitroglycerine	**Nitroglycerine**- 0.4mg SL, Buccal
Epinephrine (1:10,000)	Asystole; PEA	Vasopressin (notify MPD if need to order, requires education prior to deployment)	**Vasopressin** 40 units IV/IO q 20 min.
Allergic Reactions			
Diphenhydramine	Moderate to severe anaphylaxis	Other H2/H1 Inhibitors (e.g., Vistaril, Pepcid)	1. **Hydroxyzine**- 25-50mg IM; *Peds 0.1mg/kg* 2. **Famotidine**- 20mg IV; *Peds 0.25mg/kg IV*
Epinephrine	Severe anaphylaxis	Epinephrine drip investigate other packaging options (multi-dose vials of 1:10,000, single dose vials, etc.) Epi-Pen	
Diabetic Emergencies			
50% Dextrose	Hypoglycemia	25% Dextrose 10% Dextrose (preferred) Glucagon	**Glucagon**- 1mg SC, IM, IV; *Peds- 0.5mg SC, IM, IV* Glucose 10-25 grams (Adult)).2-1.0 g/kg Peds

Medication Shortage Approved Alternatives (Cont.)

TM3

Other Prehospital Medications			
Naloxone	Opiate Overdose	No Alternative	**Airway Management**, Intubate prn
Ondansetron	Severe Nausea	Phenergan Inapsine (droperidol)	1. **Promethazine**- 12.5-25mg IV, IM, PR; *Peds >2y/- 0.25-1mg/kg PR* 2. **Droperidol**- 0.625-2.5 mg IV, IM; *Peds >2y/o- 0.1 mg/kg*

***Ketamine** – Mix 50mg in 250ml balanced salt solution (= 2mg/ml). Give slow IV, over 1min. Do not give undiluted 100mg/ml preparation
††**Procainamide** – 20mg/min until one of the following: Suppression of arrhythmia, Hypotension, QRS widens by 50%, Max dose
†**Epinephrine** – 1 mg in 500cc balanced salt solution (=2 mcg/cc), start at 1 cc/min and increase every 1 minute, prn.

Chemical Sedation Medication (Each may substitute for the other) **do not use more than one for the same patient**

Droperidol (Inapsine)	Agitation	1.25-5.0 mg IV, IM; Peds>2.y.o. 0.1 mg/kg
Haloperidol (Haldol)	Agitation	2 mg-5mg IV,IM; ,ay repeat to total 10 mg Peds 0.1mg/kg
Ziprazadone (Geodon)	Agitation	10-20 mg IM ONLY (Not generally recommended For pediatric use, contact Medical control to Approve use and dose for Age <15 years)
Olanzapine (Zyprexa)	Agitation	5-10mg ODT, 10mg IM (Not generally recommended For pediatric use, contact Medical control to Approve use and dose for Age <15 years)

NOTE: Contact MPD if either Ziprazadone (Geodon) or Olanzapine (Zyprexa) is being considered for order. Will require special education prior to deployment

⚠ **NOTE:** This medication shortage alternative list was produced in combination with work with the DOH. Please note items with strikethrough text are options that appear in the DOH document but are not currently approved for use in Skagit County.

SECTION 9:

SPECIAL SITUATION PROTOCOLS

TABLE OF CONTENTS

Abuse/Maltreatment/Neglect: Adult & Child Protective Services Referral

S1

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
Absolute inclusion/exclusion criteria are not possible in this area. Rather, clues consistent with different types of abuse/ maltreatment should be sought and reporting should be initiated based on a reasonable concern for abuse/maltreatment/ neglect or an unsafe environment/living situation.	• Recognize any act or series of acts of commission or omission by a caregiver or person in a position of power over the patient that results in harm, potential for harm, or threat of harm to a patient. • Take appropriate steps to protect the safety of the responders as well as bystanders. • Get the patient out of immediate danger. • Assess any patient injuries that may be the result of acute or chronic events. • Attempt to preserve evidence whenever possible, however the overriding concern should be providing appropriate emergency care to the patient.

ALL EMS PROVIDERS

- Be alert for patient Presentation:
  - A. Clues to abuse or maltreatment can vary with age group of the patient and type of abuse.
  - B. Not all abuse or maltreatment is physical.
  - C. EMS role is to:
    - i. Document concerns.
    - ii. Assess potentially serious injuries.
    - iii. Disclose concerns to appropriate authorities.
    - iv. Initiate help to get the patient into a safe situation.
    - v. Not to investigate or intervene beyond the steps above.
    - vi. Leave further intervention to law enforcement personnel.

- Clues to Potential Abuse/maltreatment include:

1. Potential clues to abuse/maltreatment from caregivers or general environment:
   - A. Caregiver apathy about patient's current situation.
   - B. Caregiver overreaction to questions about situation.
   - C. Inconsistent histories from caregivers or bystanders regarding what happened.
   - D. Information provided by caregivers or patient that is not consistent with injury patterns.
   - E. Injuries not appropriate for patient's age or physical abilities (e.g. infants with injuries usually associated with ambulatory children, elders who have limited mobility with injury mechanisms inconsistent with their capabilities) .
   - F. Caregiver not allowing adult patient to speak for himself/herself, or who appears controlling. Pay special attention to patients who cannot communicate due to young age or language and or cultural barriers.
   - G. Inadequate safety precautions or facilities where the patient lives and/or evidence of security measures that appear to confine the patient inappropriately.

2. Potential clues to abuse or maltreatment that can be obtained from the patient:
   - A. Multiple bruises in various stages of healing.
   - B. Age inappropriate behavior (e.g. adults who are submissive or fearful, children who act in a sexually inappropriate way).

- If abuse/maltreatment/neglect suspected:
  - A report to the receiving facility is indicated AND EMS provider online report to CPS is required

Abuse/Maltreatment/Neglect: Adult & Child Protective Services Referral

S1

STANDING ORDERS

NOTES

Washington State Adult Protective Services 1-877-734-6277 or Report Online

Contact APS for reports on allegations of abuse, abandonment, neglect, self-neglect and financial exploitation of vulnerable adults living in the community and in facilities.

Who is considered a vulnerable adult?

The State of Washington defines a vulnerable adult by law as a person who is:

- 60 years of age or older who has the functional, mental, or physical inability to care for himself or herself; or
- Found incapacitated under chapter 11.88 RCW; or
- Who has a developmental disability as defined under RCW 71A.10.020; or
- Admitted to any facility; or
- Receiving services from home health, hospice, or home care agencies licensed or required to be licensed under chapter 70.127 RCW; or
- Receiving services from an individual provider; or
- Who self-directs his or her own care and receives services from a personal aide under chapter 74.39 RCW.

Washington State Child Protective Services 1-866-829-2153

Questions that will be asked when you call:

1. The name, address and age of the child.
2. The name and address of the child's parent, guardian or other persons having custody of the child.
3. The nature and extent of the abuse or neglect.
4. Any evidence of previous incidences.
5. Any other information which may be helpful in establishing the cause of the child's abuse or neglect and the identity of the perpetrator.

You do not need to have all of the above information when you call to make a report, but the more accurate information you can provide, the better equipped the offices will be to assess the child's safety.

DOCUMENTATION / KEY PERFORMANCE INDICATORS

- History
- Physical exam findings
- Environmental/situational observations

Adult Social Services Referral
Northwest Regional Council (NWRC)

S2

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
Adult individuals seen by Fire and EMS personnel who are identified as having or potentially having social services needs.	• Identify potential candidates for referral to NWRC social services • Support community-based care, particularly to seniors and adults with disabilities

OVERVIEW

The Northwest Regional Council has offered a partnership with Skagit County EMS and Fire to allow EMS and Fire agencies to make a referral for evaluation by NWRC. The overall goal is to support community-based care, particularly to seniors and adults with disabilities.

Once a referral request is submitted the NWRC resources staff will then contact the individual and screen them to determine the individual's needs and assist them in connecting to services within Skagit County.

Current indications for referral include, but are not limited to:

- Inadequate social support
- Environmental issues
- Inadequate housing
- Mental health problems
- Concern for abuse or neglect (Also refer to [S1: Abuse/Maltreatment/Neglect: APS & CPS Referral]
- Transportation not available
- Substance abuse
- Food insecurity
- Safety hazards
- Health management problems
- Durable medical equipment concerns
- In home care options
- Ground level fall

ALL EMS PROVIDERS

- Complete [Appendix 6: NWRC Patient Referral Form]
- Have patient sign permission to release information to NWRC (on the referral form)
- Fax completed referral form to 360-428-1302

ALS to BLS Downgrade

S3

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
Calls dispatched as ALS (C, D, E) where ALS personnel have evaluated a patient and determined that patient condition is appropriate for transfer of care to BLS personnel and transport.	• Ensure appropriate level of care and/or transport based on clinical presentation and clinical risk for deterioration

EMT AND ABOVE PROVIDERS

- Under certain circumstances (e.g. MCI) an ALS evaluation may not be available in a timely manner. In the setting of an MCI, BLS transport without ALS evaluation may be reasonable.
- Outside of the setting of an MCI, if ALS evaluation is delayed, a report (via radio or phone) and discussion with responding ALS unit is indicated prior to BLS transport

PARAMEDIC PROVIDERS

- Remain with patient until arrival of BLS transport unit
- Perform a patient assessment and exam
- Evaluate for Clinical Indicators for ALS Evaluation and abnormal vital signs and address as needed
- Document ALS Assessment and downgrade to BLS level of care in electronic patient care report
- If EKG performed, document interpretation and send a copy of the EKG with the transporting unit
- Patients at clinical risk for deterioration are not appropriate for downgrade to BLS

NOTES	DOCUMENTATION / KEY PERFORMANCE INDICATORS
Law enforcement has no authority in patient transport decisions.	• Assessment and findings • Complete vital signs • Justification for downgrade to BLS

Approach to Crime Scenes & Evidence Preservation

S4

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
EMS patient or scene that is known to involve or has a potential to involve the commission of a crime requiring preservation of physical evidence by EMS personnel present on the scene.	• Exercise caution when approaching a potential crime scene • Maintain high situational-awareness and safety of patient, bystanders, and response personnel

OVERVIEW

The basic objective of crime scene protection is to preserve physical evidence that may be used to develop investigative leads and to prosecute defendants in court. Physical evidence must be protected from accidental or intentional alteration from the time it is first discovered to its ultimate disposition at the conclusion of an investigation.

Often, emergency medical service personnel are the first to arrive at potential crime scenes. EMS personnel may be unaware that the incident which necessitated the request for medical aid is a result of a criminal act. While emergency aid may be imperative, medical personnel should exercise extreme caution in approaching scenes suspected or known to involve any violent act. Sniper incidents have often resulted in multiple injuries among those trying to rescue the victim. Responding emergency personnel must consider their own safety as well as the methods they will use in aiding victims.

Personnel should consider evidence preservation and crime scene protection while en route to such an emergency. While saving life is paramount, personnel should do all they possibly can to prevent the lost of related evidence.

There are 2 primary types of mistakes which damage crime scenes: Errors of commission and errors of omission.

Errors of commission: occur when citizens, witnesses, officers, or emergency personnel smear fingerprints, step on evidence, add their own fingerprints, rearrange the scene, drop cigarette ashes, and butts at the scene, etc. Any time anyone destroys existing evidence or adds "evidence" (cigarette butts), a serious mistake has damaged the crime scene.

Errors of omission: occur when personnel fail to notice the scent of perfume or cigar smoke, fail to listen to persons standing near the scene discussing the crime, or fail to take efforts to protect existing evidence which may otherwise be destroyed.

Most errors in either category are unintentional, but they still complicate the investigation. A brand of cigarettes determined from butts found at the scene may be important, but if they were left by an officer or a paramedic, they are merely a waste of time, money and effort to analyze. Being aware of the problems commonly found at scenes and the needs of the investigating officers should help to prevent some of these difficulties.

ALL EMS PROVIDERS

- Stop/listen - the suspect(s) may be fleeing the crime or noise may indicate flight via vehicle / foot, etc.
- Minimize on scene personnel - designate only one paramedic / aid person to check the body (if death is apparent).
- Route - All emergency personnel should use the same route in and out of the crime scene whenever possible. This will minimize the destruction of evidence, i.e., tire tracks.
- If weapons are being used and/or violent suspect(s) still on the scene:
  a. Report to a designated staging area or
  b. Establish a staging area and notify dispatch of arrival and location. Be sure staging area is out of the line of fire and sight of scene.
  c. Report any suspect activity, especially weaponry seen or heard.

Approach to Crime Scenes & Evidence Preservation (Cont.)

S4

ALL EMS PROVIDERS (CONT.)

d . Await instructions from officer.
- i. Officers should bring victim to you when possible
- ii. Officers will request you approach when scene is under control and deemed safe.
- iii. Officers will coordinate an operation to rescue victim in hazard zone.

PARKING/POSITIONING OF EMERGENCY VEHICLES

A. When possible, check with the law enforcement officer-in-charge to determine where your vehicle should be positioned at the crime scene.
B. Be conscious of accident debris, skid/scuff marks from tires, as you approach.
C. Place items of evidentiary value (pill bottle, beverage cans, etc., found in vehicle) in a secure area while treating the victim. Whenever possible leave items where they are; do not touch with hand. If you have to move them, mark the spot.
D. Check with the officer in charge of the scene before hosing/washing vehicle debris from the road or pavement. (Cover if raining, without touching).

When it is apparent that the incident/scene is a crime and further investigation is required, evidence preservation becomes essential.

WHEN THE CRIME SCENE IS INDOORS OR SHELTERED -- EMERGENCY RESPONSE PERSONNEL SHOULD

A. Ensure that items of evidence (spent cartridges, weapons, clothes, etc.) are not stolen or destroyed, moved or inadvertently stepped on.
B. Contain the area and restrict/stop pedestrian traffic.
C. Note body position and only disturb when necessary to give first aid. Mark, if you can.
D. Note position of clothes on the body before disturbing for medical aid and check for any foreign substances that may be on the body.
E. If you move the body, be aware that pertinent evidence is often found underneath a body. Mark its location.
F. Do not use bathroom facilities or sinks.

WHEN CRIME SCENE IS OUTDOORS OR NOT SHELTERED -- EMERGENCY PERSONNEL SHOULD

A. Restrict vehicle/pedestrian traffic in the area.
B. Call for assistance to control onlookers and bystanders.
C. Seek guidance from the on-scene police officer about travel routes. Inform the officer in charge about any material (coat, sheet, blanket, etc.) used to cover/protect the victim from the elements. Officer may want those items as evidence

EVIDENCE

A. Chalk or tape the location where evidence/items required moving in order to give aid to the victim.
B. Avoid using the telephone and items in and around the crime scene.
C. Designate a garbage spot for all non-essential or non-evidentiary items.
D. If the victim is deceased, bag hands prior to moving the body if law enforcement personnel are not at the scene (use plastic only).
E. Liquids found near or at the crime scene should not be used for washing/cleaning your hands or equipment.
F. Check with the officer in charge of the crime scene if you had close contact with the victim/ deceased (your clothes may contain fibers and trace evidence).
G. If clothing must be cut, do not cut through bullet holes or knife cuts. These are critical pieces of evidence
H. If a rope must be cut, do not cut it at the knot.
   a. At a hanging, if the possibility of life exists, cut the rope at least 18 inches above the knot and in the bight. The knot is important evidence.
   b. If the rope is over a limb or a beam, do not pull it down. Cut the victim down, if necessary, but do not pull the remaining rope down.

Approach to Crime Scenes & Evidence Preservation (Cont.)

S4

ALL EMS PROVIDERS (CONT.)

I. Do not move evidence unless necessary. Point the evidence out to the officer where it is found. Obviously a gun on a crowded sidewalk probably should be secured, but use common sense. If the item is not going to be dangerous, stepped on, lost, or stolen where it is, leave it there for the officer.

ASSIGNMENT COMPLETION AND RECORDING

A. Note the number of people under your control at the crime scene and their specific assignment(s).
B. Seek direction from the on-scene police officer when you have questions/doubts about items/ evidence at the crime scene.
C. C. Check with officer in charge of the crime scene prior to leaving. If you have information about the crime, do not leave the scene before giving it to an officer.

Remember that the suspect (perpetrator) always leaves something behind.

Non-police personnel are reminded that these protocols do not preclude their use of judgment and appropriate response determined by the conditions at the incident site.

These guidelines are based on a Tacoma Police Department document and are used with permission.

Law enforcement agencies in Skagit County have reviewed the material and their suggestions have been incorporated in this protocol.

Determination of Death/ Withholding Resuscitation Efforts

S5

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
A clinically dead patient is defined as any unresponsive patient found without respirations and without a palpable carotid pulse.	All clinically dead patients will receive all available resuscitative efforts including cardiopulmonary resuscitation (CPR) unless contraindicated by one of the exceptions defined in this protocol.

ALL EMS PROVIDERS

- Resuscitation efforts may be withheld in patients in cardio-respiratory arrest if any of the following are present:

1. Patient presenting with no pulse and no breathing AND valid advanced directive (POLST) indicating "Do Not Attempt Resuscitation"
2. In blunt and penetrating trauma, if the patient is apneic, pulseless, and without other signs of life
3. Decapitation
4. Total incineration
5. Obviously non-survivable injuries (complete exsanguination, massive crush injury, extruded brain material)
6. Obvious signs of death including:
   - -Decomposition
   - -Dependent lividity
   - -Patient cold and stiff in a warm environment
   - -Rigor mortis (First detectable in the short muscles. Determination of rigor mortis should include immobility of the jaw muscles and the upper extremities.)
7. Known end-stage terminal illness and next of kin requests withholding resuscitation efforts
8. Mass casualty situations where triage principles preclude CPR from being initiated on those categorized as deceased or expectant
9. Underwater submersion for > 2 hours (consider extending timeframe if water temperature is near freezing
10. The scene is not safe for EMS personnel to render care

- If there is any doubt about the above criteria, resuscitation efforts should be initiated while relevant factors and patient condition are further assessed. If there is disagreement among family, begin CPR.

- At a likely crime scene, disturb as little potential evidence as possible and avoid moving the deceased

NOTES	DOCUMENTATION / KEY PERFORMANCE INDICATORS
• Different law enforcement jurisdictions and Coroner's office may have different policies/expectations on some issues regarding decedents such as moving or covering once confirmation has been done. Always confirm with law enforcement jurisdiction in charge of the scene before moving or covering decedent.	• A patient care report should be completed on all deceased person calls for documentation of obvious/expected death criteria and circumstances for withholding resuscitation efforts

Do Not Resuscitate (DNR) Orders & End of Life Care

S6

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
• An unresponsive patient found without respirations and without a palpable carotid pulse with valid exclusion to resuscitation as outlined in this protocol **AND/OR** • Patients enrolled in hospice or palliative care program, see [S16: Patients on Hospice]	• Provide relief from pain and other distressing symptoms • Affirm dying as a normal process • Integrate psychological and spiritual aspects of patient care • Offer support to patient and family

ALL EMS PROVIDERS

1. Patients must have one of the following documents or a valid alternative immediately available:
   a. **Portable Order for Life Sustaining Treatment (POLST)** - (formerly Physician Order for Life Sustaining Treatment) explicitly describes acceptable interventions for the patient, must be signed by a physician or other empowered medical provider to be valid
   b. **Do Not Resuscitate Order (DNR)** - identifies that CPR and intubation are not to be initiated if the patient is in arrest or peri-arrest. The interventions covered by this order and the details around when to implement them can vary widely.
   c. **Advanced Directives**—document that describes acceptable treatments under a variable number of clinical situations including some or all of the following: what to do for cardiac arrest, whether artificial nutrition is acceptable, organ donation wishes, dialysis, and other parameters. Frequently do not apply to emergency or potentially transient medical conditions.
2. One of the documents above is valid when it meets all of the following criteria:
   a. Conforms to state specifications for color and construction, if applicable
   b. Is intact: it has not been cut, broken, or shows signs of being repaired or altered
   c. Displays both the patient's name and the name and signature of the Physician or other empowered medical provider
3. If there is question about the validity of the form/instrument, the best course of action is to proceed with resuscitation efforts until additional information can be obtained to clarify the beset course of action
4. If a patient has a valid version of one of the above documents, it will be referred to as a "valid exclusion to resuscitation" for the purposes of this protocol.

Assessment

- If the patient has a valid exclusion to resuscitation then no CPR or airway management should be attempted, however this does not exclude appropriate comfort measures including medications for pain as needed
- If CPR has been initiated and a valid exclusion to resuscitation has been subsequently verified, CPR may be discontinued and Medical Control contacted as needed.

Treatment and Interventions

- If there is a valid exclusion to resuscitation and there are signs of life (pulse and respirations), EMS providers should provide standard appropriate treatment under existing protocols according to patient's condition.
  a. If the patient has a POLST Form, it may provide specific guidance on how to proceed
  b. Directives should be followed as closely as possible and Medical Control contacted as needed
- The patient should receive full treatment per protocols with the exception of any intervention specifically prohibited in the patients valid exclusion to resuscitation
- If for any reason an intervention that is prohibited in the patient's valid exclusion to resuscitation is being considered, **Contact On-Line Medical Control.**

EMS Initiated Non-Transport

S7

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
Patients who develop a pattern of frequent EMS utilization that is unsubstantiated by medical need. In the setting where: • EMS provider assessment is unable to identify the presence of a medical emergency on a repeated basis **AND** • Patient is subsequently encountered **AND** • On-scene medical evaluation does not identify an acute medical problem	• Prevent un-necessary ambulance transport • Refer patient to resource appropriate for their needs • Encourage follow-up with primary care provider when possible

ALL EMS PROVIDERS

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- Perform a standard clinical evaluation and physical assessment for the possibility of an acute medical emergency
- Complete vital signs should be documented
  - -Include temperature if patient is ≥ 60 years old or they have co-morbidities/chronic illness requiring assistance with activities of daily living
- Evaluate mental status (normal or if at baseline as reported by family member or caregiver)
- Transport is indicated for patients with:
  - -Mental status changes from baseline (including intoxication/absence of decisional capacity)
  - -Fever
  - -Abnormal vital signs
  - -Assessment findings suggesting acute injury or illness
- If evaluation does not identify an acute injury or illness **Contact On-Line Medical Control** to consider declining patient transport
- A complete patient care report documenting physical assessment, vital signs, medical control contact, and patient disposition is required

NOTES	DOCUMENTATION / KEY PERFORMANCE INDICATORS
POV Transport: Privately Operated Vehicle (POV): A. Non-emergent patients requiring medical care, but not requiring ambulance transport may be allowed to travel POV to the hospital of their choice, consistent with refusal of care guidelines. B. Non-transports other than refusals: After evaluation and treatment, if the patient is to be left at the scene, or if they will be transported POV, contact OLMC BEFORE leaving the patient. Patients treated for hypoglycemia may be left at the scene consistent with hypoglycemia protocol.	• Assessment and findings • Complete vital signs • Patient provided alternatives • Patient advised if condition worsens to call 911 • Medical control contact (name of MD) and concurrence with plan

AGENCY OPTIONAL

Fire Scene Standby and Firefighter Rehab / Medical Monitoring

S8

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
Firefighter rehab should be considered for any operation or training exercise where strenuous physical activity or prolonged exposure to heat or cold conditions exist.	• Ensure continued health and safety of members operating at the scene of an incident or training exercise • Monitor vital signs, CO level, mental status, and heat exposure symptoms • Hold firefighters in rehab or release for re-assignment based on results of medical monitoring

ALL EMS PROVIDERS

- When firefighter rehab is established, firefighters should be assigned to the designated rehab area if any of the following exist:
  - -Firefighter has met or exceeded 45 min of strenuous activity
  - -Firefighter has utilized two SCBA bottles
  - -Firefighter has had an unprotected exposure to an IDLH atmosphere
  - -Firefighter has a medical complaint or injury

- Once in rehab, firefighter should remove PPE and be evaluated by the EMS/Rehab provider. Firefighter should stay in rehab for a minimum of 20 minutes and have normalization of vital signs (see below) before they should be re-assigned by command. Firefighter may be kept longer and/or transported if the EMS/Rehab supervisor deems necessary.

- Assessment in rehab should include but is not limited to:
  Vitals (Pulse, BP, RR, SPO2), **CO** (CO Monitor), **Mental Status, Heat exposure symptoms**
  Hold firefighter in rehab for longer than 20 min. and treat if any of the following exist:
  - -Vitals – Pulse >110, BP >160 or 24
  - -CO – > 12 (Refer to [E2: Carbon Monoxide Poisoning])
  - -Delayed cognitive processing
  - -Heat exposure symptoms (nausea, vomiting, cramps etc)

  Transport is indicated for firefighters that meet the following criteria after 20 minutes:
  - -Vitals – Pulse > 130, BP >180 or 28
  - -CO – level 13 – 25
  - -Altered mental status
  - -Extreme heat exposure symptoms

- For Firefighters entering Rehab, CO monitoring is mandatory. Due to the incidence of hydrogen cyanide (CN) and cumulative effect of CO, the following guidelines regarding CO values obtained by the CO monitor, are to be followed:

  If the firefighter entering rehab is **not** symptomatic –
  1. < 6% - No tx necessary
  2. 6-12% - Rest and ambient air should be sufficient, use NRB to lesson time A value < 6% should occur within 1-5 minutes
  3. 13-25% - Use NRM @ 15 Lpm or CPAP (NOTE: CPAP preferred for firefighters to lessen the chance for further cumulative effect of CO)
  4. 25% - Treat & Transport

  If the firefighter entering rehab **is symptomatic** –
  1. Start an IV and infuse 500 ml of fluid for hydration
     a. If symptoms abate completely, the firefighter was dehydrated
     b. Ensure that the firefighter can take oral hydration without n/v
     c. Ensure that pulse is < 100 bpm and BP is perfusing
  2. Obtain a CO value a. Follow guidelines for values above
  3. If after hydration and O2 therapy firefighter has remaining signs/symptoms, i.e. nausea vomiting, or tachycardia at rest, or hypertension at rest or CO values > 12 persist after O2: Transport is indicated

Firearms Encountered During Course of Care

S9

STANDING ORDERS

CRITERIA

Intended for the patient with a concealed carry firearm or weapon, or circumstances in which a firearm is incidentally encountered during patient care.

ALL EMS PROVIDERS

General Guidelines:

EMS providers should anticipate that any patient may have a concealed firearm (or other weapon). The safety of EMS providers is paramount. EMS providers should never knowingly approach a patient who appears threatening with a firearm or weapon., no matter how ill the person seems. Request law enforcement to address potentially threatening individual(s), and approach only after law enforcement indicates the scene is secure and the individual has been appropriately searched/swept for weapons.

Ideally, patients will self-disclose that they have a firearm. However it is likely that at times patient may choose not to declare or may not be able to indicate that they have a firearm.

The following are guiding concepts pertaining to the discovery of a firearm on a patient or relevant to the scene. The guiding concepts are focused on firearms, but can be generally applied to other weapon types:

- Always assume a firearm is loaded.
- Always treat a firearm as if it loaded, regardless of suspected status.
- Optimally, firearms should be safely secured by the patient at their residence and not be transported. (Does not apply if patient is an identified law enforcement officer.)
- Patients with an altered level of consciousness of any cause, in severe pain or emotional/ behavioral distress, or with difficulties in motor control should not be encouraged to disarm themselves.
- Optimally, have law enforcement assist with disarmament
- A EMS Provider may need to obtain control of the firearm for the safety of responding personnel, the public, and the patient. Caution should be used at all times when handling a firearm.
- If the firearm is in a holster, it should remain in the holster at all times. (Remove the holster to remove the firearm, keeping the firearm holstered throughout. A properly holstered firearm is safe.)
- EMS provider should not attempt to unload a firearm. Regardless of a person's familiarity with firearms, there is no way to know if the gun is in proper working order.
- When in doubt about a patient with a firearm or the firearm itself, request law enforcement for assistance.
- It is recommended that EMS providers obtain education regarding basic firearm safety given the potential for encountering an armed patient.

Patient's with Altered Level of Consciousness:

- If a firm is found on an awake patient with an altered level of consciousness, EMS provider should **not** attempt too have the patient hand over the firearm. EMS providers should not attempt to remove a firearm from a patient whose level of consciousness could precipitates of that firearm against them. Law enforcement should be requested to assist in disarming these patients
- If the patient is unconscious and requires emergent care but law enforcement is not on scene, EMS providers will need to carefully separate the firearm from the patient prior to transport,. Optimally the firearm should be removed from the patient while still in the holster. If removing the holster and firearm together jeopardized the safety of the patient of EMS Provider, or it is physically impossible to remove the holster and firearm together, or if the firearm is already separated from a holster, and as last resort the firearm may be carefully remove without the holster. Once removed:
    - Handle any firearm with extreme care
    - Do not allow the muzzle of the firearm to point at any human
    - Keep fingers away from the trigger and out of any trigger guard at all times
    - If practical, request law enforcement to secure
    - Agencies with potentially extended LEO response times may consider having a lock box for securing a firearm.

Functional Needs Assessment (Travis Alert Act)

S10

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
Patients who are identified by the World Health Organization's International Classification of Functioning, Disability, and Health (ICF) that have experienced a decrement in health resulting in some degree of disability. According to the U.S. Department of Health and Human Services, this includes, but is not limited to, individuals with physical, sensory, mental health, and cognitive and/or intellectual disabilities affecting their ability to function independently without assistance.	• To meet and maintain the additional support required for patients with functional needs during the delivery of prehospital care.

OVERVIEW

In 2017, the Washington State Legislature passed SHB 1258, known as the Travis Alert Act (RCW 43.70.490). The law required the Department of Health (DOH) to collaborate with Department of Social and Health Services (DSHS), State Fire Marshal's Office, Superintendent of Public Instruction, and Washington State Council of Firefighters to review existing training programs both local and nationally, to design a state wide training program that will familiarize fire department and emergency medical service personnel with the techniques, procedures, and protocols for best handling situations in which persons with disabilities are present at the scene of an emergency. The training is mandatory for all EMS personnel.

ALL EMS PROVIDERS

• Patient Management Assessment:

- Identify the functional need by means of information from the patient, the patient's family, bystanders, medic alert bracelets or documents, or the patient's adjunct assistance devices.
-The physical examination should not be intentionally abbreviated, although the manner in which the exam is performed may need to be modified to accommodate the specific needs of the patient.

• Treatment and Interventions:

-Medical care should not intentionally be reduced or abbreviated during the triage, treatment, and transport of patients with functional needs, although the manner in which the care is provided may need to be modified to accommodate the specific needs of the patient.

• Patient Safety Considerations:

-For patients with communication barriers (language or sensory), it may be desirable to obtain secondary confirmation of pertinent data (e.g. allergies) from the patient's family, interpreters, or written or electronic medical records. The family members can be an excellent source of information and the presence of a family member can have a calming influence on some of these patients.

NOTES	DOCUMENTATION / KEY PERFORMANCE INDICATORS
Communication Barriers (such as: language barriers, expressive or receptive aphasia, nonverbal patients, and/or fluency in a different language than that of the EMS Professional). Consider the following tools to help overcome language/communication barriers: • Transport of an individual who is fluent in the patient's language along with the patient to the hospital. • Medical translation cards. • Telephone-accessible services with live language interpreters. • Methods through which the patient augments his/her communication skills (e.g. eye blinking, nodding) should be noted, utilized as able, and communicated to the receiving facility	• Document "Barriers to Care" (ESO: Narrative > Factors > Barriers to Care) • Document specific physical barriers in the appropriate exam elements • Adjuncts to overcome communication barriers • Document transfer of information regarding function needs to receiving facility

NOTES (cont.)

Sensory Barriers
(such as: visual impairment, auditory impairment) Consider the following tools to help overcome sensory barriers:
• Braille communication card.
• Sign language
• Lip reading
• Hearing Aids
• Written communication

Physical Barriers
(such as ambulatory impairment form limb amputation, bariatric or neuromuscular impairment)

Cognitive Barriers
(such as mental illness, development challenge or delays)
• When possible/practical, try to identify and bring devices and assistance adjuncts to overcome barriers. These may include, bur are not limited to:
• Hearing Aids
• Dentures
• Extremity prosthetics
• Glasses/magnifiers
• Tracheostomy speaking valves
• Cane/Walkers or wheelchair

Service Animals
As defined by the American Disabilities Act, "any guide dog, signal dog, or other animal individually trained to do work or perform tasks for the benefit of an individual with a disability, including, but not limited to guiding individuals with impaired vision, alerting individuals with impaired hearing to intruders or sounds, providing minimal protection or rescue work, pulling a wheelchair, or fetching dropped items" Services animals are not classified as a pet and should, by law, always be permitted to accompany the patient with the following exceptions where a public entity may ask an individual with a disability to remove a service animal from the premises - If the animal is out of control and the animal's handler does not take effective action to control it; or the animal is not housebroken.

Service animals are not required to wear a vest or a leash. It is illegal to make a request for special identification or documentation from the servicer animal's partner. EMS providers may only ask the patient if the service animal is required because of a disability and the form of assistance the animal has been trained to perform.

EMS providers are not responsible for the care of service animal. If the patient is incapacitated and cannot personally care for the service animal, a decision can be made whether or not to transport the animal in this situation.

Animals that solely provide emotional support, comfort, or companionship do not qualify as service animals.

SEE ABILITY CHECKLIST ON NEXT PAGE

Functional Needs Assessment (Travis Alert Act)

S10

ABILITY CHECKLIST

FOR USE WHEN ENCOUNTERING PATIENTS WITH FUNCTIONAL NEEDS

General—Immediate Action Items:

- ☐ Protect safety of EMS personnel and bystanders
- ☐ Respect personal space
- ☐ Use calm tone
- ☐ Include the patient in planning and decision making
- ☐ Ask the patient for assistance and guidance where possible
- ☐ Assess and treat immediate life threats
- ☐ Consider what physical barriers need to be removed or addressed
- ☐ Consider the need for outside resources
- ☐ Proceed to specific ability section

1. Mobility / Physical Impairments

- Key Considerations
  - ☐ Transport assistive devices used by patient should accompany the patient when possible.
  - ☐ Arrange for alternative transport for the device or find a method of securing the device if it is not possible to transport the device.
  - ☐ Consider using the same method patient was transported in past.
  - ☐ Request other resources if special considerations in handling and transport are needed.

2. Sensory Impairments—Vision

- Key Considerations
  - ☐ Determine the degree of vision deficit
  - ☐ Speak directly to the patient; do not shout or use non-specifics e.g. “Watch out”
  - ☐ Determine if assist devices or service animals are used

3. Sensory Impairments—Hearing

- Key Considerations
  - ☐ Determine the degree of hearing deficit.
  - ☐ Determine which communication techniques are best to use, such as lip reading, signing, or the use of written language.
  - ☐ Look for someone to help you to communicate, or use a family member or other resource immediately available who is able to assist if appropriate.

4. Mental Health / Cognitive

- Key Considerations
  - ☐ Check blood sugar
  - ☐ Consider the differential diagnosis (consider medical, traumatic conditions)
  - ☐ Try to avoid sensory overload or triggering actions when interacting with the patient
  - ☐ Use calm voice, avoid escalation
  - ☐ Use open posture, avoid prolonged eye contact
  - ☐ Consider other resources for safety

ABILITY CHECKLIST

FOR USE WHEN ENCOUNTERING PATIENTS WITH FUNCTIONAL NEEDS

5. Autism

- Key Considerations
  - ☐ Try to avoid sensory overload and triggering actions such as sounds or bright light when interacting with the patient
  - ☐ Discuss requirements for successful interaction with caregiver
  - ☐ Use a calm tone. Acknowledge and validate emotions

6. Service Animals

- Key Considerations
  - ☐ Transport the service animal with the patient when possible
  - ☐ Request additional assistance should the animal not be able to accompany the patient

Ground Level Fall & Lift Assistance

S11

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
Any dispatch for a "lift assist" or ground level fall regardless of acuity level or report of known injury.	• Ensure complete and thorough physical assessment for underlying injury / illness resulting from or causing fall

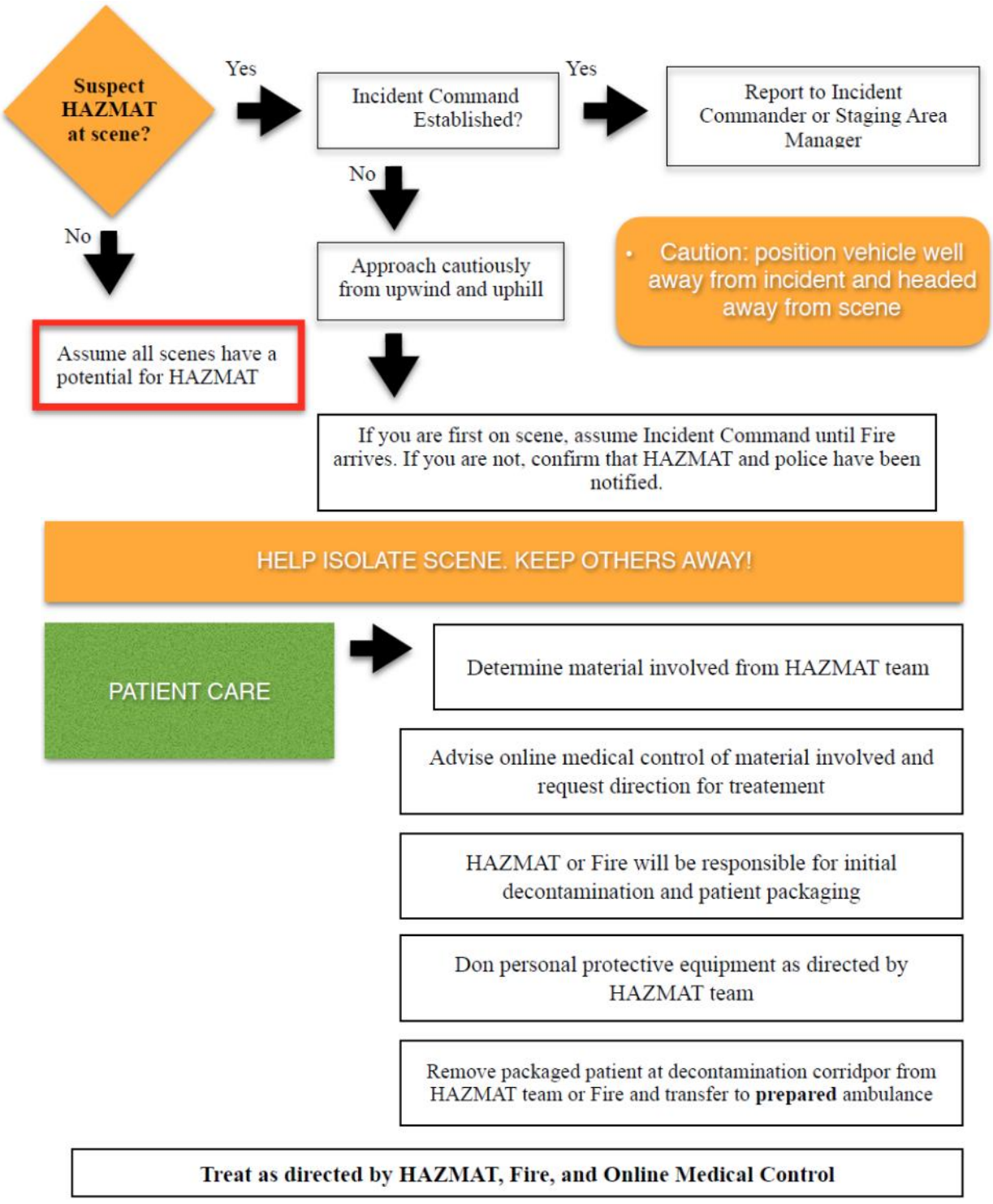
ALL EMS PROVIDERS

- Follow [G27: Universal Patient Care Guideline] as appropriate to scope of practice
- Perform a standard clinical evaluation and physical assessment for the possibility of an acute medical emergency
- Complete vital signs should be documented
  - -Include temperature if patient is ≥ 60 years old or they have co-morbidities/chronic illness requiring assistance with activities of daily living
- Evaluate mental status (normal or if at baseline as reported by family member or caregiver)
- Transport is indicated for patients with:
  - -Mental status changes from baseline
  - -Fever
  - -Abnormal vital signs
  - -Assessment findings suggesting acute injury or illness
- If evaluation does not identify an acute injury or illness, assist as appropriate
- If the dispatch was for a citizen assist or lift assist (no transport requested) and the clinical evaluation does not demonstrate an acute injury or illness or transport indicated, no refusal forms are required but a standard patient care report should be completed documenting completion of the items above.
- If the assessment reveals concerns for an acute injury or illness and the patient refuses transport, follow the standard patient care refusal process.
- If scene suggests patient may benefit from a referral to the Northwest Regional Council Senior Services program, complete referral form.
- For agencies with approved Community Assistance Referral Education Services (CARES) programs, follow agency process for follow-up with CARES/MIH/Community Paramedic provider.

NOTES	DOCUMENTATION / KEY PERFORMANCE INDICATORS
⚠ **NOTE:** • Multiple studies suggest that lift assist/citizen assist calls are at higher risk for missed injuries and illnesses, EMS callbacks and lawsuits. • These calls should be given the same clinical evaluation attention and documentation as any other call. • A fall patient is a patient until proven otherwise (through appropriate evaluation)	• Physical exam • Mental status • Vital signs including temperature

Hazardous Materials Incident

S12



Hazardous Materials Incident

S12

Ambulance Preparation

- Prepare ambulance as directed by HAZMAT or Fire
- Remove all non-essential supplies/equipment
- Drape interior and floor of vehicle as directed

Transport

- Notify receiving facility as soon as practical. Provide all relevant information and ask where they would like you to park.
- **Do NOT enter the Emergency Department without specific direction from ED Staff**
- After transferring the patient to the ED staff, return ot the ambulance and remain inside. Do not move the vehicle or allow others inside.
- Contact the Incident Commander to determine how and where the vehicle should be decontaminated.

EMS Personnel Exposure

- **If exposed at scene:** remove yourself from further contamination and report incident to Safety Officer or HAZMAT and wait for direction
- **If exposed en route to the hospital:** inform ED and await direction.
- **After decontamination and treatment, receive clearance from HAZMAT Group Supervisor or ED MD AND your supervisor before returning to duty.**

Document

- **Patient Care**
- **Response to Treatment**
- **Hazardous Material**
- **Communication with ED, Medical Control, HAZMAT**
- **Measures Taken to Limit Exposure**
- **Decontamination**

Helicopter Transport

S13

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
A. Critical patient with either or all: 1) a delay to ALS arrival (>30 min) and/or 2) an estimated long transport time (>30 min) and/or extended extrication B. Critical patient requiring special destination for treatment (Trauma/burns, etc) C. Mass casualty incidents D. Scenes with limited access and/or helicopter hoist operations required	• Expedite critical patient transport when response time, extrication time, patient packaging, and/or transport times are expected to be prolonged

ALL EMS PROVIDERS

- Request air medical transport via Skagit 911
- The following information will need to be provided when possible:
  a. Approximate patient age and weight/height (weight >300lbs will require pilot review)
  b. Brief patient report
  c. Landing zone location (address or GPS coordinates, if available)
  d. Unit radio callsign for landing zone ground contact to be reached on "SKAGIT AIR TAC"
  e. Requested transport destination
- Dispatch should request helicopter availability in accordance with air medical transport agreement
- Dispatch should relay responding air transport company, unit number, and ETA
- In the event of an extended ETA for air transport or unavailability of air transport the patient should be transported by ground to the nearest appropriate hospital
- Establish landing zone and follow helicopter safety precautions per air transport agency guidelines
- Ground contact should monitor "SKAGIT AIR TAC" and provide landing zone report with incoming helicopter report using the acronym **SO WHAT**
  (S) Suitability **(W)** Winds **(H)** Height of obstructions **(A)** Axis of Landing **(T)** Terrain **(O)** Obstructions
- Once on the ground, advise crew if EMS crew requires assistance with patient stabilization
- Maintain LZ safety perimeter and monitor radio until helicopter is off the ground and out of sight
- Document indication for helicopter standby or transport in ePCR

Helicopter Transport Services

Agency Name (Location of nearest bases)	Contact #	Pt size limitations (triggers flight crew review)	Notes
Airlift Northwest (Arlington & Bellingham)	1-800-426-2430	>300lbs/135kg or >26" across at widest point	• Primary Air Medical Transport Provider for Skagit County • Carries Blood products/TXA • Staffed RN/RN
Life Flight Network (Coupeville & Port Angeles)	1-800-232-0911	>350lbs/158kg	• Carries Blood products/TXA • Staffed Paramedic/RN
US Naval Air Station Whidbey (Oak Harbor)	1-360-257-2681	**N/A**	• May only be dispatched if private services not available *and/or* not capable • Specialty Winch/Rescue capabilities • No capability for neonates • Bariatric Capable • Staffed: *Variable, May not always be ALS*

Helicopter Transport (Cont.)

S13

STANDING ORDERS

NOTES

- Separate from requesting transportation from the field (including intercept locations), helicopter transport may also be activated from the field with a request to place them on standby. Standby will likely result in launch and the unit moving up to a hospital or other location in close proximity to the call.
  - -Standby is indicated for critical patients who can be transported to a receiving hospital but for whom inter-facility transfer to a tertiary facility is anticipated (neuro trauma, spinal trauma, burns, etc.)
  - -Standby may be requested based on dispatch information prior to EMS arrival at scene
- Examples of critical patients include:
  - -Multi-system trauma or trauma patients with hypotension, airway compromise, or identified/suspected uncontrolled bleeding
  - -Head injury with decreased or altered LOC***
  - -Spinal cord injury with neurologic impairment
  - -Amputation with suspected potential for re-implantation
  - -Complications of pregnancy after 24 weeks
  - -Severe hypotension/clinical shock
  - -STEMI
  - -Suspected TPA eligible stroke/suspected Large Vessel Occlusion CVA (Consult with On-Line Medical Control
- The helipads at United General and Island Hospital are appropriate field rendezvous sites and do not require hospital Emergency Department assessment when used only for EMS/Air Medical Transport rendezvous site. However, if EMS arrives at the helipad and there is a delay in helicopter arrival or need for additional support resources/stabilization, do not delay on the helipad, but access the ED for assistance.
- If the initial helicopter transport destination request is to a Skagit County Hospital (Skagit Valley Hospital, United General, or Island Hospital) Skagit EMS personnel should provide notification to the receiving hospital. When possible, do so prior to the initiation of liftoff from the scene to help verify appropriateness of the destination. (Many/most helicopter scene transports qualify for transport to out-of-county tertiary facilities such as Harborview Medical Center. Skagit County Hospitals receive a low volume of incoming air medical transports and verifying the facilities appropriateness prior to transport is warranted).
- Naval Air Station Whidbey (NAS) SAR may provide helicopter resources only in the setting where the use of their aircraft does not compete with privately owned air medical resources such as Life Flight Network and Airlift Northwest. NAS Whidbey SAR should only be requested when at least one of the following applies, and it must be communicated to NAS Whidbey SAR dispatch which condition applies:
  - -The request for NAS Whidbey SAR is due to capabilities not available from other providers (hoist operations, backcountry/mountain access, etc)
  - -No other air medical transport provider is available to respond (system demand, mechanical issues, weather conditions, etc.)
- Access to the patient during the during the actual helicopter transport may be limited. Consideration of these limitations is warranted in the provision of clinical care prior to transfer to air medical transport agency care (airway assessment/management, optimized parenteral access, splitting, environmental concerns).

DOCUMENTATION / KEY PERFORMANCE INDICATORS

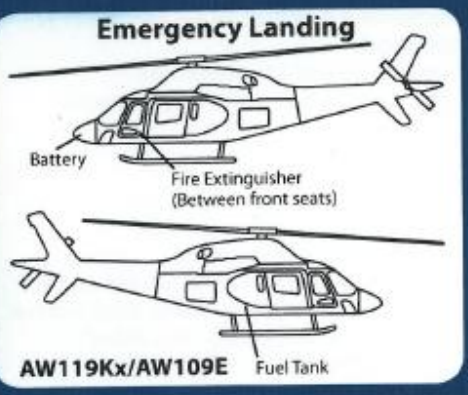
- Indication for air medical transport
- Time of helicopter arrival
- Time of helicopter departure
- Helicopter transport destination

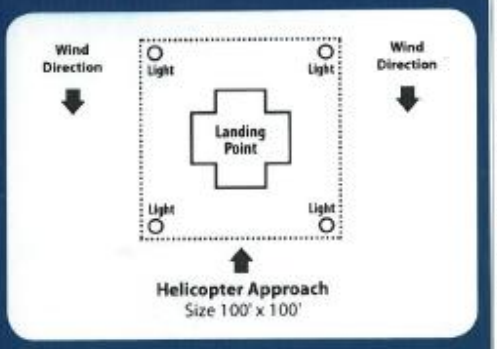
LIFE FLIGHT NETWORK

1-800-232-0911

Helicopter Landing Zone (LZ) Guidelines

There. When You Need Us.®





LANDING ZONE (LZ) GUIDELINES

When requesting a helicopter, please provide the following:

- Name of requesting agency
- Call back number
- Address of location
- GPS coordinates, if available
- Ground contact and radio frequency
- Any other responding aircraft

LZ Selection

- 100' x 100' Area: marked with four cones (day) or strobes (night), if available
- Surface: flat or slope of < 5 degrees, free of loose debris and animals
- Loose dirt may need to be watered down
- Keep all bystanders at least 100' away from aircraft

LZ Radio Report

- Alert aircraft when you have them in sight
- Describe LZ location and how it is marked
- Identify any hazards of obstructions
- Minimize radio traffic when aircraft is on final approach
- If an imminent hazard is observed while aircraft is on final approach, immediately transmit "abort landing"
- Keep radio frequency open until aircraft departs

LZ Safety

- Never approach the aircraft unless directed by flight crew
- Stay clear of tail rotor area at all times
- Never direct bright lights toward the aircraft
- Follow flight crew instructions
- Secure all loose objects in LZ (ball caps/blankets)
- Protect eyes from blowing dirt and debris

Emergency Landing

- **In case of a helicopter emergency landing - Keep safe!**
- Protect yourself and others from flying debris
- Do not approach the aircraft until all moving parts have stopped
- Call 911 for additional fire, EMS, and air resources as needed

Life Flight Network is user friendly! Do not be stressed if you don't remember everything. The flight crew will prompt you if additional information is needed. The Safety of the LZ is ultimately the pilot's responsibility.

THANK YOU

There. When You Need Us.®
www.LifeFlight.org

STANDING ORDERS

LANDING ZONE GUIDELINES

AIRLIFT NORTHWEST
UW Medicine

24-Hour Communications Center: 206.329.2569 or 800.426.2430

When preparing for emergency air transport, we ask that you follow these landing zone guidelines.
For more information, please visit airliftnw.org/LZ.

ACTIVATE US EARLY! *Call us as soon as possible for the most rapid response.*

#1
BEFORE HELICOPTER ARRIVAL

Select LZ location at/near incident site*
Send us directly to the scene if possible.
- **15' x 15'** landing gear touchdown area
- **100' x 100'** for all operations
- Clear of obstructions/overhead wires
- Less than **10** degree slope
- Roadway, school, parking lot or field
- If very rural, consider GPS locator

Inspect the landing zone (LZ):
Landing zones should be clear of:
- Debris and unsecured materials and brush taller than knee high
- If the LZ is dusty or covered in loose grass, spraying the area with water helps but is not necessary

Prepare a brief LZ description:
- Note overhead wires, light standards, radio towers, fences, obstruction or other hazards in relation to compass bearings (N,S,E,W)
- Note surface winds and visibility (N,S,E,W)

Observe LZ safety and security:
- Fire department personnel should maintain a **200'** perimeter for bystanders, from aircraft arrival through departure
- PERSONAL PROTECTIVE EQUIPMENT (vision and hearing protection) should be used

Minimize LZ lighting issues:
- No white strobe lights. Use red lights to assist in noting location
- Flares are OK as long as they are not a fire hazard due to the helicopter downwash
- All white lights, such as headlights, should be OFF during landing and takeoff to protect pilot's night vision
- Do not spotlight overhead hazards; park a vehicle beneath overhead hazards

+ We can also land at non-established LZs. Always make sure that all safety precautions are met, including moving dumpsters, clearing debris and making sure that there are no obstructions.

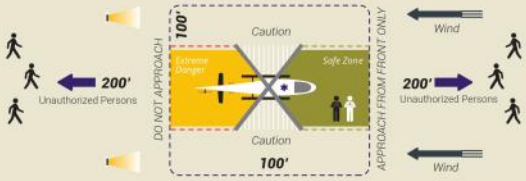
The acronym *SO WHAT* can help you easily recall these instructions in a pinch.

(S) Suitability
(O) Obstructions
(W) Winds
(H) Height of Obstructions
(A) Axis of Landing
(T) Terrain

#2
HELICOPTER ARRIVAL AND LANDING

As the helicopter approaches the landing zone, be sure to:
- Brief the pilot prior to arrival, noting locations of known hazards in the LZ area
- Remain in two-way radio contact throughout landing
- If landing on a roadway, make sure to halt traffic for the duration of the evacuation
- If there are safety concerns, a pilot may need to request the LZ be moved. Be prepared to call off landing if LZ or helicopter approach becomes unsafe.

While the helicopter is in the LZ:
- **DO NOT APPROACH** the helicopter until the rotor blades have stopped
- Approach the helicopter only from the front, once directed by the flight crew
- **DO NOT WALK AROUND THE TAIL**, even when aircraft is shut down
- Maintain the LZ security and light restrictions at all times
- Review known hazards with the pilot before aircraft departure



#3
HELICOPTER DEPARTURE

The following precautions should be followed for helicopter departure:
- Clear all ground personnel away from the helicopter before the engine starts
- **NO ONE MAY APPROACH** after engine(s) started
- Re-establish two-way radio contact with pilot and confirm the LZ is secure
- Notify the pilot immediately if an unsafe situation develops

Landing Zone information provided and approved by Air Methods. All aviation services, pilots and mechanics are provided by Air Methods Corporation and Aero Air.

camts

Interfacility Transport

S14

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
•Transfer between hospitals for admission for services not available and sending facility • Transport of patient to and from facility for diagnostic evaluations and second facility • Transport from hospital to extended care facility • Transport of patient between facilities at patient or physicians request • Transport of psychiatric patients to in-patient psychiatric facilities for specialized treatment	• Ensure medical necessity for safe patient transfer is provided • Utilize private ambulance resources for interfacility transport when available

EMT AND ABOVE PROVIDERS

- Transferring facility must provide EMS personnel with the name of the receiving facility and receiving physician, copies of any available diagnostic tests, x-rays, medical records, EMTALA form prior to releasing the patient.
- EMS personnel should only transfer a patient whose monitoring and/or interventions required during the transfer is within the EMS crews level of capability, unless capable personnel accompany the patient during transport
- In all interfacility transports, if an emergency occurs during transport that is not anticipated prior to transport, pre-hospital protocols will immediately apply and ALS intercept and/or additional resources should be requested if needed.
- If a BLS interfacility transport is requested by the sending facility and it is the judgement of the BLS crew that the patient requires a higher level of care from an ALS or Critical Care Transport* unit, the appropriate dispatch center must be contacted and a higher level of care requested for transport. Under no circumstances should a BLS crew transport a patient if, in their judgement, the patient requires a higher level of care (exception: Mass Casualty Incidents).
- EMT personnel who have completed MPD-approved training may transport patients with a pre-established saline lock or peripheral IV gravity fed infusion of normal saline, dextrose or lactated ringers or a combination of these solutions when: it has been determined by the sending physician to be a BLS level transport. EMTs are not authorized to establish an IV unless the EMT holds an endorsement for IV therapy. Transport of this equipment is limited to monitoring only.

PARAMEDIC PROVIDERS

- For ALS transports, the following may apply:
  - A. Paramedics may initiate pre-hospital patient care protocols including the establishment of intravenous access, airway control, etc.
  - B. Paramedics may refuse to transfer the patient until the facility has completed an appropriate evaluation and provided stabilizing treatment, as needed
- Paramedics are authorized to administer or monitor all medications listed in the approved Skagit County EMS Medication Formulary as appropriate in accordance with protocol
- Paramedics are authorized to administer or monitor any crystalloid or colloid IV solution during transport
- Arterial lines should be discontinued unless appropriate hospital personnel and equipment accompany the patient during transport
- Heparin locks/implantable catheters with/without reservoirs may be closed off and left in place. If they are to be used during transport, then an IV drip should be established if tolerated by the patient.
- IV pump systems should be disconnected unless hospital equipment and personnel accompany the patient during transport
- Orogastric or nasogastric tubes may be left in place and should either be closed off or left to suction per order of transferring physician
- Orthopedic devices may be left in place at EMS crew discretion as to ability to properly transport the patient with existing device(s) in place.
- Trained personnel authorized to operate the equipment must accompany any patient requiring mechanical ventilation during transport. If the patient will require manual ventilatory assistance (BVM ventilation), then at least two persons shall be available to attend to the patient.

Interfacility Transport (Cont.)

S14

PARAMEDIC PROVIDERS

• If during the transfer the patient becomes unstable, the patient may be transported to the closest medical facility, at EMS crew discretion, regardless of the prearranged destination. Medical Control during transport of the patient will be decided upon by the transferring physician and receiving physician prior to transport

NOTES

- *Licensed ambulance services that provide critical care interfacility ambulance transports, must have sufficient medical personnel and equipment on each response to provide patient care specific to the transport in accordance with Washington Administrative Code.
- Private (ground and air) ambulance services should generally be utilized, when available for interfacility transportation prior to any request to utilize a primary 911 system ambulance service
- It is the responsibility of the transferring facility to ensure that the medical necessities for safe patient transfer are met. Medical instructions of the attending physician and registered nurses will be followed unless specifically contrary to guidelines or standing orders. If a physician attends the patient during transfer, s/he will direct all care regardless of standing orders. If a registered nurse attends the patient, s/he will direct the care of the patient from the standing orders given by the physician at transfer or by contact with the receiving hospital physician. The registered nurse may desire to defer emergency care in some situations to the paramedic.
- The responsibility for transfer to another facility resides with the transferring facility. Patients will not be transferred to another facility without first being stabilized. Stabilization includes adequate evaluation and initiation of treatment to assure that transfer of a patient will not, within reasonable medical probability, result in material deterioration of the condition, death, or loss or serious impairment of bodily functions, parts, or organs. Evaluation and treatment of patients prior to transfer will include the following:
  - -Establish and assure an adequate airway and ventilation.
  - -Initiate control of hemorrhage.
  - -Stabilize and splint the spine or fractures when indicated.
  - -Establish and maintain adequate access routes for fluid administration.
  - -Initiate adequate fluid and/or blood replacement.
  - -Determine that the patient's vital signs are sufficient to sustain adequate perfusion.
- It is also the transferring facility's responsibility to establish the need for BLS Ambulance, Specialty Care Transport (SCT) Ambulance or ALS Ambulance.
- Prior to the transfer, the transferring physician is responsible for notifying the receiving physician of the following:
  - -Reason for transfer
  - -Patient condition
  - -Estimated time of arrival

Multiple Casualty Incidents (MCI)

S15

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
An incident in which the number of patients exceeds the available resources in the initial EMS response.	• Identify MCI and request appropriate MCI alarm level response • Effectively prioritize patients with survivable conditions and ensure rapid treatment and transport to definitive care

ALL EMS PROVIDERS

- First arriving certified EMS provider to determine that an MCI exists should notify dispatch to upgrade to MCI response:

1st ALARM MCI	**3 ENGINES**	**3 AMBULANCES**	**2 CHIEF OFFICERS**	**1 LADDER or RESCUE**
2nd ALARM MCI	**6 ENGINES**	**6 AMBULANCES**	**3 CHIEF OFFICERS**	**2 LADDER or RESCUE**

- First arriving qualified personnel initiate ICS and provide initial radio report
- Consider early notifications: Hospital Control, Air Medical Transport Providers, Private Ambulance
- As soon as possible after initial radio report, incident commander will give a size up report including:
  - Brief description and impression of the scene and known hazards
  - Cause of incident, if known
  - Estimated number of patients involved
  - Establishment of the Command designator and Command post location
  - Designation of the Transportation Corridor
  - Initial actions and assignments
  - Stating location
  - Additional resource requests
- Establish additional ICS Medical positions as needed based on the size and complexity of the event:

Medical Group Supervisor
- Oversees Triage, Treatment, and Transportation Unit Leaders
- Makes resource requests from Incident Commander
- Coordinates notification and communication with patient receiving facilities
- May retain functions of all or some of Triage, Treatment, Transport Unit Leader functions as below

Triage Unit Leader
- Ensures safety of members working in the area
- Counts and prioritizes patients using triage tape (primary triage) and bands (secondary triage)
- Ensures all patients are moved to the treatment areas
- Documents activities in the triage area
- Establishes initial morgue site, if necessary.

Treatment Unit Leader
- Ensures safety of members working in the area
- Sets up treatment area with a tier for each triage level
- Assigns crews to treat patients
- Ensures sufficient supplies and personnel
- Initiates decontamination procedures, if necessary
- Documents activities in the treatment area

Multiple Casualty Incidents (MCI) (Cont.)

Transportation Unit Leader

- Ensures safety of members working in the area
- Coordinates the transportation and destination of patients
- Ensures communication with hospitals/Hospital Control
- Establishes a landing zone for air medical resources, if needed
- Tracks all patient movement

Triage Categories

• Immediate (**RED**)
Severe injuries but high potential for survival with treatment; taken to collection point first

• Delayed (**YELLOW**)
Serious injuries but not immediately life-threatening

• Minor (**GREEN**)
Minor injuries

• Deceased/Expectant (**BLACK**)
Injuries incompatible with life or without spontaneous respiration; should not be moved forward to the collection point

Triage Method

• The MPD-preferred triage tool is Rapid Assessment of Mentation and Pulse (RAMP) or Simple Triage and Rapid Treatment (START)

1. Begin where you are.
2. Ask anyone who can walk to move to a designated area.
3. Move quickly from patient to patient.
4. Maintain patient count.
5. Provide only life-saving interventions, when indicated.
6. Keep moving!

Triage Tags

MPD-approved MCI triage tags for at least 12 patients should be carried by all EMS provider agencies in accordance with DOH required equipment (WAC 246-976-300).

MCI Patient Care Documentation

Patient documentation is important; however, documentation should never delay patient care or transport. Individual MIRFs/ePCRs should be attempted at every incident, however, as an incident grows in size and complexity it may not be reasonable to complete MIRFs/ePCRs. Incidents may have segments when MIRFs/ePCRS may be completed and other segments where circumstances prevent the use of MIRFs/ePCRs. At a minimum, a photograph of all command and control boards shall be taken and filed with the incident report or official record.

Patients on Hospice Care

S16

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
• Patients enrolled in hospice or palliative care program	• Relieve suffering of patient and family • Affirm allowance of death as a normal process • Integrate psychological and spiritual aspects of patient care • Offer support and resources to patient and family

ALL EMS PROVIDERS

1. EMS Clinicians should make every effort to reach a hospice provider. Call *Hospice of the Northwest at **360-814-5550*** and **identify yourself as EMS**. Expect to be connected to RN case manager.
2. Where possible, EMS clinicians are encouraged to remain with the patient until Hospice Provider arrives
3. These comforting interventions are encouraged:
   - A. Open airway manually (no intubation, no BVM unless invited by conscious patient)
   - B. Suction and provide oxygen
   - C. Make the patient comfortable (position, etc…)
   - D. Be Supportive of the patient and family
   - E. Blood glucose measurement (and any indicated treatment) is permitted

4. A**void resuscitative measures**, including:
   - A. CPR
   - B. Intubation, SGA or other advanced airway management
   - C. Surgical Procedures
   - D. Defibrillation
   - E. Cardiac Resuscitation
   - F. Artificial Ventilation by any means
   - G. IV therapy is discouraged

5. Hospice Patients should not be transported to the hospital except where transport is specifically requested by the patient or his/her healthcare surrogate, and preferably only after consultation with hospice team and exhaustion of other treatment pathways that do not require transport to the hospital.

6. If the reason for calling EMS is unrelated to the hospice patient's terminal illness, the appropriate protocol may be followed, but with clinical discretion and avoidance of resuscitative measures.

7. Address/evaluate for common presentations:
   - A. Breakthrough pain: BLS Providers may suggest administration of breakthrough pain medications by patient or family. IF acute or atypical pain, clinical assess for possible cause (e.g. pathologic fracture).
   - B. Anxiety: Consider causes, reduce stimulus. BLS Providers may suggest administration of anxiety medications by patient or family.
   - C. Dyspnea: Oxygen may be administer by EMS personnel. BLS Providers may suggest administration of dyspnea medications by patient or family.
   - D. Constipation; Suggest administration of constipation medication by patient/family
   - E. Terminal dehydration: Moisten lips with petroleum jelly, use artificial saliva/mouth sponges and/or ice chips as available.

F. Confusion/Delirium: speak slowly and calmly to the person. Remind the patient of where they are and who you are. Avoid contradicting the patient's statements.

8. If Patient/Family requests to revoke hospice status:
   A. Transport with a goal of comfort (to patient and family), exercising clinical discretion on treatment during transport
   B. B. Airway and ventilation management should be limited to oral/nasopharyngeal airway and BVM use. SGA and intubation are not indicated for patients enrolled in hospice at time of EMS arrival.
   C. Avoidance of CPR is recommended, and early termination is appropriate if initiated and no immediate response. Should CPR have been performed and ROSC obtained, airway and ventilatory management should remain limited to BVM.

PARAMEDIC PROVIDERS

1. ALS providers are authorized to administer hospice medications (See [Appedix 1: Hospice Comfort Medications]) (Many hospice patients will have a hospice comfort kit with medications)

Termination of Resuscitation Efforts

S17

STANDING ORDERS

CRITERIA	PATIENT CARE GOALS
• Any cardiac arrest patient that has received resuscitation efforts and has return of spontaneous circulation (proceed to [C6: Post ROSC Care]) • Any cardiac arrest patient that has received resuscitation efforts in the field but has not responded to treatment • Any cardiac arrest patient where resuscitation efforts have been initiated in the field and it is later found that the patient has a DNR or other actionable medical order precluding continuation of resuscitation efforts • When rescuers are physically exhausted/unable to continue resuscitation efforts	• Survival an functional neurologic outcomes are unlikely if ROSC is not obtained by EMS. It is dangerous to the crew, pedestrians, and other motorists and not advised to attempt to resuscitate a patient during ambulance transport.

ALL EMS PROVIDERS

- Explain rationale for termination of resuscitation to family or bystanders
- If resuscitation terminated in the field, request law enforcement respond to the scene
- Consider requesting Support Officer respond to the scene to assist with family/friends/bystanders
- Do not remove EKG pad/patches, ET tube, SGA, IV, IO or other EMS interventions
- If circumstances are suspicious, refer to [S4: Approach to Crime Scenes & Evidence Preservation]

⚠ **NOTE**: Survival an functional neurologic outcomes are unlikely if ROSC is not obtained by EMS. It is dangerous to the crew, pedestrians, and other motorists and not advised to attempt to resuscitate a patient during ambulance transport.

EMT AND ABOVE PROVIDERS

- Request ALS response but EMTs may consider Termination of Resuscitation prior to ALS arrival when ETA for ALS arrival is > 25 minutes **AND** all of the following exist:
  1. Cardiac arrest was not witnessed (by anyone, bystander/family, or EMS)
  2. At least four 2-minute cycles of CPR have been completed with at least 3 AED rhythm analyses
  3. No shocks advised or delivered by AED
  4. No ROSC at any time

PARAMEDIC PROVIDERS

- When an ALS provider is on scene from the initiation of resuscitation, resuscitation may be terminated at the discretion of the ALS provider when the following timeframes have been met:
  - -Persistent Asystole x 20 minutes
  - -Slow and/or wide complex PEA x 20 minutes
  - -Fast/Narrow PEA x 45 minutes
  - -VF/Pulseless VT x 45 minutes

Termination of Resuscitation Efforts

S17

STANDING ORDERS

PARAMEDIC PROVIDERS

- If ALS arrives on scene of resuscitation with ongoing BLS: Consider termination of resuscitation if:
  1. After a total (BLS + ALS) resuscitation time of 20 minutes with the AED having *never* advised shock *AND* the first rhythm for ALS providers is systole or slow/wide PEA
  2. If the patient is found in fast/narrow PEA and does not achieve ROSC after 45 minutes of ALS + BLS care
  3. If the patient is found in VF/Pulseless VT does not achieve ROSC after 45 minutes of ALS + BLS care.
  4. In the case of non-traumatic arrest with narrow/fast PEA and/or VF/Pulseless VT, the Paramedic must complete the ALS algorithm in these protocols prior to consideration of TOR, regardless of time frame.
- Consider discussion with online medical control whenever possible after 20 minutes of ALS resuscitation for advice on treatment, termination, or transport.
-
- If patient is under hospice care, contact hospice at (360) 814-5550 and contact the nurse on call. If no contact is made within 20 minutes, then recall and ask for the administrator on call. If both of these fails, then contact law enforcement agency to assist.
- If patient is at a skilled nursing facility or other healthcare facility, call the on-call or chief administrator to see if they have an alternate process other than contacting law enforcement.
- An EMS responder or appropriate individual must stay on scene until the arrival of local law enforcement.

NOTES	DOCUMENTATION / KEY PERFORMANCE INDICATORS
• Logistical factors should be considered, such as collapse in a public place, family wishes, and safety of the crew and public. • Quantitative EtCO2 measurements of less than 10mmHg or falling greater than 25% despite resuscitation indicates a poor prognosis and provide additional justification to support termination of resuscitation	• Rationale for termination of resuscitation • Duration of resuscitation efforts • Response to treatment, if any

SECTION 10:
PATIENT CARE PROCEDURES

TABLE OF CONTENTS

Waveform Capnography

PR1

PROCEDURE

INDICATIONS	CONTRAINDICATIONS
• Intubated patients • CPAP patients • All respiratory distress patients • Trauma, Overdoses • During cardiac arrest to monitor quality of CPR and prognosis • All patients receiving high risk medication or medication combinations	• None

EMT AND ABOVE PROVIDERS

⚠ **NOTE:** MPD-approved specialized training and authorization required for EMTs to perform this procedure.

Procedure

1. Apply ETCO2 monitor

- Normal ETCO2 is 35-45 mmHg
- All patients should have a continuous waveform with each peak indicating a breath
  - -If ETCO2 decreases below 35 and RR is < 6, patient may need ventilatory assistance or Naloxone in the case of Opiate overdose
- If very elevated ETCO2 (i.e. > 55), patient may be retaining CO2 due to COPD, asthma, or another cause and require medication or ventilatory assistance
- A very low ETCO2 (i.e. < 20) and lack of waveform may indicate tube misplacement
- ETCO2 for TBI should be maintained at 35-40 mmHg
- ETCO2 < 5 does not represent confirmation of tube placement (if required, use video to confirm)
- It is key to remember that changes in capnography reflect changes in either ventilation, perfusion, and/or metabolism and is often an earlier indication of a change in patient condition than other clinical parameters (HR, BP, LOC, etc.)
- Cardiac Arrest
  - -Once intubated, attempt to improve CPR quality to attain ETCO2 > 30 mmHg
  - -Generally, if ETCO2 is still < 20 after resuscitation, there is a poor prognosis for attaining ROSC in cardiac arrest

NOTES	DOCUMENTATION / KPIs
• Use continuous waveform capnography to detect end-tidal carbon dioxide (ETCO2). This is an important adjunct in the monitoring of patients with respiratory distress, respiratory failure, and those treated with positive pressure ventilation. • It should be used as the standard to confirm SGA, EGD, and endotracheal tube placement.	• Initial ETCO2 value and the presence of a good waveform • ETCO2 value every 5 minutes

Figure 1: Normal end-tidal capnography waveform

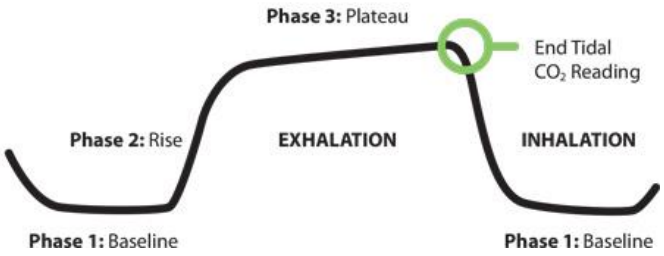


Figure 2: Partial pressures as O_2 and CO_2 are pushed to different parts of the body

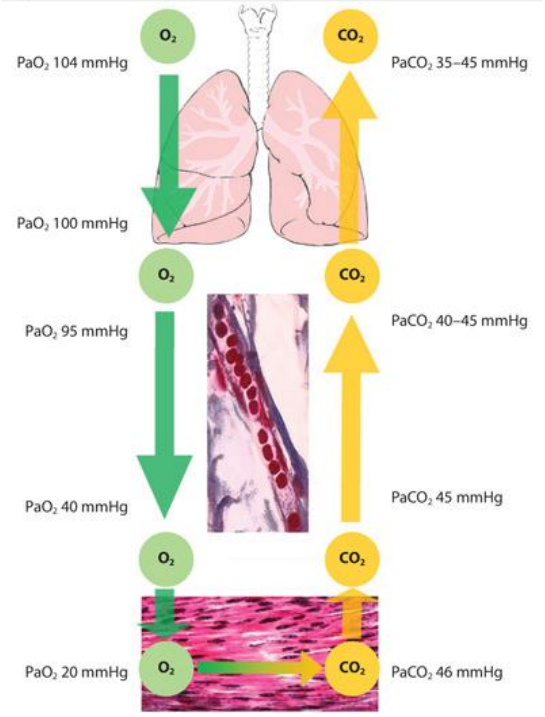


Figure 3: Oxyhemoglobin dissociation curve

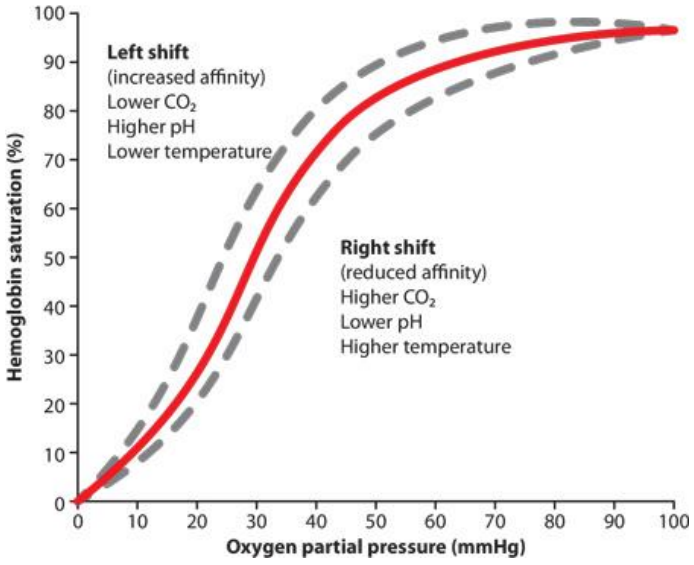
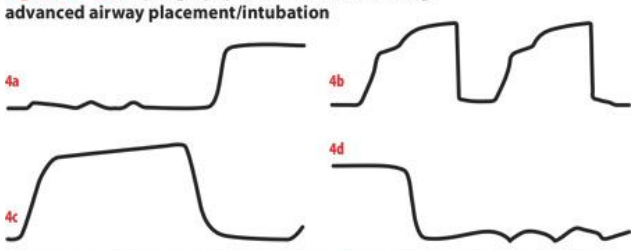


Figure 4a–4d: Capnography waveforms seen during advanced airway placement/intubation



4a: Near flat-line of apnea to normal rounded rectangle; **4b:** Irregular top indicating problem with airway placement; **4c:** Near-normal shape indicates successful airway placement; **4d:** Sudden drop indicating displacement of airway or cardiac arrest.

Figure 5: Capnography waveform indicating ROSC after cardiac arrest

Figure 6: Capnography waveforms illustrating problematic ventilation

6a: Faster ventilation/rapid exhalation. **6b:** Slower ventilation/longer exhalation with CO_2 building up between breaths.

Continuous Positive Airway Pressure (CPAP)

PR2

PROCEDURE

INDICATIONS	CONTRAINDICATIONS
• Patients whom inadequate ventilation is suspected and who have adequate mental status and respiratory drive to tolerate CPAP • Hypoxic patients requiring pre-oxygenation and de-nitrogenation prior to intubation • CPAP may be used for respiratory support in patients for whom progression to mechanical ventilation is contraindicated (DNR/DNI).	• Facial features or deformities that prevent an adequate mask seal • Apnea • Excessive respiratory secretions or vomiting • Suspected pneumothorax • Trauma patients (see notes) • Decreased mental status (see notes)

PARAMEDIC PROVIDERS

Procedure

- Ensure adequate oxygen supply to ventilation device
- Explain the procedure to the patient
- Patient should be positioned seated with head up
- If patient is agitated or uncooperative, and application is part of Delayed Sequence Intubation (DSI), administer medication(s) as indicated in Intubation Protocol
- Consider placement of a nasopharyngeal airway
- Place the delivery mask over the mouth and nose. Oxygen should be flowing through the device at this point
- Secure the mask with provided straps starting with the lower straps until minimal air leak occurs
- If the Positive End Expiratory Pressure (PEEP) is adjustable on the CPAP device adjust the PEEP beginning at 5-10cm H20 of pressure support. Start at lower scale of pressure for patients with COPD or asthma. Start at 10cm for patient with suspected pulmonary edema or severe hypoxia in setting of DSI
- Titrate oxygen and PEEP pressure support levels to the patient's response. Many patients respond to low FIO2 (30-50%). For patients undergoing DSI, use 100% FIO2. "The CPAP device provides a fixed FI02 of 30%, if hypoxemia persists, add O2 via nasal cannula placed under the CPAP mask."
- Encourage the patient to allow forced ventilation to occur. Observe closely for signs of complications or intolerance. The patient must be breathing for optimal use of the CPAP device
- Monitor and document end-tidal CO2 (ETCO2). 12. Document time and response on patient care report (PCR)
- Early medication for nausea management is recommended if CPAP is being considered or employed
- Some CPAP models allow administration of nebulized medication

NOTES	DOCUMENTATION / KPIs
• A brief therapy with CPAP may be indicated and used to facilitate pre-oxygenation, de-nitrogenation, and ventilation in direct preparation for intubation as part of the intubation procedure itself under settings where traditional longer term CPAP application would be considered contraindicated (e.g. decreased mental status, etc…).	• Initial ETCO2 value and the presence of a good waveform • SPO2 before, during, and after CPAP placement • Patient response to treatment

Positive End-Expiratory Pressure / PEEP Valve

PR3

PROCEDURE

INDICATIONS	CONTRAINDICATIONS
• Patients requiring positive pressure ventilation via bag-valve mask, endotracheal intubation, or supraglottic airway	**Absolute** • Patients with known or suspected tension pneumothorax, penetrating chest injury, or chest trauma **Relative** • Trauma patients • Hypotension (SBP < 90) • Patients presenting with suspected acute asthma exacerbation (see notes) • Patients with suspected acute COPD exacerbation (see notes)

PARAMEDIC PROVIDERS

Procedure

- Apply the PEEP Valve with initial setting of 5cm H20. A PEEP valve may be attached to a bag valve mask, endotracheal tube, or supraglottic airway. Most PEEP valves may be adjusted to different pressure measurements. The default pressure measurement to be used is 5cm H20. This may be used in all patients receiving ventilation - but should be removed or not used in patients with absolute contraindications.
  -PEEP valves may be used in patients in cardiac arrest at a setting of 5cm H2O.
- Re-assess patient oxygenation, ventilation, and blood pressure after application and continue to monitor.
  -If mild hypotention occurs, either bolus 250-500mL normal saline OR discontinue PEEP
- In hypoxic patients who do not have relative contraindications, increase the PEEP to 10cm H20 as needed to improve oxygenation. Patients with suspected CHF benefit the most from the application of PEEP.
  -If mild hypotension occurs, either bolus 250-500mL normal saline OR reduce PEEP

NOTES	DOCUMENTATION / KPIs
• No benefit from the use of PEEP has been identified for patients with suspected acute asthma or COPD exacerbation and these conditions have the risk of resulting in auto-PEEP. Therefore routine extrinsic PEEP (the use of the PEEP valve) is not currently recommended. • Positive end expiratory pressure (PEEP) is the application of a fixed pressure at the end of expiration. PEEP raises the functional residual pressure and capacity above the level at which alveolar closure occurs. The goal of PEEP is to: -minimize alveolar collapse and improve oxygenation (recruitment) -reduce gas trapping (increase compliance) -decrease the workload of breathing -maintain ventilation/perfusion (V/Q) matching	• Initial ETCO2 value and the presence of a good waveform • SPO2 before, during, and after CPAP placement • Patient response to treatment

Pulse Oximetry

PR4

PROCEDURE

INDICATIONS	CONTRAINDICATIONS
• Pulse oximetry is a routine vital sign and should be obtained on most patients (see notes) • Any patient with a concern for possible hypoxia or a cardiorespiratory condition	• None

ALL EMS PROVIDERS

Procedure

- Apply probe to patient's finger or any other digit as recommended by the device manufacturer. Allow machine to register saturation level.
- Record time and initial saturation percent on room air if possible in the patient care report (PCR).
- Verify pulse rate on machine with actual pulse of the patient.
- Monitor critical patients continuously until arrival at the hospital. If recording a one-time reading, monitor patients for a few minutes as oxygen saturation can vary.
- Document percent of oxygen saturation every time vital signs are recorded and in response to therapy to correct hypoxemia.
- In general, normal saturation is 97-99%. Below 92-94%, suspect a respiratory compromise, which may or may not be a chronic condition (e.g. COPD). Oxygen therapy is indicated for patients ≤89-90%.
- Use the pulse oximetry as an added tool for patient evaluation. Treat the patient, not the data provided by the device.
- The pulse oximeter reading should never be used to withhold oxygen from a patient in respiratory distress or when oxygen therapy despite good pulse oximetry readings is indicated, such as for pre intubation pre-oxygenation. Supplemental oxygen is generally not required if the oxyhemoglobin saturation is ≥ 94%. If there are obvious signs of ischemia, heart failure, dyspnea, or hypoxia, goal is to maintain saturation 90-99% depending on patient condition.
- Factors which may reduce the reliability of the pulse oximetry reading include but are not limited to:
  - -Poor peripheral circulation (blood volume, hypotension, hypothermia)
  - -Excessive oximeter sensor motion
  - -Fingernail polish (may be removed with acetone pad)
  - -Carbon monoxide bound to hemoglobin
  - -Irregular heart rhythms (atrial fibrillation, SVT, etc.)
  - -Jaundice
  - -Placement of BP cuff on same extremity as pulse ox probe.
- If inaccurate or unreliable pulse-oximetry readings are suspected, document concern in narrative of PCR.

Carboxyhemoglobin Monitoring

PR5

PROCEDURE

INDICATIONS	CONTRAINDICATIONS
• Persons with suspected or known exposure to carbon monoxide or substance likely to produce carboxyhemoglobin or methemoglobin • All patients with an indoor smoke inhalation exposure should have carboxyhemoglobin monitoring	• None

PARAMEDIC PROVIDERS

Procedure

- Apply probe to patient's finger or any other digit as recommended by the device manufacturer. Allow machine to register saturation level.
- Record time and initial saturation percent on room air if possible in the patient care report (PCR).
- Verify pulse rate on machine with actual pulse of the patient.
- Monitor critical patients continuously until arrival at the hospital. If recording a one-time reading, monitor patients for a few minutes as oxygen saturation can vary.
- Document percent of carboxyhemoglobin or methemoglobin values every time vital signs are recorded during therapy for exposed patients.
- Carboxyhemoglobin reference ranges vary, and they also differ among smokers and nonsmokers.
  - -Non-smokers: Up to 3%
  - -Smokers: Up to 10%
  - -Presence of fetal hemoglobin in infancy (up to ~3 months): Up to 10%
  - -Indications for hyperbaric therapy very, may be considered if levels >30%
- Factors which may reduce the reliability of the oximetry reading include, but are not limited to:
  - -Poor peripheral circulation (blood volume, hypotension, hypothermia)
  - -Excessive oximeter sensor motion
  - -Fingernail polish (may be removed with acetone pad)
  - -Irregular heart rhythms (atrial fibrillation, SVT, etc.)
  - -Jaundice
  - -Placement of BP cuff on same extremity as pulse ox probe.
- If inaccurate or unreliable oximetry readings are suspected, document concern in narrative of PCR.

NOTES	DOCUMENTATION / KPIs
• Not all oximeters within Skagit County are able to measure carboxyhemoglobin or methemoglobin. Initiate oxygen therapy in setting of suspected carbon monoxide toxicity and do not delay patient care or treatment waiting for oximetry if not immediately available.	• Initial reading on room air • Reading after initiation of supplemental oxygen

Foreign Body Airway Obstruction

PR6

PROCEDURE

INDICATIONS	CONTRAINDICATIONS
• Sudden onset of respiratory distress often with coughing, wheezing, gagging, or stridor due to a suspected foreign-body obstruction of the upper airway	• None

ALL EMS PROVIDERS

Procedure

1. Assess the degree of foreign body obstruction
   - Do not interfere with a mild obstruction allowing the patient to clear their airway by coughing.
   - In severe foreign-body obstructions, the patient may not be able to make a sound. The victim my clutch his/her neck in the universal choking sign.
2. For an infant, deliver 5 back blows (slaps) followed by 5 chest thrusts repeatedly until the object is expelled or the victim becomes unresponsive.
3. For a child, perform a sub-diaphragmatic abdominal thrust (Heimlich Maneuver) until the object is expelled or the victim becomes unresponsive.
4. For adults, a combination of maneuvers may be required:
   - First, sub-diaphragmatic abdominal thrusts (Heimlich Maneuver) should be used in rapid sequence until the obstruction is relieved.
   - If abdominal thrusts are ineffective, chest thrusts should be used. Chest thrusts should be used primarily in morbidly obese patients and in the patients who are in the late stages of pregnancy
5. If the victim becomes unresponsive, begin CPR immediately but look in the mouth before administering any ventilations. If a foreign-body is visible, remove it.
6. Do not perform blind finger sweeps in the mouth and posterior pharynx. This may push the object farther into the airway.
7. Document the methods used and result of these procedures in the patient care report (PCR).

PARAMEDIC PROVIDERS

8. In unresponsive patients, visualize the posterior pharynx with a laryngoscope to potentially identify and remove the foreign-body using Magill forceps.

Surgical Airway / Cricothyrotomy

PR7

PROCEDURE

INDICATIONS	CONTRAINDICATIONS
• Alternate attempts to secure the airway and/or successfully obtain or maintain adequate oxygenation and ventilation are unsuccessful or failing (generally a rescue technique) • In rare cases where intubation is anticipated to be contraindicated and/or thought to be impossible (e.g. a patient with jaw wired shut) who requires immediate airway control a surgical airway may represent a primary airway management technique	• Age <10 years (unless teenage or adult size, see notes) • Ability to maintain adequate oxygenation and ventilation by alternate means

PARAMEDIC PROVIDERS

Equipment

- Scalpel
- 6.0 cuffed endotracheal tube (6.5 in larger patients)
- Endotracheal tube introducer (bougie, Eschmann stylet)
- Povidone iodine or chlorhexidine skin soap (if time permits)
- 2% lidocaine with skin needle (if time permits)
- Standard intubation equipment

Procedure

The Scalpel Bougie technique is the recommended technique for surgical airway placement in Skagit County.

- Palpate the neck and attempt to identify landmarks. If not previously performed or when time permits, mark cricothyroid membrane with permanent skin pen to help identify anatomy
- If time and situation permit, prepare the neck with soap and lidocaine.
- Stabilize larynx between thumb and middle finger of non-dominant hand and attempt to feel for cricothyroid membrane. Make a ~1" vertical incision through skin and subcutaneous tissue in midline (if anatomy not distorted)
- Insert index finger into incision and localize cricothyrotomy membrane
- Insert scalpel to make a horizontal incision through the cricothyrotomy membrane. Insert scalpel through membrane and bring the scalpel towards you until stops against trachea, then rotate scalpel 180 degrees (not removing) and cut the membrane away from you to the other side of the trachea (Result: A horizontal incision through the length of the membrane.)
- Remove scalpel and insert index finger all the way in to the trachea until you can touch the cricoid (back of the trachea)
- Insert bougie along the index finger and make sure the bougie is same space as finger. Insert bougie until you reach hold up You should both feel tracheal rings with bougie and reach hold up past the carina at about 12cm in most adults.)
- Load the 6.0 ET on to bougie and insert ET tube (may need to spin the tube during insertion to slide it in) just until the cuff have passed. Inflate cuff. Remove bougie and confirm placement with end-tidal CO2, chest rise, patient oxygenation/ventilation, and BVM compliance.)

- Attempt to tape secure ET tube if possible, but continuous, careful manual stabilization of the ET tube is required. Standard continuous monitoring of an intubated patient is required with heightened attention to risk of dislodgment.
- Provide sedation, analgesia, and/or paralysis as indicated per intubation protocol.

CricCon2 **Simplified Cricothyrotomy Alert Posture**	
Ready **(All Patients)**	**Discuss/Feel/See Kit**
Set **(Difficult Airway)**	**Mark/Kit Bedside**
About to Go **(Crashing/Hypoxemic)**	**Inject/Prep/Open & Set Kit/ Scalpel in Hand**

NOTES	DOCUMENTATION / KPIs
• ⚠ **NOTE**: It is recommended that every intubation/ airway procedure be approached with the understanding that there is the possibility of a need for a surgical airway. See the intubation protocol for the recommended CriCon2 approach to preparation and mindset • The performance of a surgical airway is a sentinel event in Skagit County. Notify your agency QA officer and the EMS Medical Program Director as soon as practical.	• Initial vitals and physical exam • Interventions attempted including method of airway intervention, size of equipment used and number of attempts to achieve success • Indications for advanced airway management • Pre and post procedure vitals including SpO2 and ETCo2

Endotracheal Intubation: Video Laryngoscopy

PR8

PROCEDURE

Required Equipment for Skagit County ALS Units

- OneScope® Video Laryngoscope (handle and monitor screen)
- Disposable Pediatric blade, Size 1
- Disposable Pediatric blade, Size 2
- Disposable Adult blade, Size 3
- Disposable Adult blade, Size 4
- Disposable Adult blade, Direct, Mac 3
- Disposable Adult blade, Direct, Mac 4
- 1 Micro USB AC power cable
- 1 USB to Micro USB data transfer cable

Daily Maintenance

1. Remove OneScope® Video Laryngoscope from case
2. Press the power button on the upper right-hand side of the device screen, device should power up in 3-5 seconds
3. You should hear an audible tone to indicate auto-recording has started and see a red dot and a counting timer begin in the lower left-hand corner of the screen
4. Press and hold the red button on the lower left-hand side of the screen to stop recording
5. Click on the Menu button in the lower right-hand corner of the screen
6. Check that the device date and time stamp setting is correct (should match Zoll monitor date and time) If not, click on Time Setting and correct the date and time and then click on the check mark
7. Press and hold the power button on the upper right-hand side of the screen to power off

PARAMEDIC PROVIDERS

Intubation Procedure

1. Follow intubation protocol
2. Remove OneScope® Video Laryngoscope from case, select appropriate disposable blade
3. Extend video wand fully for adult size blade, retract video wand fully for pediatric size blade
4. Immediately prior to intubation attempt, power on the OneScope® device, verify the video feed is being displayed on the screen and that you have at least 50% battery remaining in the icon in the upper right-hand corner of the screen (Note: unlike the IntuBrite, this device has real-time anti-fogging and doesn't require a warmup)
6. Listen for audible indication that auto-recording has started, and that red dot is displayed in lower left hand corner of screen. If not, press and hold the photo/video button in the lower left-hand corner of the screen until recording starts. (**Note:** All intubation attempts will be recorded for MPD/QA review)
7. Perform intubation
8. To decontaminate unit, please refer to the cleaning and disinfection instructions found in the OneScope® Instructions For Use (IFU) booklet, on page 9. Decontaminate using manufacturer recommended cleaning procedure and **do not submerge device.**
9. Once call is complete, follow your agency process for transferring recorded video and for submitting it to Skagit County EMS using the Advanced Airway QA Review Form. ***Any failed airway attempt or failure of the OneScope® Video Laryngoscope device itself is a sentinel event and must be reporting to agency QA person and MPD using EMS Sentinel Event Form.

Endotracheal Intubation: Summary & Checklist

PR9

PARAMEDIC PROVIDERS

PROCEDURE

☐ Prepare patient and equipment

- Pre-oxygenate (goal >93%). Where possible, recommend non-rebreather and NC both at flush or 15 lpm flow, use delayed sequence intubation using Ketamine 1mg/kg IV up to 50mg IV repeated as needed and CPAP or BVM with PEEP if needed.
- De-nitrogenate (8 vital capacity breaths or 3 minutes supplemental O2)
- Establish Cri-con status
- Position patient for optimal laryngoscopy

☐ Optimize patient pre-intubation

- Where possible, resuscitate the patient in shock prior to intubation ("Resuscitation Sequenced Intubation")
- Consider push-dose Epinephrine 10mcg IV PRN
- If hypoxic, apply PEEP (after clinically evaluating for pneumothorax)

☐ Administer induction and paralytic

- Ketamine 1-2mg/kg IV up to 500mg or Etomidate 0.3mg/kg IV. Consider reduced dose for hypotensive shock states
- Succinylcholine 1.5-2mg/kg IV. (Use 2mg/kg dose in setting of hypotensive shock state or pediatric patient) OR Rocuronium 1-1.2mg/kg IV (Use 1.2mg/kg dose in setting of hypotensive shock state or pediatric patient)

☐ Finalize positioning and perform intubation*

- Consider brief initial suctioning prior to introduction of video laryngoscope
- Perform apneic oxygenation where possible with NC at 15 lpm or greater during laryngoscopy
- Consider external laryngeal manipulation to improve visualization
- Abort attempt if hypoxia occurs
  - -No more than (2) attempts per provider is recommended. In the anticipated difficult airway, the most experienced personnel should perform the intubation.
  - -After (3) attempts of laryngoscopy move rapidly to the placement of a supraglottic airway and BVM ventilation. Prepare for surgical airway if unable to adequately oxygenate or ventilate.

** Or if situation indicates, placement of supraglottic rescue airway device (SGA)*

☐ Confirm tube placement

- Record ET placement using video laryngoscope (dedicated QA review)
- Monitor and record ETCO2 for both endotracheal and supraglottic airway devices
- Auscultate chest and gastric areas. Evaluate oxygenation and ventilation status.

☐ Secure endotracheal tube

- Consider c-collar if pediatric patient

☐ Reassess patient

- Continuous ETCO2, cardiac, and oximetry monitoring indicated. Reassess vitals.

☐ Provide sedation and analgesia

- Ketamine 1-2mg/kg IV every 30 minutes PRN and/or
- Fentanyl 1-2mcg/kg IV up to every 5 minutes PRN and/or
- Midazolam 0.05mg/kg (up to 10mg) IV up to every 5 minutes PRN

☐ Evaluate need for post-intubation paralysis

Video Laryngoscopy Rigid Stylet

PR10

PROCEDURE

PARAMEDIC PROVIDERS

Description

The Rigid Stylet is a reusable device intended to aide in the placement of the endotracheal (ET) tube. The Stylet helps to shape the endotracheal tube and facilitate intubation when using video laryngoscopes. The Rigid Stylet is designed for use with a 6.0mm and larger endotracheal tubes.

Procedure

- Prior to first use and between patients, ensure the Rigid Stylet has been high-level disinfected or sterilized.
- Place the ET tube onto the Rigid Stylet assuring the distal end of the Rigid Stylet does not extend beyond the distal end of the ET tube
- Insert the ET tube into the oral cavity adjacent to the laryngoscope blade
- Position the tip of the ET tube above the vocal cords. Do not insert the Rigid Stylet through the vocal cords.
- When the ET tube is properly positioned in the glottic opening, use your thumb to apply pressure on the Thumb Tab and pull the Rigid Stylet back 5cm . This allows the ET tube tip advancement past the vocal cords
- Position the ET tube as per standard protocol and remove the Rigid Stylet.

Cautions

- Inspect device before each use. Do not use and discard if damaged.
- Do not advance the Rigid Stylet into or pass the glottis under any circumstance
- Do not advance the Rigid Stylet pass the distal end of the endotracheal tube.
- This is a semi-critical device and may become contaminated with human blood or body fluids. Clean and either high-level disinfect or sterilize after each use.

NOTES	DOCUMENTATION / KPIs
• The stylet is expensive and is reusable. It is not disposable. • It is not a malleable stylet. The device is rigid and specifically shaped. • Do not look at the video screen when inserting the video laryngoscope, look at the patient's anatomy. You want to gently advance the laryngoscope until it is just behind the tongue, then adjust using video screen. (Advancing the blade too far was a common event and makes placement more difficult) Similarly, gently advance and position the styletted ET tube while looking at patient, then transition to video screen. • Once positioned at the opening of the vocal cords, use the thumb to begin removal of the stylet, and then advance the ET tube through the cords. • Reconfirm on video the proper positioning of the ET tube before completing stylet removal • Retain the stylet for cleaning, disinfecting, and reuse. Do NOT dispose of the stylet.	• Initial vitals and physical exam • Interventions attempted including method of airway intervention, size of equipment used and number of attempts to achieve success • Indications for advanced airway management • Pre and post procedure vitals including SpO2 and ETCo2

Endotracheal Tube Introducer (Eschmann Stylet/Bougie)

PR11

PROCEDURE

INDICATIONS	CONTRAINDICATIONS
• May be used for any intubation • Initial intubation attempt unsuccessful • Predicted difficult intubation • Surgical airway placement • Emergent exchange of endotracheal tubes	• Adult bougie will not fit ET tube size <6.5mm • Pediatric bougie, if available, may be used for ET tubes 4-6mm

PARAMEDIC PROVIDERS

Procedure

1. Prepare, position, and oxygenation patient per intubation protocol.
2. Select proper ETT tube without stylet, test cuff and prepare suction.
3. Lubricate the distal end of the cuff of the ETT and the distal 1/2 of the bougie. Note: Failure to lubricate the Bougie and the ETT may result in being unable to pass the ETT.
4. Using laryngoscopic techniques, visualize the vocal cords if possible using external laryngeal manipulation as needed.
5. Introduce the Bougie with curved ("Coude") tip anteriorly and visualize the tip passing the vocal cords or above the arytenoids if the cords cannot be visualized.
6. Tracheal placement should result in palpable vibrations of the bougie as the tip bumps against the tracheal rings during insertion. Alternately, tracheal placement can be confirmed by "hard stop" or "hold up" (generally at around 40cm insertion in adults). Placement in the esophagus provides no such hard stop.
7. Once inserted, gently advance the Bougie until you meet resistance or "hold-up" (if you do not meet resistance you have a probable esophageal intubation and insertion should be reattempted or the failed airway protocol implemented as indicated).
8. IF needed, withdraw the Bougie only 1-2cm to a depth sufficient to allow loading of the ETT while maintaining proximal control of the Bougie. Loading of the ETT over the bougie is best done by an assistant/partner.
9. Gently advance the Bougie and loaded ET tube until you have hold-up again, thereby assuring tracheal placement and minimizing the risk of accidental displacement of the Bougie.
10. While maintaining a firm grasp on the proximal Bougie, introduce the ET tube over the Bougie passing the tube to its appropriate depth. If you are unable to advance the ETT into the trachea easily and the Bougie and ETT are adequately lubricated, withdraw the ETT slightly and rotate the ETT 90 degrees COUNTER clockwise to turn the bevel of the ETT posteriorly. (When the tip of the tube is not passing, it is often caught on the arytenoids, and rotating counter clockwise allows the bevel of the ETT to guide the tube up and over and through the cords) If this technique fails to facilitate passing of the ETT you may attempt direct laryngoscopy while advancing the ETT (this will require an assistant to maintain the position of the Bougie and, if so desired, advance the ETT).
11. Once the ETT is correctly placed, hold the ET tube securely and then remove the Bougie.
12. Confirm tracheal placement according to the intubation protocol.

Supraglottic Airway (i-Gel®) Placement

PR12

PROCEDURE

INDICATIONS	CONTRAINDICATIONS
• Unconscious patient without a gag reflex requiring airway management • Use as a rescue airway device in a difficult airway situation	• Intact gag reflex • Caustic ingestion • Trismus (reduced opening of jaws from spasm or other cause) • Limited mouth opening or inability to pass the I Gel® without excessive force

EMT AND ABOVE PROVIDERS

⚠ **NOTE:** MPD-approved specialized training and DOH endorsement required for EMTs to perform this procedure.

EMT w/ SGA Endorsement

• Estimate body weight and choose size based on patient ideal body weight and i-Gel® size availability:

i-Gel Size	Broselow Color	Patient Size	Patient Weight (kg)/(lb)
1		Neonate	2-5 kg / 4-11 lbs
1.5		Infant	5-12 kg / 11-26 lbs
2		Small Pediatric	10-25 kg / 22-55 lbs
2.5		Large Pediatric	25-35 kg / 55-77 lbs
3		Small Adult	30-60 kg / 66-132 lbs
4		Medium Adult	50-90 kg / 110-200 lbs
5		Large Adult +	90+ kg / 200+ lbs

- Prepare i-Gel® per manufacturer's guidelines
- Open the lubricant and place a small bolus on the inner side of the i-gel cradle (see video)
- Lubricate the back, sides, and front of the i-gel with a thin layer of lubricant
- Grasping the i-gel firmly along the bite block, open the airway.
- Position the device so the i-gel 02 cuff outlet is facing the patient. Introduce the leading soft tip into the mouth of the patient in the direction of the hard palate.
- Glide the device downwards and backwards along the hard palate with a continuous but gentle push until a definitive resistance is felt.
- The tip of the airway should be located into the upper esophageal opening with the cuff located against the laryngeal framework. The incisors should be resting on the bite block.
- For sizes 3-5, secure the device by sliding the strap underneath the patient's neck and attaching to the hook ring. Take care to ensure the strap is not secured too tightly around or too low on the neck. For sizes 1-2.5, the device can be secured by taping maxilla to maxilla.
- Commence with positive pressure ventilation per appropriate protocols. (When ALS become available, end-tidal CO2 monitoring should be initiated)
- Assess quality of ventilation (listen to lung sounds, observe chest rise, and monitor pulse oximetry
- Reassess tube placement frequently, especially after movement of the patient.
- Document the time, provider, provider level and success for the procedure.
- Complete all applicable airway confirmation fields including chest rise, bilateral, equal breath sounds, absence of epigastric sounds and end-tidal CO2 reading as soon as available.

PARAMEDIC PROVIDERS

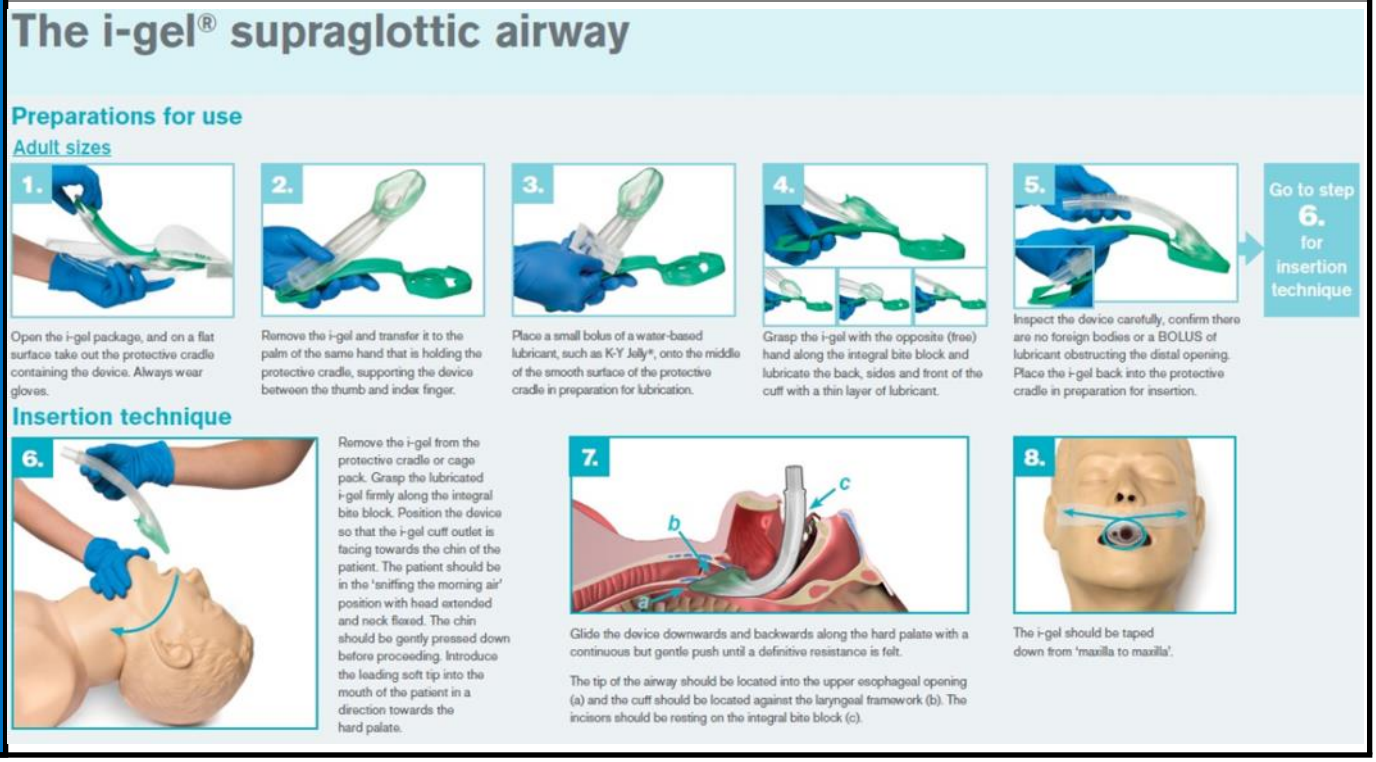
- Verification of placement (if placed by another provider/prior to arrival)
- Initiate continuous ETCO2 monitoring

Supraglottic Airway (i-Gel®) Placement

PR12

PROCEDURE

NOTES	DOCUMENTATION / KPIs
• Insertion can generally be achieved in < 5 seconds • Sometimes a feel of "give-way" is felt before the end poin resistance is met. This is due to the passage of the bowl of the i-Gel® through the faucial pillars. It is important to continue to insert the device until a definitive resistance is felt. • Once correct insertion is achieved and the teel are located on the integral bite block, do not repeatedly push down or apply excessive force. • If there is resistance, remove and re-lubricate and reposition the airway before repeat insertion. However, ***no more than (3) attempts*** on one patient should occur. • It is not necessary to insert fingers or thumbs into the patient's mouth during insertion. • If required and equipment available, Paramedics may pass an appropriate size nasogastric tube down the gastric channel of the i-Gel® **Regarding Dentures** • Dentures may be left in place during initial bag valve mask ventilation to improve quality of mask seal. However, prior to i-Gel® insertion, dentures should be gently removed to prevent them from becoming a loose foreign body in the airway. Simply gently pull out the dentures and proceed. If dentures are tightly adhered or are not easily removable, leave them in place and notify ALS and/or ED staff upon transfer of care.	• Approximate patient weight • Placement verification • SpO2 reading before & after • ETCO2 reading before & after



Bleeding Control—Tourniquet Application

PR13

PROCEDURE

INDICATIONS	CONTRAINDICATIONS
• Life threatening extremity hemorrhage that can not be controlled by other means or requires immediate control during assessment. • Potentially serious or life threatening extremity hemorrhage where tactical, safety, or patient access considerations prevent the use of standard hemorrhage control techniques.	• Non-extremity external hemorrhage • Proximal extremity location where tourniquet application is not practical

ALL EMS PROVIDERS

Procedure

1. Select commercially manufactured tourniquet device
2. Apply the tourniquet to the extremity proximal to the wound, preferably on single-bone structures (humerus and femur) above wound. **Do not place over joints.**
3. Tighten windlass rod until bleeding stops
4. The time of application (example: "TQ 20:30" indicates the tourniquet was placed at 8:30pm) should be written on the tourniquet itself (if it has a TIME tab), on a piece of tape secured to the tourniquet extremity, or written directly on the patients skin next to the tourniquet with a permanent marker.
5. The tourniquet should be left uncovered so that the site can be monitored for recurrent hemorrhage.
6. Keep tourniquet on throughout transport—A correctly applied tourniquet should only be removed by the receiving hospital
7. Continue to monitor patient vitals and wound
8. Ensure receiving hospital personnel are aware of tourniquet application

PARAMEDIC PROVIDERS

9. Consider analgesia in accordance with trauma protocol
10. In general, keep TQ applied. In circumstances where TQ is applied due to resource limitations or multiple patients, etc. ALS provider at their discretion may consider removal to re-assess wound.

NOTES	DOCUMENTATION / KPIs
• Commonly used commercial tourniquets approved by the Committee on Tactical Combat Casualty Care (CoTCCC) include: -Combat Application Tourniquet (CAT) -Special Operations Forces Tactical Tourniquet (SOFTT) -SAM Extremity Tourniquet (SAM-XT)	• Mechanism of injury • Time of tourniquet application

Bleeding Control—Wound Packing

PR14

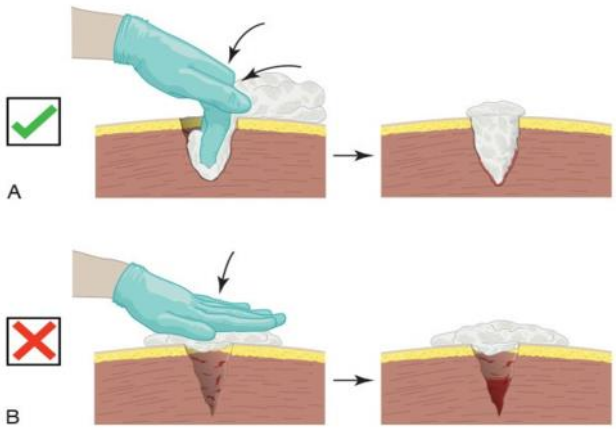
PROCEDURE

INDICATIONS	CONTRAINDICATIONS
• Life threatening extremity or penetrating junctional hemorrhage that can not be controlled by other means or requires immediate control during assessment.	• Non-extremity external hemorrhage • Proximal extremity location where tourniquet application is practical

ALL EMS PROVIDERS

Procedure

1. Immediately apply direct pressure to the wound, using gauze or clean cloth to slow or stop the hemorrhage until wound packing supplies are available
2. Place gloved fingers into the wound to apply initial pressure to the target area (with your target being the vein, artery, or both) and compress the source of the bleeding. Keep in mind that the body's anatomy presents with major vessels running close to bones. Whenever possible, utilize pressure against a bone to assist with bleeding control.
3. Pack the wound with gauze, tightly. The goal is to completely and tightly pack the wound cavity to stop the hemorrhage. Begin packing the gauze into the wound with your finger, while simultaneously maintaining pressure on the wound.
4. When no more gauze can be packed inside the wound, hold direct pressure on the wound for at least 3 minutes.
5. Secure a snug pressure dressing over the wound. You may consider splinting or immobilizing the area, if possible, to prevent movement during transport from dislodging the wound packing and allowing hemorrhage to restart.
6. Monitor wounds and dressings during transport for continued bleeding.



Orthostatic / Postural Vital Signs

PR15

PROCEDURE

INDICATIONS	CONTRAINDICATIONS
• Patient situations with suspected blood, fluid loss, dehydration, or medication effect with no indication for spinal immobilization. • Patients > 8 years of age, or patients larger than the Broselow-Luten (or equivalent) based tape • Orthostatic vital signs are neither sensitive nor specific for volume loss or dehydration and may induce syncope in some cases	• Identified hemodynamic instability • Clinical instability and/or identified urgency emergency prohibits

ALL EMS PROVIDERS

Definition of Orthostatic Vital Signs for Skagit County EMS:

A reduction in systolic blood pressure of at least 20 mmHg within 3 minutes of standing or positional change
AND/OR
An elevation of heart rate of at least 20 beats per minute within 3 minutes of standing or positional change

Procedure

1. Gather and prepare standard sphygmomanometer and stethoscope.
2. With the patient supine, obtain pulse and blood pressure.
3. Have the patient sit upright.
4. After 30 seconds, obtain blood pressure and pulse.
5. If the systolic blood pressure falls more than 20 mmHg or the pulse rises more than 20 bpm, the patient is considered to be orthostatic by vital signs. If symptomatic, patient is considered to be orthostatic by symptom.
6. If tolerated, stand the patient, and after 30 seconds repeat blood pressure and pulse. Again If the systolic blood pressure falls more than 20 mmHg or the pulse rises more than 20 bpm in comparison with supine values, the patient is considered to be orthostatic by vital signs.
7. If a patient experiences dizziness upon sitting or is obviously dehydrated based on history or physical exam, formal orthostatic examination should be omitted and fluid resuscitation initiated.

NOTES	DOCUMENTATION / KPIs
• The exact parameters (HR and BP) used do determine orthostasis vary by system. Adjusting the specifics affects sensitivity and specificity, but not necessarily utility. Clinical interpretation is warranted. Orthostatics can only be interpreted in the clinical context of the individual patient. • If the above vital sign abnormalities are measured and meet the above criteria, document and report the patient has having demonstrated positive orthostatic vital signs. • In addition to the vital signs, it is important to also note the patient's symptoms during measurement of orthostatic vitals. A patient may have "*clinical" orthostasis* (meaning they feel symptomatic on standing), with or without positive orthostatic vital signs.	• Vital signs with corresponding body Position (supine, sitting, standing) • Symptoms during measurement of orthostatic vital signs if positive

Orthostatic / Postural Vital Signs

PR15

NOTES

Orthostatic Hypotension (also referred to as postural hypotension):

- Orthostatic hypotension is defined as a sudden drop in blood pressure upon standing from a sitting or supine position. (An increase in heart rate may also have potential significance)

- There are a variety of definitions on the magnitude of the blood pressure and heart rate changes. In general the choice of numbers affects the *sensitivity* and *specificity.* For example, looking for a blood pressure drop of 10mm Hg on standing identifies more people who might be orthostatic, say from dehydration (i.e., increases *sensitivity*). However, using this threshold is also more likely to also capture people who are not dehydrated and for whom a drop of 10mm Hg is clinically meaningless. Likewise, monitoring for a drop of 40mm Hg in blood pressure would capture people with true pathology, but miss many others who are less severe, but also clinically relevant (reduces *specificity)*

- The parameters chosen to define orthostatic are arbitrary, and represent a component of the clinical exam meant to only to supplement the history and exam. Overall interpretation of clinical significance requires clinical context.
    - Patients found to have positive orthostatic vital signs are at increased risks of falls or injuries, regardless of presence/absence of symptoms

Intravenous Vascular Access / Therapy

PR16

PROCEDURE

INDICATIONS	CONTRAINDICATIONS
• Any patient who upon assessment is thought to have an emergent or potentially emergent condition that may require the administration of intravenous fluids and/or medications. • Patients who may require major fluid resuscitation	• Local skin infection, inflammation, trauma, or burns at IV access sites (consider IO access)

EMT AND ABOVE PROVIDERS

EMT w/ IV Therapy Endorsement

Procedure

1. Select, check, and assemble equipment
   - IV Solution, administration set, catheter, sharps container, IV Start kit
2. Check solution for:
   - Proper solution, clarity or particulate matter, expiration date, protective covers on tail ports
3. Check administration set for:
   - Drip rating, tangled tubing, protective covers on both ends, flow clamp closed
4. Spike solution bag
   - Insert IV tubing spike into IV solution bag tail port by twisting and pushing until inner seal is punctured while maintaining sterility
   - Turn IV bag upright, squeeze drip chamber and fill half-way
   - Turn on flow and bleed line of all air
   - Shut flow off after assuring all large air bubbles have been purged
5. Perform venipuncture
6. Secure catheter and IV tubing to patient
7. Adjust flow rate as appropriate

NOTES	DOCUMENTATION / KPIs
• In post-mastectomy patients, avoid blood draw, peripheral IV line insertion, and/or blood pressure measurement o the same side as the mastectomy – with the exception of critically ill patients for whom no alternative peripheral sites can be located. • A pre-existing central venous access device and/or dialysis shunt may be by utilized by Paramedics in the setting of cardiac arrest. For all other patient situations, contact Online Medical Control to discuss possibility of using such access options. • Upper extremity peripheral IV sites are preferable to lower extremity sites • Unless administering fluid bolus, all IV rates should be KVO (or as directed by Online Medical Control). • EMTs with IV Therapy Endorsement are limited to the administration of crystalloid fluids (e.g., Normal Saline, Lactated Ringers, D5W, ½ NS, and D5 ½ NS).	• Assessment of IV site for signs of infiltration, irritation • Response to therapy

EZ-IO® Intraosseous Vascular Access System

PR17

PROCEDURE

INDICATIONS	CONTRAINDICATIONS
• In cardiac arrest, concurrently with attempts to establish an IV • In critically ill patients with urgent Need for IV access and in whom IV placement has failed twice or is unobtainable • In critically ill pediatrics patients, IO may be initiated without prior attempt at IV	• Infection at or near insertion site • Suspected or known fracture of the extremity being used • History of orthopedic surgery near insertion site (joint replacement, hardware in place)

EMT AND ABOVE PROVIDERS

EMT w/ IV Therapy Endorsement

Preferred Sites

1. Anterior Distal Femur:
   - Adult/Pediatric: Identify the anterior midline of the distal femur 1-2 finger widths above the patella. Bariatric needle is required for adult patients and consider the adult needle Pediatric patients.

2. Humeral Head
   - Adult/Pediatric: Anterior humeral head at base of greater tubercle (approximately 2 finger widths inferior to line between the coracoid process and the acromion). Adduct humerus (palm over abdomen) and position elbow on ground/gurney.

3. Proximal Tibia
   - Adult: 1 finger width medial to the tibial tuberosity.
   - Pediatric:
     -If tibial tuberosity CAN be palpated: 1 finger width below the tuberosity and then medial along the flat aspect of the tibia.
     -If tibial tuberosity CANNOT be palpated: 2 finger widths below the patella and then medial along the flat aspect of the tibia.

4. Distal Tibia (Medial Malleolus)
   - Adult: 2 finger widths proximal to the medial malleolus on the distal tibia.
   - Pediatric: 1 finger width proximal to the medial malleolus on the distal tibia.

Equipment

- EZ-IO® Power Driver
- EZ-IO® Needle Set and EZ-Connect® Extension Set.
  Needle set is chosen on basis of patient size and weight:
  a. EZ-IO 15mm 3-39 kg
  b. EZ-IO 25mm 40 kg and greater
  c. EZ-IO 45mm excessive tissue

Special Considerations

- All fluids and medications may be given by intraosseous route.
- Pressure infusion is required in most cases. Flush catheter with a 10 ml saline syringe prior to fluid challenge.
- When placing an IO in a conscious patient:
- Administer Lidocaine 40 mg (2ml of 2% Lidocaine) and allow it to sit in the catheter for 2 minutes, then flush with 10ml saline. May repeat with Lidocaine 20mg (Pediatric 0.5 mg/kg).
- Removing an IO: An IO may be removed in the field if the patient does not require transport. Puncture site should be properly cleaned and covered with a Band-Aid.

AGENCY OPTIONAL

Blood Draw

PR18

PROCEDURE

INDICATIONS	CONTRAINDICATIONS
• Any patient determined to require intravenous therapy should have a blood sample drawn while the IV is being inserted whenever possible. This procedure describes an isolated lab draw • Legal blood draw samples may be drawn at the request of law enforcement (sites for legal blood alcohol must be prepped using povidone iodine NOT alcohol).	• Obtaining a blood sample is deferred in the event of cardiac arrest. • Blood alcohol samples at the request of law enforcement will not be provided if patient care is compromised. • All samples will be drawn from a vein. EMS personnel are not authorized to collect samples from arterial sources.

EMT AND ABOVE PROVIDERS

EMT w/ IV Therapy Endorsement

Procedure

1. Use universal precautions
2. Select vein and prep as usual. Have all supplies ready prior to initiating the IV stick.
3. Select appropriate blood-drawing devices (Vacutainer holder, adapter, lab tubes).
4. Place a venous tourniquet and insert the IV needle-catheter device into the skin. Advance the catheter and leave the tourniquet in place for drawing blood.
5. Attach the vacutainer adapter and device to the catheter hub. Draw blood by pushing the lab tubes onto the needle inside the vacutainer- blood should flow easily into the lab tube. Allow to fill until flow ceases. Repeat as needed; once each tube is filled, rock gently end over end 8-10 times to ensure that the tube additive is well mixed with the blood in the tube.
6. Draw the appropriate type and number of tubes of blood for indicated lab testing. Once blood drawing is complete, remove tourniquet, occlude vein, and insert IV tubing or saline lock onto the catheter hub and refer to the venous access procedure.
7. Alternately, a syringe may be utilized to draw blood from the IV and then transferred.
8. Assure that the blood samples are labeled with the correct patient information (if the tubes are no properly labeled, they may not be usable at the hospital.) Label with the patient's name, along with the date and time the sample was collected, and the initials of the EMS provider that collected the blood.
9. Deliver the blood tubes to the appropriate individual at the emergency department.

NOTES	DOCUMENTATION / KPIs
• Peacehealth United General Hospital does not accept or process blood drawn by EMS personnel. Do not perform a blood draw on patients being transported to United General Hospital	•

Nebulizer Therapy

PR19

PROCEDURE

INDICATIONS	CONTRAINDICATIONS
• Patient requiring a nebulized medication (e.g. patients experiencing bronchospasm)	• None

PARAMEDIC PROVIDERS

Procedure

1. Gather the necessary equipment.
2. Assemble the nebulizer kit.
3. Instill the medication (e.g. albuterol, atrovent, etc…) into the reservoir well of the nebulizer.
4. Connect the nebulizer device to oxygen at 4 - 6 liters per minute or adequate flow to produce a steady, visible mist.
5. Instruct the patient to inhale normally through the mouthpiece of the nebulizer. The patient needs to have a good lip seal around the mouthpiece.
6. The treatment should last until the solution is depleted. Tapping the reservoir well near the end of the treatment will assist in utilizing all of the solution.
7. Monitor the patient for medication effects. This should include the patient's assessment of his/ her response to the treatment and reassessment of vital signs and breath sounds.
8. Document the treatment, dose, and route on/with the patient care report (PCR).

Access of Existing Catheters

PR20

PROCEDURE

INDICATIONS	CONTRAINDICATIONS
• Inability to obtain adequate peripheral access • An existing catheter may be used in the setting of cardiac arrest • Individual case approval by medical control for patients not in cardiac arrest	• Unable to contact medical control for patients not in cardiac arrest

PARAMEDIC PROVIDERS

Procedure

1.Clean the port of the catheter with alcohol wipe.

2. Using sterile technique, withdraw 5-10 ml of blood and discard syringe in sharps container.

3. Using 5cc of normal saline, access the port with sterile technique and gently attempt to flush the saline.

4. If there is no resistance, no evidence of infiltration (e.g., no subcutaneous collection of fluid), and no pain experienced by the patient, then proceed to step 5. If there is resistance, evidence of infiltration, pain experienced by the patient, or any concern that the catheter may be clotted or dislodged, do not use the catheter.

5. Begin administration of medications or IV fluids slowly and observe for any signs of infiltration. If difficulties are encountered, stop the infusion and reassess.

6. Record procedure, any complications, and fluids/medications administered in the electronic patient care report.

Pleural Decompression

PR21

PROCEDURE

INDICATIONS	CONTRAINDICATIONS
• Pneumothorax is suspected **AND** • Patient is in respiratory distress AND is hypotensive (SBP <100) with clinical signs of shock with at least one of the following signs: -Absent or decreased breath sounds on the affected side -Increased resistance during ventilation -Jugular vein distention -Tracheal deviation away from the side of injury (often late sign) • In patients with penetrating trauma to the chest or upper back, or gunshot wound to the neck or torso, who are in respiratory distress, a weak or absent radial pulse may be substituted for blood pressure measurement as above; signs of tension pneumothorax listed above may also be present. • Patients in traumatic arrest with chest or abdominal trauma for whom resuscitation is indicated may require bilateral chest decompression even in the absence of the signs above.	• None

PARAMEDIC PROVIDERS

Equipment order of preference (based on availability) is:

1. Simplified pneumothorax emergency air release (SPEAR)™
2. Air release system (ARS)™ or Enhanced ARS™
3. Large gauge angiocath

Procedure

1. Universal precautions (BSI)
2. Administer high flow oxygen
3. Identify and prep the site:
   - Locate the second intercostal space in the mid-clavicular line on the same side as the pneumothorax. If necessary the 5th intercostal space on the anterior axillary line is a secondary alternative.
   - When possible prepare the site with povidone-iodine or Hibiclens®
4. Insert the catheter into the skin over the rib into the 3rd or 4th intercostal space. Direct it just over the top of the rib (superior border) into the interspace in order to avoid the vessels and nerves on the inferior aspect of the rib.
5. Advance the catheter approximately 3 centimeters beyond exterior of targeted rib
6. Remove the needle, leaving the plastic catheter in place.
7. Secure the catheter hub to the chest wall with dressings and tape.
8. Consider placing a finger cut from an exam glove over the catheter hub. Cut a small hole in the end of the finger to make a flutter valve. Secure the glove finger with tape or a rubber band. (Note – do not waste much time preparing the flutter valve; if necessary control the air flow through the catheter hub with your gloved thumb.)
9. Reassess the patient. If high suspicion for ongoing tension pneumothorax, insert a second decompression needle.

Physical Restraint Application

PR22

PROCEDURE

INDICATIONS	CONTRAINDICATIONS
• Any patient who may harm himself, herself, or others may be restrained to prevent injury to the patient or crew. This restraint must be in a humane manner and used only as a last resort. Other means to prevent injury to the patient or crew should be attempted first. These efforts could include reality orientation, distraction techniques, or other less restrictive therapeutic means. Physical or chemical restraint should be a last resort technique. See [M8: Behavioral Emergencies: Agitated or Combative] • A medical assessment is indicated to identify and manage medical conditions to a patient's combative or agitated behavior. Such conditions include, but are not limited to: hypoxia, hypoglycemia, alcohol or drug intoxication, excited delirium, stroke, and/or brain trauma. • Patients who have been detained for involuntary psychiatric treatment by the County DCR and are being transferred between facilities.	• May be contraindicated in some patients with mobility issues and some posttraumatic syndromes (including those following torture, kidnapping, or severe sexual abuse) can increase a patient's vulnerability to traumatic re-experiencing or sensory deprivation, making physical restraint very difficult to tolerate

EMT AND ABOVE PROVIDERS

Procedure

1. Attempt less restrictive means of managing the patient. Attempt verbal de-escalation first.
2. Request law enforcement assistance.
3. Restraint devices applied by law enforcement require an officers continued presence to ensure patient safety and allow for quick removal if necessary. Law enforcement should accompany the patient in the ambulance.
4. Ensure that there are sufficient personnel available to physically restrain the patient safely.
5. Restrain the patient in a lateral or supine position. No devices such as backboards, splints, or other devices will be on top of the patient. **Patients should *never* be placed or transported on their abdomen chest (e.g. "hog-tied" or restrained in a prone position)**
6. The patient must be under constant observation by the EMS crew at all times. This includes direct visualization of the patient as well as respiratory and pulse oximetry monitoring.
7. The extremities that are restrained will have a circulation check at least every 15 minutes. The first of these checks should occur as soon after placement of the restraints as possible. This must be documented on the PCR.
8. Documentation on/with the patient care report (PCR) should include the reason for the use of restraints, the type of restraints used, and the time restraints were placed.
9. Request ALS response if not already dispatched as in general, chemical restraints (i.e. medication(s) given under [M8: Behavioral Emergencies: Agitated or Combative Protocol] should be anticipated whenever physical restraints are utilized.

PARAMEDIC PROVIDERS

10. Initiate continuous cardiac and pulse oximetry monitoring when available

11. If the above actions are unsuccessful, or if the patient is resisting restraints, consider further medication per protocol or **Contact On-Line Medical Control**. Chemical restraint should be considered early. See [M8: Behavioral Emergencies: Agitated or Combative Protocol]

Gastric Tube Insertion

PR23

PROCEDURE

INDICATIONS	CONTRAINDICATIONS
• Gastric decompression in intubated patients or those with advanced airways	• Caustic ingestion or esophageal strictures (risk of perforation) • Coagulopathy (epistaxis risk) • Base of skull fracture. • Severe mid-face trauma

PARAMEDIC PROVIDERS

⚠ **NOTE:** MPD-approved specialized training and authorization required to perform this procedure.

Procedure

1. Estimate insertion length by superimposing the tube over the body from the nose to the stomach.
2. Flex the neck if not contraindicated to facilitate esophageal passage.
3. IF NO FACIAL TRAUMA OR SUSPECTED CONTRAINDICATION TO NASAL PLACEMENT: Liberally lubricate the distal end of the tube and pass through the patient's nostril along the floor of the nasal passage. Do not orient the tip upward into the turbinates. This increases the difficulty of the insertion and may cause bleeding.
4. In the setting of an intubated patient or a patient with facial trauma, oral insertion of the tube may be considered or preferred after securing airway. Oral insertion can be done blindly or under laryngoscope guidance. ⚠ **NOTE:** When available, use the gastric tube port in supraglottic airway devices featuring a gastric tube port.
5. Continue to advance the tube gently until the appropriate distance is reached.
6. Confirm placement by injecting 20mL of air and auscultate for the swish or bubbling of the air over the stomach. Additionally, aspirate gastric contents to confirm proper placement. Warning: A gastric tube can be blindly placed into the lungs, despite the presence of an endotracheal tube, so always confirm placement.
7. Secure the tube.
8. Decompress the stomach of air and food either by connecting the tube to suction or manually aspirating with the large catheter tip syringe.
9. Document the procedure, time, and result (success) in the electronic patient care report.

Decontamination

PR24

PROCEDURE

INDICATIONS	CONTRAINDICATIONS
• Any patient who may have been exposed to significant hazardous materials, including suspected chemical, biological, or radiological weapons.	• None

ALL EMS PROVIDERS

Procedure

1. In coordination with HazMAT and other Emergency Management personnel, establish hot, warm and cold zones of operation.
2. Ensure that personnel assigned to operate within each zone have proper personal protective equipment.
3. In coordination with other public safety personnel, assure each patient from the hot zone undergoes appropriate initial decontamination. This is specific to each incident; such decontamination may include:
    - Removal of patients from Hot Zone
    - Simple removal of clothing
    - Irrigation of eyes
    - Passage through high-volume water bath (e.g., between two fire apparatus) for patients contaminated with liquids or certain solids. Patients exposed to gases, vapors, and powders often will not require this step as it may unnecessarily delay treatment and/or increase dermal absorption of the agent(s).
4. Initial triage of patients should occur after step #3. When possible, immediate life threats should be addressed prior to technical decontamination.
5. Assist patients with technical decontamination (unless contraindicated based on #3 above). This may include removal of all clothing and gentle cleansing with soap and water. All body areas should be thoroughly cleansed, although overly harsh scrubbing which could break the skin should be avoided.
6. Place triage identification on each patient. Match triage information with each patient's personal belongings which were removed during technical decontamination. Preserve these personnel affects for law enforcement.
7. Monitor all patients for environmental illness.
8. Transport patients per protocol

Defibrillation—Manual

PR25

PROCEDURE

INDICATIONS	CONTRAINDICATIONS
• Cardiac arrest with ventricular fibrillation or pulseless ventricular tachycardia	• None

PARAMEDIC PROVIDERS

Procedure

1. Ensure that Chest Compressions are adequate and interrupted only when absolutely necessary.
2. Clinically confirm the diagnosis of cardiac arrest and identify the need for defibrillation.
3. After application of an appropriate conductive agent if needed, apply defibrillation hands free pads in the proper position:
    - Anterior-posterior (AP) position is preferred, vs. antero-lateral (AL) position if AP cannot be quickly and easily obtained
4. For patients with implanted pacers/defibrillators, pads can be in AP or AL positions. The presence of implanted pacers/defibrillators should not delay defibrillation. Attempt to avoid placing pads directly over device.
5. Set the appropriate energy level.
6. Charge the defibrillator to the selected energy level.
7. Announce that you are charging only as compressors should continue chest compressions while the defibrillator is charging.
8. **Hold Compressions, assertively state, "CLEAR" and visualize that no one, including yourself, is in contact with the patient.**
9. Deliver the countershock by depressing the shock button on the monitor.
10. Immediately resume chest compressions and ventilations. After 2 minutes of CPR, analyze rhythm and check for pulse only if appropriate for rhythm. (30 seconds prior to end of 2 minute cycle, announce upcoming pulse check and pre-charge defibrillator while CPR is ongoing to minimize delay to defibrillation if defibrillation is indicated. (Defibrillator will automatically and safely dump charged energy after 60 seconds, no action required.)
11. Repeat the procedure every two minutes as indicated by patient response and ECG rhythm.
12. Keep interruption of CPR compressions as brief as possible. Adequate CPR is a key to successful resuscitation

Defibrillation—Automated External

PR26

PROCEDURE

INDICATIONS	CONTRAINDICATIONS
• Cardiac arrest, patient pulseless and apneic	• None

ALL EMS PROVIDERS

Procedure

1. Ensure that Chest Compressions are adequate and interrupted only when absolutely necessary.
2. Clinically confirm the diagnosis of cardiac arrest and identify the need for defibrillation.
3. Apply defibrillation hands free pads in the proper position:
    - Anterior-posterior (AP) position is preferred over antero-lateral (AL) position. AL may be used if AP cannot be quickly and easily obtained
4. For patients with implanted pacers/defibrillators, pads can be in AP or AL positions. The presence of implanted pacers/defibrillators should not delay defibrillation. Attempt to avoid placing pads directly over device.

5. Hold Compressions, assertively state, "CLEAR" and visualize that no one, including yourself, is in contact with the patient.

5. Press the "Analyze" soft key and allow the AED to analyze
6. If AED indicates no shock advised" Announce "Continue CPR"
7. If AED indicates shock advised: Announce "Continue CPR, CHARGING" while AED charges.
8. **If AED old Compressions, assertively state, "STOP CPRCLEAR" and visualize that no one, including yourself,**
   is in contact with the patient.
9. Deliver the countershock by depressing the shock button on the monitor.
10. Immediately resume chest compressions and ventilations. After 2 minutes of CPR, analyze rhythm and check for pulse only if appropriate for rhythm. (30 seconds prior to end of 2 minute cycle, announce upcoming pulse check and pre-charge defibrillator while CPR is ongoing to minimize delay to defibrillation if defibrillation is indicated. (Defibrillator will automatically and safely dump charged energy after 60 seconds, no action required.)
11. Repeat the procedure every two minutes as indicated by patient response and ECG rhythm.
12. Keep interruption of CPR compressions as brief as possible. Adequate CPR is a key to successful resuscitation

Splinting

PR27

PROCEDURE

INDICATIONS	CONTRAINDICATIONS
• Immobilization of an extremity for transport due to suspected fracture, sprain, or injury • Immobilization of an extremity for transport to secure medically necessary devices such as intravenous catheters	• No specific contraindications however patient-specific comorbidities require special consideration

ALL EMS PROVIDERS

Procedure

1. Assess and document pulses, sensation, and motor function prior to placement of the splint. If no pulses are present and a fracture is suspected with significant deformity present, consider reduction any long bone fracture prior to placement of the splint. Generally field reduction should be avoided (except femoral traction splint); simply splinting may restore pulses. Consider contacting medical control for advice if extended scene time is expected and an extremity is pulseless.
2. Remove all clothing from the extremity.
3. Select a site to secure the splint both proximal and distal to the area of suspected injury, or the area where the medical device will be placed.
4. Do not secure the splint directly over the injury or device.
5. Place the splint and secure with Velcro, straps, or bandage material (e.g., kling, kerlex, cloth bandage, etc.) depending on the splint manufacturer and design.
6. Document pulses, sensation, and motor function after placement of the splint. If there has been a deterioration in any of these 3 parameters, remove the splint and reassess.
7. If a femur fracture is suspected and there is no evidence of pelvic fracture or instability, the a femoral traction splint may be considered. Traction splints are no longer required or recommended for most patients.

   ⚠ **NOTE:** EMRs may only apply traction splint after completing MPD-approved specialized training.

8. Document the time, type of splint, and the pre and post assessment of pulse, sensation, and motor function in the patient care report (PCR).

12-Lead EKG

PR28

PROCEDURE

INDICATIONS

- Patients who present with a complaint chest pain (including atypical chest pain) or palpitations which might be cardiac in origin should have an EKG performed early in their evaluation.
- Patients without chest pain but having other signs and/or symptoms with a clinical concern for a potential cardiac cause, including:
  - -Shortness of breath
  - -Diaphoresis
  - -Nausea
  - -Palpitations
  - -Upper abdominal and/or back pain
  - -Hypotension
  - -Syncope
- Consider a lower threshold for obtaining and EKG in diabetic, female, and/or elderly patients.
- Patients with resolved chest pain being sent to a treatment facility other than the closest hospital.
- Cardiac arrest with ROSC

EMT AND ABOVE PROVIDERS

⚠ **NOTE:** MPD-approved specialized training and authorization required for EMTs to perform this procedure. (12-lead EKG placement, NOT interpretation)

PARAMEDIC PROVIDERS

Timing of the 12-Lead EKG

A. The 12–Lead EKG should be obtained as the opportunity permits – at a point when obtaining the 12–Lead does not delay emergent patient care or resuscitative efforts, but as soon as possible in patients with chest pain or symptoms of a dysrhythmia.

B. The WA State EMS Key Performance Indicators aims for obtaining a 12-Lead EKG within 10 minutes of arriving on scene of patients age ≥ 35 with suspected cardiac chest pain/discomfort or other ACS Symptoms.

C. Serial 12-Lead EKGs are encouraged in patients for whom there is a high index of suspicion or concern for a cardiac etiology.

Disposition of the 12-Lead EKG

A. The initial and any other requested EKG's will be attached to the patient's ED record. A copy will be attached to the patient care report.

B. If possible, attempt to transmit the copy of the 12-Lead EKG to receiving hospital for all STEMI's, cardiac arrests (post ROSC), wide-complex tachycardias, high grade heart blocks.

Technique

A. Obtaining an EKG requires greater patient access with the possibility of embarrassing exposure. If time and the situation permits consider the use of a blanket or gown to cover the patient.

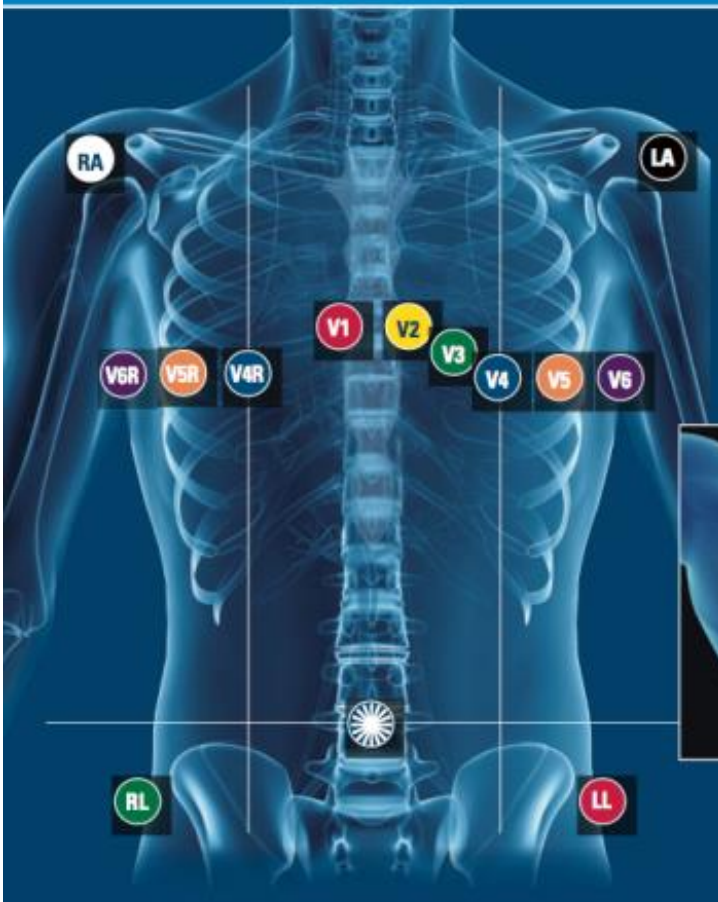
B. Standard pre-cordial lead placement will be used and limb placement will be on the upper arm between the shoulder and elbow and on the ankles. (See illustration next page.)

C. Notify receiving hospital of STEMI immediately. Other important data such as abnormal rate, rhythm should be noted at the time of patient report to receiving hospital.

D. To prevent misplacement of EKG's and for Quality Assurance purposes, the first and last name of the patient will be included on the EKG tracing.

E. To ensure legibility copies will be obtained by downloading from the receiving units or the defibrillator files.

Multi-Lead ECG Electrode Placement



STEP 1
Find angle of Louis and palpate 2nd rib on right

STEP 2
Let finger fall down into 2nd intercostal space

STEP 3
Palpate downward two more intercostal spaces and apply V1 electrode

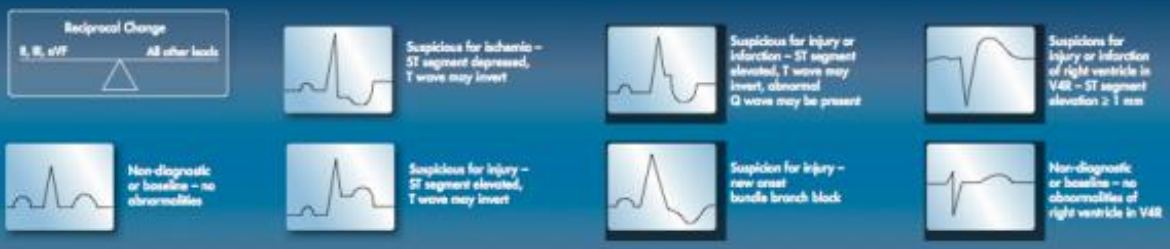
- **V1** Right sternal border 4th intercostal space
- **V2** Left sternal border 4th intercostal space
- **V3** Directly between leads V2 and V4
- **V4** Mid-clavicular line 5th intercostal space
- **V5** Between V4 and V6 horizontal to V4
- **V6** Mid-axillary line horizontal to V4

Used in presence of Inferior AMI to rule out RVI

- **V4R** Right chest mid-clavicular line, 5th intercostal space
- **V5R** Right chest, between V4 and V6, horizontal to V4
- **V6R** Right chest, mid-axillary line, horizontal to V4

Used to detect Posterior Wall Infarct

- **V7** Left posterior axillary line, straight line from V6
- **V8** Left mid-scapular line, straight line from V7
- **V9** Left paraspinal line, straight line from V8



I	LATERAL	aVR		V1	SEPTAL	V4	ANTERIOR
II	INFERIOR	aVL	LATERAL	V2	SEPTAL	V5	LATERAL
III	INFERIOR	aVF	INFERIOR	V3	ANTERIOR	V6	LATERAL

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ZOLL

Vacuum Spine Board (VSB) Application

PR29

INDICATIONS	CONTRAINDICATIONS
• Trauma patients with neurologic symptoms or deficits and/or a high risk mechanism of injury who requires spinal motion restriction	• Rigid spine board may be utilized for difficult extrication, when firm surface is needed for ongoing CPR, patients who are clinically unstable, uncooperative or for whom expedited transport is indicated

ALL EMS PROVIDERS

PROCEDURE

- Place cervical collar
- Use rigid extrication device (e.g., long board), as needed to move patient to VSB
- Place patient on VSB
  - -Patients head should be even with top of VSB
- Move hands to the outside of the VSB while keeping head in neutral inline position
- Attach straps in "stop light" order: **RED**, **YELLOW**, **GREEN**
- Mold shoulder wings firmly and completely over patient's shoulders to properly align head strap
- Attach pelvic straps across lower third of pelvis
- Attach shoulder straps over shoulder wings to isolate the head/neck from the mass of the body
- Push vacuum hose into cap (you do not need to open the valve)
- Begin removing air from VSB using pump
  - -If patient injuries allow, slightly bend the patients knees when pumping air out of VSB
- As air is being removed, mold device around head and shoulders while ensuring head is in proper neutral alignment
- When VSB is rigid, pull hose out (a slight clockwise rotation of the hose when pulling will ensure that the valve remains closed)
- Re-tighten all straps
- Check for CMS x4 extremities
- Patient can now be lifted to gurney for transport

Medication Administration: Intranasal Naloxone

PR30

INDICATIONS	CONTRAINDICATIONS
• Respiratory depression (RR < 6) **OR** apnea **AND** Known or suspected Narcotic (Opiate) overdose (prescription or illicit)	• None in the emergency setting

ALL EMS PROVIDERS

Simple observation is more prudent than giving Naloxone when a patient is ventilating adequately. Spontaneous breathing with adequate respiratory effort and ventilation/ oxygenation is the goal of Naloxone use

PROCEDURE

1. Open kit and/or load 2mg (2ml) ℞ ***Naloxone*** (Narcan) in a syringe
   b. Attach nasal atomizer to syringe (facilitates intranasal delivery and absorption of drug)
   c. Place atomizer into nostril
   d. Briskly compress syringe to administer 1mg (1ml) of atomized spray
      i. If patient is in cardiac arrest, immediately repeat process in the other nostril to deliver the remaining 1mg (1ml)
   e. Resume cardiopulmonary and/or respiratory support as indicated
   f. If the patient was not in cardiac arrest and there is no clinical response/improvement in 3-5 minutes after the initial 1mg dose, then repeat the process in the other nostril to deliver the remaining 1mg (1ml) of medication.
   g. Re-evaluate and document level of consciousness, respirations, oximetry, pulse and blood pressure continuously. Rescue breathing and/or CPR as needed. Intranasal Naloxone generally requires approximately 2-5 minutes to take effect. h. If no improvement or response after 2mg dose and high suspicion for narcotic/opiate overdose remains, a repeat dose of 2mg with 1mg administered into each nostril can be given i. Continue to support breathing and oxygenation and perform ongoing assessments of respiratory status as needed

Cautions:

A) Patients may experience withdrawal symptoms and may respond with violence and/or agitation. Common reactions also include tachycardia, high blood pressure, body aches, nausea and vomiting.

B) Naloxone may wear off prior to narcotic being metabolized and symptoms of overdose can re-occur. Repeat doses can be given if indications return.

2. If no response, consider other causes of respiratory depression and/or altered mental status
3. Prepare patient for transport
4. All patients requiring naloxone should undergo an ALS evaluation.

   NOTE: All patients receiving naloxone must be encouraged to be transported for an emergency department evaluation. A patient refusal of care/transport following naloxone administration can only be considered after an ALS evaluation is complete.

5. If available, consider providing patient or family with Naloxone Leave Behind Kit

Examples of Common Narcotics/Opiates

Codeine	Hydrocodone	Morphine	Subutex
Demerol	Hydromorphone	Oxycodone	Percocet
Dilaudid	Meperidine	Oxycontin	Tramadol
Heroin	Methadone	Suboxone	Vicodin

Medication Administration: Intramuscular Epinephrine 1mg/1mL

PR31

PROCEDURE

INDICATIONS	CONTRAINDICATIONS
• Known or suspected trigger (commonly food allergy, insect sting, drug allergy) **AND one or more of the following:** • Respiratory distress including oral swelling • Hypotension • Diffuse or progressive hives	• None in emergency setting

EMT AND ABOVE PROVIDERS

> ⚠ **NOTE**: *EMRs are limited to use of Epi-Pen®/Epi-PenJr® auto-injector. EMTs may administer via syringe and vial or ampule after completing MPD-approved specialized training.*

Medical control contact is not required unless need for epi is in doubt. Obtain patient or parent permission if able, if unable to obtain consent due to decreased mental status or absence of parent for a minor, administer epi under implied consent. If an adult patient refuses, do not administer. Contact medical control if parent/guardian refuses epi for pediatric patient.

℞ ***Epinephrine*** **Adult Dosage** (>30kg/60lbs): 0.30mg 1mg/1mL IM
Pediatric Dosage (<10kg/22lbs): 0.10mg 1mg/1mL IM
Pediatric Dosage (10-30kg/22-65lbs): 0.15mg 1mg/1mL IM

Procedure

1. Confirm vial or ampule is Epinephrine 1mg/1mL and not expired (if expired and no unexpired drug is available, administer anyway and notify receiving facility). Do not administer if solution is cloudy.
2. Gently tap vial or ampule, while holding upright
   -Ampule: with gauze around neck of ampule, break open
3. Using syringe and needle included in the BLS Epinephrine Administration Kit, draw up appropriate dose as above
4. Expose skin at anterolateral thigh, prep with alcohol wipe, and insert needle through skin into muscle.
5. In adult may insert needle to hub, in peds, at least ½ length of needle.
6. Draw back on plunger to ensure no blood return, if there is blood, pull needle back until no blood returns.
7. Inject medication briskly, remove needle and cover puncture site with adhesive bandage or gauze and tape.
8. Document time and dose of medication administered, patient response and vitals 5 minutes after administration.
9. Recheck vitals every 5 min for unstable patients or every 15 min if patient is improved and stable.

Medication Administration: Sublingual Nitroglycerin Assist

PR32

PROCEDURE

INDICATIONS	CONTRAINDICATIONS
• Chest pain, pressure, SOB, sweating **AND** • Patient has own, unexpired prescription for Nitroglycerin available (tablet or sublingual spray) **AND** • Patient complains of pain similar to that normally experienced as angina or cardiac chest pain	• Use of medication for erectile dysfunction (Viagra/sidenifil or other i.e. Cialis within 36 hours • SBP < 100mm/Hg • Suspected head injury • Patient has already exceeded 3 doses total (5 minutes apart)

EMT AND ABOVE PROVIDERS

Procedure

1. Patient should be sitting or lying down
2. The EMT may locate the Nitroglycerin (tablet or spray), open the container, and offer it to the patient. Do not administer the drug into the patient
3. Check patient's blood pressure prior to any repeated doses

Medication Administration: Metered Dose Inhaler Assist

PR33

PROCEDURE

INDICATIONS	CONTRAINDICATIONS
• Dyspnea and signs of respiratory distress associated with bronchospasm (breath sounds diminished or wheezing, retractions, etc.) • Alert patient physically capable of using MDI with assistance	• Medication is expired • Medication not prescribed for patient • Inability of the patient to assist in using the MDI • Maximum prescribed dose has been met or exceeded prior to EMS arrival

EMT AND ABOVE PROVIDERS

Procedure

1. Obtain and use spacer, if available
2. Determine number of puffs that make one dose per physician order/prescription
3. Shake the device for 2-3 seconds
4. Coach the patient to exhale, depress canister while inhaling, hold breath as long as comfortable, then exhale slowly through pursed lips or nose
5. Separate puffs within one dose with 30-60 seconds of oxygen
6. May repeat one full dose once if indications remain after 5 minute reassessment unless repeat dose would exceed maximum prescribed dose

Medication Administration: Oral Glucose

PR34

PROCEDURE

INDICATIONS	CONTRAINDICATIONS
History of diabetes and Blood glucose level < 60 mg/dL **OR** Blood glucose level <70 with altered mental status, diaphoresis, confusion, or weakness.	• Patient is unresponsive, unable to swallow, or has no intact gag reflex

EMT AND ABOVE PROVIDERS

Equipment

• Oral glucose solution, gel, paste, or tablets

Procedure

1. Request ALS response if not already dispatched
2. Confirm the patient is responsive, has intact gag reflex, and the ability to swallow and protect airway
3. Confirm the medication is "glucose for oral administration" and has not expired or discolored
4. Administer glucose medication:

A. For gel or paste:

-Squeeze small portions of the glucose gel or paste into the patients mouth between cheek and gum on each side until tube is empty

OR

-Apply the oral glucose to one or two tongue depressors and place the tongue depressor(s) between the cheek and the gum, one on each side of the patient's mouth, with the medication side contacting the patient's cheek

B. For solution or tablets

-Administer small amounts of solution until all is given or allow to chew and swallow two tablets

5. Monitor patient for signs of airway compromise, such as choking, gagging, drooling, or uncontrolled coughing
6. Suction as necessary and maintain open airway
7. Reassess mental status, vital signs, and repeat the initial assessment after 5 minutes and every 5 minutes until ALS arrives

Medication Administration: Aspirin

PR35

PROCEDURE

INDICATIONS	CONTRAINDICATIONS
• Suspected ischemic chest pain or anginal equivalent. Aspirin should be given to all cases of confirmed or suspected STEMI unless a significant contraindication exists	• Known allergy/sensitivity. • Patients already taking aspirin and have taken adequate dose that day • Known or suspected hemorrhage

EMT AND ABOVE PROVIDERS

Procedure

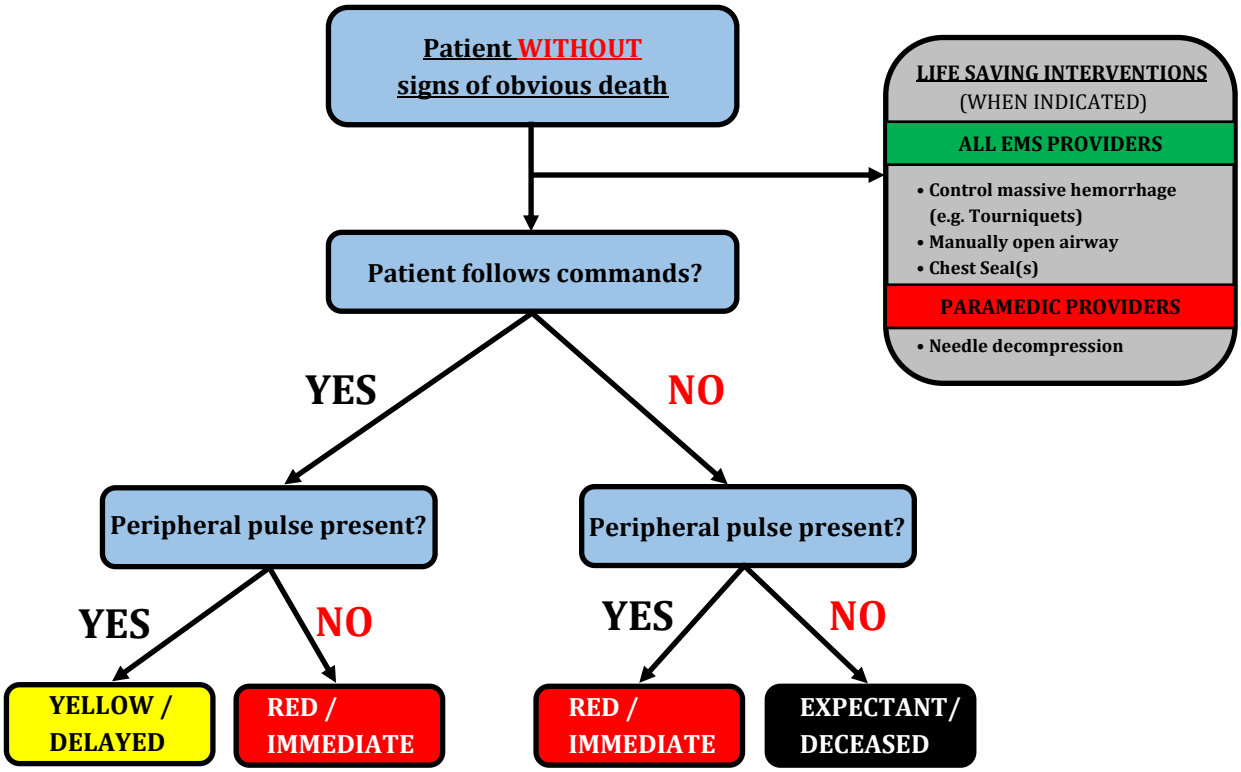
1. Request ALS response if not already dispatched
2. Perform a complete assessment of patient to include medical history, medications, and allergies
3. Place patient in position of comfort
4. Confirm if patient has previously taken aspirin prior to EMS arrival
5. If not contraindicated and no apsrinin has previously been taken, assist patient in chewing or swallowing either 4 baby aspirin (81mg) tablets or one 325mg tablet

RAMP Triage
(Rapid Assessment of Mentation and Pulse)

PR36

PROCEDURE

- Ensure all minor/"walking wounded" (GREEN/MINOR) are escorted to the Treatment Area
- Conduct secondary triage assessment on all patients in the Treatment Area
- Evaluate infants and children first in secondary triage due to potential for rapid decompensation



CONTAMINATED PATIENTS

Ensure all contaminated patients are decontaminated prior to entry into Treatment Area.

START Triage
(Simple Triage and Rapid Treatment)

PR37

Figure 1
Combined START/JumpSTART Algorithm

Adult START

- Move the walking wounded → MINOR
- No respirations after head tilt → DECEASED
- Respirations over 30/min → IMMEDIATE
- Perfusion – No radial pulse
  Cap refill>2 sec → IMMEDIATE
- Mental Status: Unable to
  Follow simple commands → IMMEDIATE
- Stable RPM → DELAYED

Child JumpSTART

- Move the walking wounded → MINOR
- Respirations
  - No respirations → DECEASED
  - No peripheral pulse
- Respirations <15 >45 → IMMEDIATE
- No Respirations
  With peripheral pulse
  Give 5 ventilations via barrier
  Respirations resume → IMMEDIATE
- No Spontaneous respirations → DECEASED
- Perfusion
  - No peripheral pulse → IMMEDIATE
  - Cap refill > 2 sec.
- Mental status AVPU
  - AV → DELAYED
  - PU → IMMEDIATE

Pediatric Transport Guidelines

PR38

INDICATIONS	CONTRAINDICATIONS
• These guidelines apply to transporting pediatric patients who are of an age weight that require a child safety device. Pediatric patients that don't require a child safety devices should be transported following adult guidelines.	• None

ALL EMS PROVIDERS

PROCEDURE

Procedure

1. An ill or injured child must be restrained in a manner that minimizes injury in an ambulance crash. The best location for transporting a pediatric patient is secured directly to the ambulance stretcher.

⚠ **NOTE:** Never allow anyone to hold an infant or child during transport.

2. TYPES OF PEDIATRIC SAFETY DEVICE/RESTRAINTS FOR **PEDIATRIC PATIENT TRANSPORT:**

A. Convertible (traditional) car seat with two belt paths (front and back) with four points for belt attachment to the cot is considered best practice for pediatric patients who can tolerate a semi-upright position. (See [Appendix 2 : Pediatric Transport Devices])
- Position safety seat on cot facing foot-end with backrest elevated to meet back of child safety seat.
- Secure safety seat with 2 pairs of belts at both forward and rear points of seat.
- Place shoulder straps of the harness through slot just below child's shoulders and fasten snugly to child.
- Follow manufacturer's guidelines regarding child's weight

⚠ **NOTE**: Non-convertible safety seats cannot be secured safely to cot. If child's personal safety seat is not a convertible seat, it cannot be used on the cot.

B. Stretcher harness device with 5-point harness (examples: **Neo-Mate** and **Pedi-Mate Plus** are used in Skagit County)
- Attach securely to cot utilizing upper back strap behind stretcher and lower straps around stretcher's frame.
- A 5-point harness must rest snugly against child. Secure belt at child's shoulder level so no gaps exists above shoulders.
- Adjust head portion of stretcher according to manufacturer's recommendation.
- Follow manufacturer guidelines for weight ratings.
  -Ferno Neo-Mate Weight range is 5-15 pounds
  -Ferno Pedi-Mate Weight Range is 10-40 pounds
  -Ferno Ped-Mate Plus Weight Range is 10-100 pounds

C. Car bed with both a front and rear belt path (example: Dream Ride Infant Car Bed)
- For infants who cannot tolerate a semi-upright position or who must lie flat
- Position car bed so infant lies perpendicular to stretcher, keeping infant's head towards center of patient compartment. (See Appendix for photographs)
- Fully raise backrest and anchor car bed to stretcher with 2 belts, utilizing the 4 attachment sites supplied with car bed.
- Only appropriate for infants from 5-20 pounds.

D. Isolette/Incubator must be secured to ambulance according to manufacturer's guidelines. (Note: not carried as routine option for Skagit County EMS personnel. However, EMS Personnel may assist with specialized pediatric transport.
- Secure infant using manufacturer's restraint (5 point harness restraint is preferred).
- Blankets or towels may be used for additional stabilization

PROCEDURE

3. NON-PATIENT TRANSPORT

A. Best practice is to transport well children in a vehicle other than the ambulance, whenever possible, for safety.

B. If no other vehicle is available and circumstances dictate that the ambulance must transport a well child, he/she may be transported in the following locations:

Captain's chair in patient compartment using a size appropriate integrated seat or a convertible safety seat.

Passenger seat of the driver's compartment if child islarge enough (according to manufacturer?s guidelines) to ride forward-facing in a child safety seat or booster seat. Airbag should be turned off. If the air bag can be deactivated, an infant, restrained in a rear-facing infant seat, may be placed in the passenger seat of the driver's compartment.

4. USE OF PATIENT'S CHILD SAFETY SEAT AFTER INVOLVEMENT IN MOTOR VEHICLE CRASH

A.The patient's safety seat may be used to transport child to the hospital after involvement in a minor crash if ALL of the following apply:

- It is a convertible seat with both front and rear belt paths.
- Visual inspection, including under movable seat padding, does not reveal cracks or deformation.
- Vehicle in which safety seat was installed was capable of being driven from the scene of the crash.
- Vehicle door nearest the child safety seat was undamaged.
- The air bags (if any) did not deploy.

5. MOTHER AND HEALTHY NEWBORN TRANSPORT (NEWBORN NOT REQUIRING MEDICAL CARE)

A. Secure and transport mother on the cot.

B. Consider transporting mother and newborn in separate ambulances to poperrly secure each paient to a stretcher.

C. Transport newborn secured to the rear-facing clinician seat /captain's chair using a size-appropriate child restraint system. Either a convertible safety seat with a forward-facing belt path or an integrated child restraint system certified by the manufacturer to secure infant may be used.

D. Do NOT use a rear-facing only safety seat in the rear-facing clinician seat/captain;s chair as this is dangerous and may lead to significant injuries.

Cardioversion

PR39

PROCEDURE

INDICATIONS	CONTRAINDICATIONS
Clinically unstable patient with a tachydysrhythmia (mainly wide complex tachycardias, in rare cases atrial tachycardias) **AND** Patient is not pulseless (the pulseless patient requires defibrillation)	• None

PARAMEDIC PROVIDERS

Procedure

1. Ensure the patient is attached properly to a monitor/defibrillator capable of synchronized cardioversion.
2. Prepare equipment and for potential of need for unsynchronized cardioversion/defibrillation if the patient fails synchronized cardioversion and/or the condition worsens.
3. Consider the use of pain or sedating medications:
    A. First line medications are midazolam (adult dose: 3mg, pediatric dose: 0.05mg/kg IV) and/ or fentanyl 0.5-1 mcg/kg IV up to a maximum dose of 100mcg.
    B. If patient condition and time permits, consider NS IV bolus (Adult: 250mL, Pediatric or 10mg/kg IV) prior to cardioversion.
    C. A sub-disassociative dose of ketamine may be considered and used first line
    D. Alternatively, ketamine (Adults and pediatrics: 1mg/kg up to 100mg IV max dose) may be used.
        - If ketamine is used it may obliterate the clinical exam (which can hinder assessment of clinical response to cardioversion, and may complicate hand-over at hospital). Careful continuous monitoring: manual pulse checks, frequent blood pressure measurements, and continuous end-tidal CO2 are indicated if used.
        - If ketamine is chosen for sedation/analgesia in setting of cardioversion, complete QA/QI review request for review within 48 hours of call completion.
4. Set energy selection to the appropriate setting (see table on following page)
5. Set monitor/defibrillator to **synchronized** cardioversion mode.
6. Make certain all personnel are clear of patient.
7. Press and hold the shock button to cardiovert. Stay clear of the patient until you are certain the energy has been delivered. NOTE: It may take the monitor/defibrillator several cardiac cycles to "synchronize", so there may a delay between activating the cardioversion and the actual delivery of energy.
8. Note patient response and perform immediate unsynchronized cardioversion/defibrillation if the patient's rhythm has deteriorated into pulseless ventricular tachycardia/ventricular fibrillation, following the procedure for Defibrillation-Manual.
9. If the patient's condition is unchanged, repeat steps 2 to 8 above, using escalating energy settings.
10. May repeat at increased energy levels up to 2 attempts. Consider discussion with medical control if cardioversion is unsuccessful after 2 attempts.
11. Note procedure, response, and time in the patient care report (PCR).

Biphasic Monitor Cardioversion Settings (Joules)				
	Initial	**Second**	**Third**	**Subsequent**
Adult VT (wide regular)	100J	150J	200J	Maximum Energy
Adult SVT (narrow regular)	50J	100J	120-150J	Maximum Energy
Adult A-fib (narrow irregular)	120-200J	200J	Maximum Energy	Maximum Energy
Pediatric	0.5-1.0 J/kg	2 J/kg	2 J/kg	2 J/kg

Transcutaneous Pacing

PR40

INDICATIONS	CONTRAINDICATIONS
Patients with signs and symptoms of inadequate cerebral or cardiac perfusion suspected to be related to severe bradycardia (HR <45)	• None

PARAMEDIC PROVIDERS

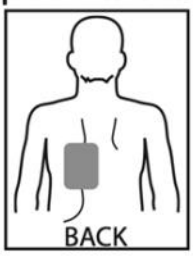
PROCEDURE

Procedure

1. Attach cardiac monitor with capability of transcutaneous pacing

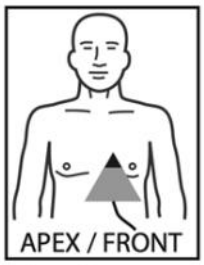
Anterior-Posterior (AP)

Recommended for defibrillation, noninvasive pacing, ventricular cardioversion and ECG monitoring. Optimal for noninvasive pacing because it increases patient tolerance and decreases capture thresholds.



Back (Posterior):
Grasp the Back electrode at the wire exit and peel away the plastic liner. Place to the left of the spine just below the scapula at the heart level.

⚠ Always apply Back electrode first. If Front electrode is already in place when patient is being maneuvered for placement of the Back, the Front may become partially lifted. This could lead to arcing and skin burns.



Apex / Front (Anterior):
Grasp the Apex/Front electrode at the wire exit and peel away the plastic liner. Apply over cardiac apex between the mid line of the chest and nipple on a male patient, with the shaded "point" facing up. Position under breast on female patient.

⚠ Avoid any contact between nipple and gel treatment area. Skin of the nipple area is more susceptible to burning.

2. Apply defibrillation/pacing pads to chest and back, using anterior-posterior placement:
3. Rotate selector switch to pacing option.
4. Adjust heart rate to 70 BPM for an adult and 100 BPM for a child.
5. Note pacer spikes on EKG screen.
6. Typical mechanical capture thresholds are 50-90mA, but may vary widely.

   ⚠ **NOTE:** For critically ill patients (e.g. hypotension, peri-arrest, unconscious), start pacing attempts at maximum current output. For critically ill patients, the most important step in pacing is to immediately ensure mechanical capture at whatever mA is required. Once mechanical capture is confirmed by a palpable pulse at the rate consistent with "electrical capture" on the monitor, current may be slowly decreased and set at 10-20 mA above mechanical capture threshold.

7. If unable to capture while at maximum current output, stop pacing immediately.
8. If capture observed on monitor, check for corresponding pulse and assess vital signs.
9. Consider the use of sedation or analgesia if patient is uncomfortable.
   A. First line medications are midazolam (adult dose: 2-3mg IV, pediatric dose: 0.05mg/kg IV) and/or fentanyl 0.5-1 mcg/kg IV up to a maximum dose of 100mcg.
      • May repeat fentanyl dose every 10 minutes x 2. Continuous ETCO2 and pulse oximetry monitoring indicated.
   B. If patient condition and time permits, consider NS IV bolus (Adult: 250mL, Pediatricor 10mg/kg IV) prior to cardioversion.
   C. A sub-disassociative dose of ketamine may be considered and used first line
   D. Full dose ketamine is not indicated for transcutaneous pacing due to obliteration of ability to monitor clinical response.
10. Document the dysrhythmia and the response to external pacing with ECG strips in the PCR

Pelvic Binder

PR41

PROCEDURE

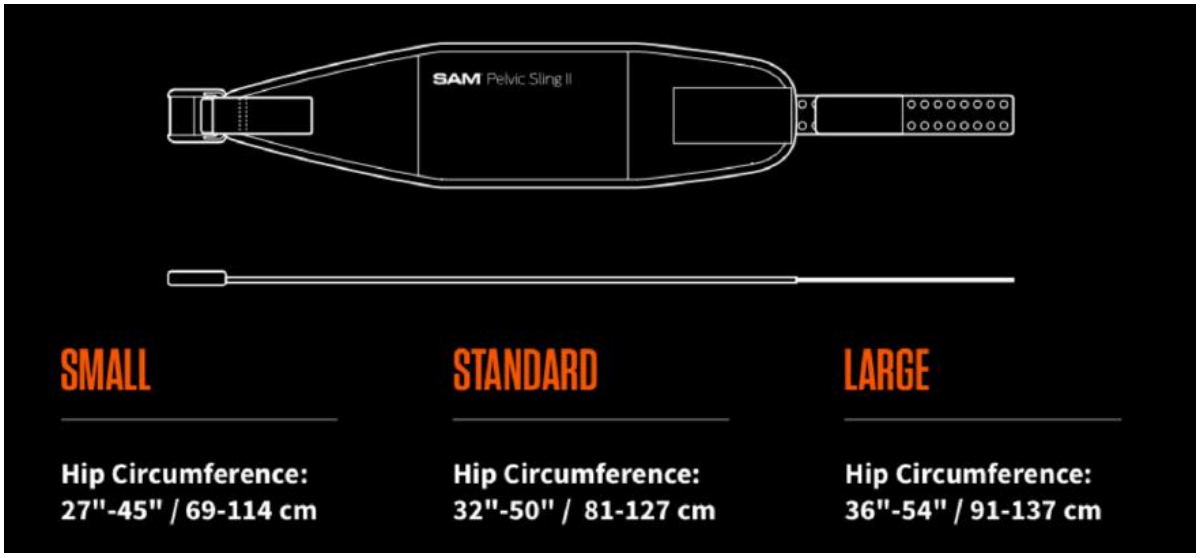
INDICATIONS	CONTRAINDICATIONS
1. Suspicion of unstable open book pelvic fracture *with hemodynamic instability* ***OR*** 2. May be considered for polytrauma patient *with hemodynamic instability* and mechanism potential for pelvic injury ***OR*** 3. May be considered for polytrauma patient with potential for unstable pelvic fracture being handed over to aeromedical personnel for aeromedical transport	• Suspected isolated hip fracture or dislocation or femur fracture • Grossly open pelvic fractures or large perineal lacerations • Morbid obesity • Extensive burns or severe soft tissue pelvic or application site injuries • Impaled objects in region that would interfere/ prohibit application

ALL EMS PROVIDERS

- Minimize movement, particularly rolling patient or manual compression/movement
- Apply a Skagit County approved Pelvic Binder commercial device (SAM Pelvic Sling)
  - -If not available a sheet wrap may be used as an alternative
  - -Place the binder over the greater trochanters NOT the iliac crest

Procedure

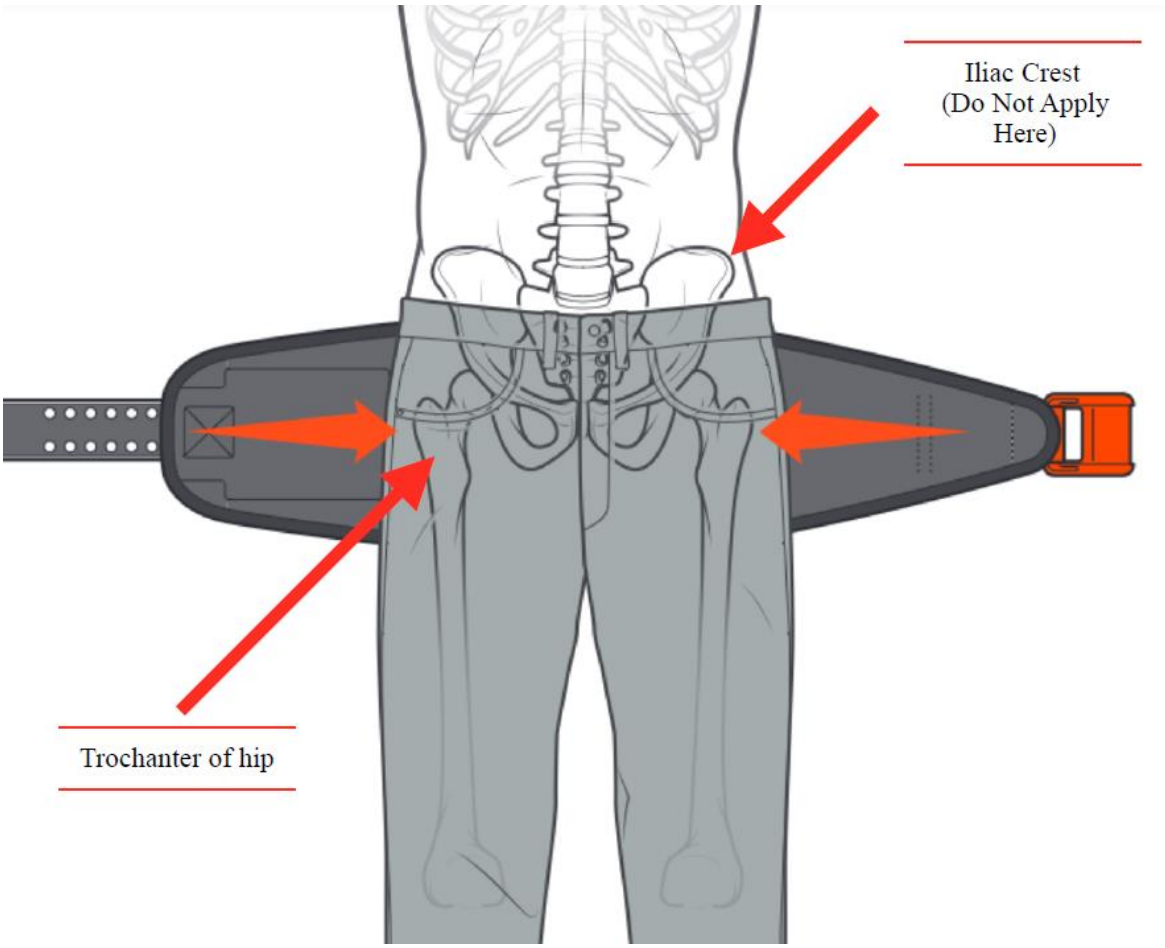
1. When possible, remove clothing prior to application (despite illustration below)
2. Place pelvic sling black side up beneath patient at level of trochanters (hips)
3. Place the black strap through the buckle and pull completely through
4. Hold the orange (or green) strap and pull black strap in opposite direction until you hear and feel the buckle click (Do not be concerned if you hear a second click)
5. Maintain tension and immediately press the black strap onto surface of pelvic sling to secure
6. Reassess patient after application

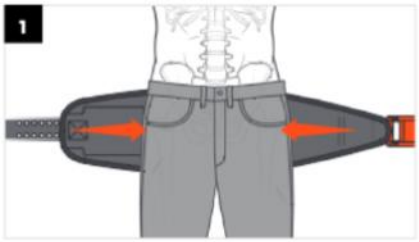


Pelvic Binder

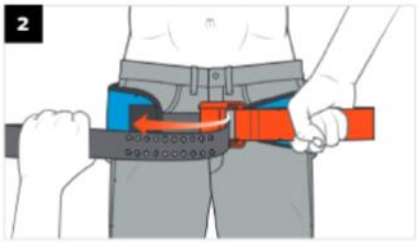
PR41

PROCEDURE

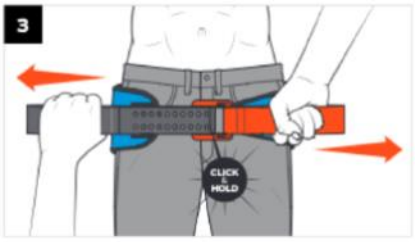




Remove objects from patient's pockets or pelvic area. Place SAM Pelvic Sling II black side up beneath patient at level of trochanters (hips).



Place the **BLACK STRAP** through buckle and pull completely through.



Hold **ORANGE STRAP** (**GREEN STRAP** on **PS301-OD-EN**) and pull **BLACK STRAP** in opposite direction until you hear and feel the buckle click. Maintain tension and immediately press BLACK STRAP onto surface of SAM Pelvic Sling II to secure.

SECTION 11:
MEDICATION FORMULARY

TABLE OF CONTENTS

ACETAMINOPHEN (TYLENOL)

MF1

Pharmacologic Effects:

1. Antipyretic
2. Analgesic

Metabolism:

1. Mainly metabolized b the liver.
2. Onset of therapeutic effect with oral or rectal dosing is ~30 minutes.
3. Duration is ~4 hours. Peak serum concentrations occur within 40-60 minutes with oral or rectal dosing.

Indications:

1. Analgesia for the treatment of pain.
2. Anti-pyretic for the treatment of fever.

Contraindications:

1. Known allergy/sensitivity.

Cautions:

1. Avoid in patients with severe liver disease.

Dosage and Administration:

- **Available in three forms: PO, suppository, and Intravenous**
- **Oral Dosing for pain and/or fever:**

Adult dose: Oral dosing is 650-1000 mg every 4 hours to a maximum of 3000mg per day.
Pediatric dose:*:* 15 mg/kg (up to 1000mg) orally or rectal suppository every 4 hours.

- Parenteral Dosing may be used at clinical discretion, if clinical circumstances, perceived benefit, and transport time permit:
  Adult Dose: 1000mg IV over 15 minutes PRN Fever or pain (consider in setting of sepsis)
  Pediatric Dose: 15mg/kg IV up to 1000mg Max dose over 15 minutes PRN Fever or pain

Adverse Effects:

1. Extremely Rare in therapeutic doses.

ACTIVATED CHARCOAL (ACTIDOSE-AQUA)

MF2

MEDICATION FORMULARY

Pharmacologic Effects:

1. GI adsorbent used to prevent the gastrointestinal absorption of drugs or toxins.

Metabolism:

1. Not absorbed from the GI tract and does not undergo metabolism, excreted in the feces.
2. Onset: N/A Duration: N/A (Not metabolized, effects are dependent on nature/timing of ingestion)

Indications:

1. Significant ingestion (e.g., tricyclic antidepressant, or cardiovascular drug) thought to hae occured within less than 1 hour prior to EMS arrival AND a transport time >15 mins.

Contraindications:

1. Known allergy/sensitivity.
2. Depressed - or declining - level of consciousness.
3. Ingestion of strong acids or alkalis (caustics).
4. Lack of cooperation.
5. Clinical concern for risk of aspiration.
6. Relative contraindication: Known ingestion of an agent not effected by activated charcoal such as alcohols, cyanide, and metals such as lithum or iron. If co-ingestant suspected, charcoal may be administered.

Cautions:

1. May cause vomiting, which may be hazardous in caustic ingestions or in cases of volatile hydro-carbon ingestion.
2. Aspiration of activated charcoal and gastric contents can cause severe pneumonitis.
3. Presence of charcoal in pharynx may obscure landmarks for intubation.
4. While activated charcoal may be effective at absorbing many substances, not all drugs/toxins are effected by activated charcoal. Known exceptions include: alcohols, cyanide, and metals such as lithium or iron.

Dosage and Administration:

A minimal dilution with of 240 ml of water or soda per 20-30 g is recommended.

1. Adult: 30-100 g; 1-2 g/kg PO may be used as a rough guideline.
2. Pediatric: 1-2 gram/kg (up to 100g) PO

Adverse Effects:

- Vomiting and aspiration.
- Black stools.

ADENOSINE (ADENOCARD INJECTION)

MF3

MEDICATION FORMULARY

Pharmacologic Effects:

1. A nucleoside with anti arrhythmic activity.
2. It works both at the A-V node and in aberrant conduction pathways such as found in Wolff Parkinson-White syndrome or LGL phenomena.
3. While it may be used to treat all patients with supra-ventricular tachyarrhythmias it works best in paroxysmal atrial tachycardia.
4. It has limited use in atrial fibrillation and atrial flutter.

Metabolism:

1. Clinical effects occur rapidly (onset ~seconds) and are very brief, owing to its rapid metabolism to Inosine. The usual plasma half-life is less than 12 seconds following an IV dose.

Indications:

1. IV Adenosine is highly effective in terminating episodes of acute paroxysmal supraventricular tachycardia.

Contraindications:

1. Known allergy/sensitivity
2. 2nd or 3rd degree AV Heart Block (without a pacemaker)

Cautions:

1. Use cautiously, if at all, in wide complex rhythms suspected to be of supra-ventricular origin.
2. Avoid or use with extreme caution (reduce dose by half) for patients on carbamazepine (Tegretol) as there are reports of this medication potentiating and prolonging the actions of adenosine.
3. There are reports of IV adenosine precipitating bronchospasm in patients with asthma/COPD, use with caution.

Dosage and Administration:

1. Should be given in increasing doses by IV bolus injection rapidly.
2. It should be given over 1-2 seconds directly into a vein or into the most proximal site of an IV catheter or infusion line.
3. Adult Dose: The initial dose in adults should be 6-12 mg rapid IV push.
    - A second and third dose of 12 mg can be given after a 1-2 minute interval if the tachyarrhythmia has not stopped.
    - Doses exceeding 12 mg are not recommended.
4. Pediatric dose: 0.1-0.2 mg/kg (up to 12mg) rapid IV push.
    - It may be repeated as in the adult dosage pattern.

5. All administrations of adenosine should be given rapidly and should be followed immediately by a saline flush since the drug degrades quickly.
6. The rapid degradation of the drug is one of its significant features since any adverse effects will be short lived.

Pharmacologic Effects:

1. Selective beta-2 agonist primarily used to treat bronchial asthma and reversible bronchospasm.

Metabolism:

1. Metabolized to inactive agents by the liver.
2. **Onset:** Within 5 minutes, with peak bronchodilation occurs within 1-2 hours. (Variable clinically)
3. **Duration:** continues for ~3-4 hours after administration. (Variable clinically)

Indications:

1. Effective bronchodilator for the treatment of asthma and reversible bronchospasm.
2. Adjunct to therapy for hyperkalemia as at high doses can help drive potassium out of the blood and into the cell, reducing serum potassium levels.

Contraindications:

1. Known allergy/sensitivity.

Cautions:

1. Tachycardia, this may be disease related.
2. May be ineffective in patients on beta-blockers.

Dosage and Administration:

1. Solution for inhalation is administered in a dose of 2.5-10 mg (usual dose 2.5-5 mg). This dosing in a nebulized form is used for both **Adult** and **Pediatric** patients.
2. Continuous nebulization may be used, if needed for respiratory distress.
3. Continuous nebulization of 20mg total dose is used for treatment of hyperkalemia.
4. An alternative is by MDI and aero chamber or nebulizer BVM at a dose of four to eight (4-8) puffs every 5 minutes or less.

Adverse Effects:

Adverse effects are usually minor and well tolerated, and they are generally dose dependent:

- Tachycardia
- Tremor
- Premature ventricular contractions
- Palpitations
- Restlessness
- Nervousness
- Headache
- Dizziness
- Insomnia
- Hyperglycemia
- Nausea
- Vomiting
- Hypokalemia

AMIODARONE (CORDARONE)

MF5

MEDICATION FORMULARY

Pharmacologic Effects:

1. Class III anti-arrhythmic agent with properties of all four anti-arrhythmic classes:
   a. Inhibits inactivated Na channels (Class I).
   b. Possesses anti-adrenergic actions (Class II).
   c. Increases action potential duration via blockade of slow potassium channels (Class III).
   d. Has calcium channel blockade similar to calcium channel blockers (Class IV).

Metabolism:

1. By the liver.
2. Onset: ~1-30 minutes (variable clinically).
3. Duration: ~1-3 hours (variable clinically).

Indications:

1. Cardiac arrest in ventricular fibrillation (VF) or pulseless ventricular tachycardia (VT) refractory to initial defibrillation.
2. Wide complex tachycardia/ventricular tachycardia with a pulse (not in cardiac arrest).

Contraindications:

1. Prior known allergy/sensitivity to amiodarone or to iodine.
2. Avoid in patients with heart block, profound bradycardia, and/or suspected digoxin toxicity.
3. Avoid in patients with known or suspected Wolf-Parkinson White (wide complex tachycardia may be from orthodromic WPW, and amiodarone may precipitate VT. Direct cardioversion is indicated.)

Dosage and Administration:

- May administer undiluted for cardiac arrest, always flush with at least 10ml saline .
- For slow IV push, dilute in 100ml of D5W or normal saline and run in over 10 minutes. Note: Add 150mg Amiodarone to 100ml D5W making a concentration of 1.5mg/ml and run at ~2 gtts/ second for an infusion that will run in over ~10 minutes.
- Foaming will occur if the drug is shaken. Caution should be taken to prevent installation of the foam into the patient if this occurs.
  1. Cardiac arrest in ventricular fibrillation (VF) or pulseless ventricular tachycardia (VT) refractory to initial defibrillation:
     - Adult Dose: 300 mg IV push, may repeat 150 mg IV push x1 if dysrhythmia persists or recurs.
     - Pediatric Dose: 5mg/kg IV push (max 300mg), may repeat 5mg/kg IV x2 up to 15mg/kg (max 300mg) total dose if VF/pulseless VT persists or recurs.
  2. Wide complex tachycardia.ventricular tachycardia with a pulse (not in cardiac arrest):
     - Adult Dose: 150mg slow IV over ~10 minutes, hold if hypotension or bradycardia are observed.
     - Pediatric Dose: 5mg/kg (max 150mg) very slow IV (run over 20 minutes)

Adverse Effects:

- Hypotension.
- Heart block.

ASPIRIN

MF6

MEDICATION FORMULARY

Pharmacologic Effects:

1. Reduces platelet adherence and clot formation. The role of ASA is to reduce platelet aggregation and clot formation. Aspirin provides among the best mortality benefits of any intervention for MI. (Number Needed to Treat (NNT): 42/life saved.)
2. At higher doses it acts as an antipyretic, anti-inflammatory agent, and inhibitor of prostaglandin production.

Metabolism:

1. Aspirin is primarily metabolized in the liver by converting enzymes. It is also partially metabolized by the blood and excreted by the kidneys.
2. Onset: ~15-30 minutes, peaks at ~2 hours.
3. Duration: Indefinite in that low-dose aspirin irreversibly blocks formation of thromboxane A2 in platelets during the lifetime of the platelet (8-9 days). As new platelets are generated, clinical effect is much shorter.

Indications:

1. Suspected ischemic chest pain or anginal equivalent. Aspirin should be given to all cases of confirmed or suspected STEMI unless a significant contraindication exists.

Contraindications:

1. Known allergy/sensitivity.
2. Patients already taking aspirin and have taken adequate dose that day
3. Known or suspected hemorrhage

Cautions:

1. Patients with asthma or other forms of reactive airway disease have a higher incidence of aspirin allergies.
2. Aspirin is generally avoided in pediatric patients (increases risk of Reye's syndrome).
3. Patients with known active gastric ulcer.
4. Patients with known or suspected coagulopathy.

Dosage and Administration:

1. Suspected cardiac chest pain: 162-325mg. Preferably administer in 81mg low dose chewable tablets.
2. Suspected STEMI: 324-325mg (4 tablets of 81 mg, or one 325mg)
    - NOTE: If patient has already taken a dose of aspirin prior to arrival, adjust dosage so that total recommended is obtained. (If a patient with a STEMI took 81mg PTA, administer 3x 81mg ASA)
    - NOTE: If patient is on anticoagulant such as warfarin, and suspicion for cardiac etiology is low, ASA administration may be deferred to the ED (document in PCR). If patient is high probability or STEMI, ASA administration is recommended.

Adverse Effects:

- May induce a reactive airway attack in susceptible individuals.
- GI upset
- Minor bleeding

ATROPINE

MF7

MEDICATION FORMULARY

Pharmacologic Effects

1. Cardiac:
   A. Increases firing rate of SA (sinoatrial) node & cardiac tissue conduction velocity by decreasing parasympathetic/vagal stimulation, resulting in an increased pulse rate.
2. Non-Cardiac:
   A. Central nervous system stimulation.
   B. Dilation of pupils and cycloplegia.
   C. Decreases all body secretions.
   D. Decrease in bladder tone resulting in urinary retention.

Metabolism:

1. By the liver.
2. Onset: ~1-4 minutes.
3. Duration: ~4 hours (clinically variable).

Indications:

1. Symptomatic, severe bradycardic rhythms (~ heart rate <45) resulting in hypotension, chest pain, decreased mentation, and/or ventricular irritability (ventricular escape beats).
2. Organophosphate poisoning (insecticides, herbicides, nerve gas).
3. Optional pre-treatment prior to succinylcholine administration in patients:
   A. Less than eight years of age.
   B. Receiving a second dose of Succinylcholine.

Contraindications:

1. Known allergy/sensitivity.
2. Atrial fibrillation or atrial flutter - unless life threatening atrial fibrillation/flutter with slow ventricular response and ~ heart rate <45).

Cautions:

1. Atropine is incompatible with sodium bicarbonate and norepinephrine, flush line prior to and/or subsequent to combination use.
2. Patients with glaucoma (increased pressure in eyes).

Dosage and Administration:

1. Symptomatic bradycardia: **Adult Dose:** 0.5-1mg IV/IO push, followed by incremental doses of 0.5 - 1 mg every 3 - 5 minutes, not to exceed a total dosage of 3 mg. **Pediatric Dose:** 0.02 mg/kg (minimum dose is 0.1 mg), not to exceed 0.5mg in a child without medical control approval.
2. Organophosphate poisoning: **Adult Dose:** 2–5 mg IV/IO push followed by 1–2 mg IV every 15 to 30 minutes or until lungs are dry, and clinical symptoms improve. **Pediatric Dose:** 1mg IV/IO followed by 1mg IV every 15-30 minutes or until lungs are dry and clinical symptoms improve.
   - Note: There is no maximum dose of atropine in the setting or organophosphate toxicity.

CALCIUM GLUCONATE

MF8

⚠ **NOTE:** Calcium gluconate replaces calcium chloride. Calcium gluconate contains approximate 1/3 of the calcium of calcium chloride (less potent), but is much less toxic to the veins and tissues (less necrosis)

Pharmacologic Effects:

1. Involved in regulation of cell membrane permeability to sodium and potassium.
2. Important in activation of enzyme systems.
3. Plays a role in excitation contraction coupling (increases force of myocardial contraction and muscle contraction).

Metabolism:

1. Calcium gluconate is metabolized by the liver before its associated calcium become bio- available. However, limited data has demonstrated no clinical difference in measured bio-availability with calcium chloride, including in patients with liver failure. Calcium is deposited in bone and excreted by the kidneys.
2. Onset: Minutes.
3. Duration: ~30-120 minutes.

Indications:

1. Hyperkalemia (very high serum potassium).
   - For crush syndrome at risk for hyperkalemia
2. Hypocalcemia (low serum calcium) with tetany.
3. Cardiac arrest in patients on high dose calcium channel blockers (potential use).
4. Overdose of calcium channel blockers with profound bradycardia/hypotension.
5. Co-administration with diltiazem in atrial fibrillation to limit/prevent hypotension.
6. Reverses effects of hypermagnesemia (such as can occur with infusions of magnesium sulphate, i.e. respiratory depression with mother and/or newborns).
7. Hydrogen Fluoride exposure.
8. Hypermagnesemia with respiratory and/or CNS depression.

Contraindications:

1. Hypercalcemia.
2. Digitalis toxicity (may result in asystole).

Use with Caution:

1. Extravasation causes tissue sloughing.
2. **Do not mix with Sodium Bicarbonate in running IV**. (Flush with NS prior to administration following/prior to sodium bicarbonate administration.)

CALCIUM GLUCONATE (cont.)

Dosage and Administration:

Supplied as a 10% solution, generally 1000mg (1 gram) in a 10ml vial.

1. For hyperkalemia in cardiac arrest: **Adult**: 3000mg IV push (30 ml IV). **Pediatric dose**: 60 mg/kg (max dose 3000mg) IV.
2. For hyperkalemia not in cardiac arrest: **Adult**: 1500-3000mg slow IV push. (Use higher dose if EKG changes present). **Pediatric dose**: 60 mg/kg slow IV.
3. For crush syndrome: **Adult**: 1500mg IV push, repeat x1 PRN, **Pediatric**: 30mg/kg (max dose 1500mg) IV, repeat X 1 PRN
4. For known hypocalcemia with tetany: **Adult**: 2000mg IV push Pediatric dose: 40mg/kg (max dose 2000mg) IV
5. For calcium channel blocker overdose: **Adult**: 3000-6000mg IV push **Pediatric**: 60mg/kg (max dose 6000mg) IV push over 10 minutes, repeated PRN every 20 minutes up to 5 doses.
6. For co-administration with diltiazem to limit/prevent hypotension: Adult: 500mg-1000mg IV Pediatric: Consult medical control
7. For magnesium toxicity: Adult: 1000-2000mg IV push Pediatric: 60mg/kg (max dose 2000mg) IV push (NOTE: Evidence indicates supportive measures as outlined in Newborn Care and Resuscitation protocol generally resolve all clinical problems related to hypermagnesemia in the neonate, so pre-hospital treatment for hypomagnesemia is rarely indicated. Priority remains the standard supportive measures.
8. For Hydrogen Fluoride inhalation exposure: Mix 1ml of 10% calcium gluconate with 3ml NS in nebulizer and administer nebulized. Repeat PRN.
9. For Hydrogen Fluoride skin exposure: Mix 2ml of 10% calcium gluconate per 1 ounce KY jelly, and coat/massage affected area.
10. For Hydrogen Fluoride Eye Exposure: Mix 5ml of 10% calcium gluconate per 40ml NS in 60ml syringe and flush eyes. Repeat PRN.
11. For hypermagnesemia: (Used to reverse adverse respiratory depression or CNS toxicity from a magnesium infusion, such as eclampsia) 500mg IV over 10 minutes.

Adverse Effects:

- Hypotension.
- Bradycardia.

DILTIAZEM (CARDIZEM)

MF9

Pharmacologic Effects:

1. Calcium ion influx inhibitor (slow channel blocker or calcium channel antagonist).
2. Slows A-V nodal conduction time.

Metabolism:

1. Primarily hepatic metabolism.
2. **Onset:** Minutes.
3. **Duration:** Plasma half-life elimination is 3-4 hours.

Indications:

1. Rapid supraventricular dysrhythmias (atrial fibrillation/flutter) with rapid ventricular response.
2. May be used to treat narrow complex supraventricular tachycardia (SVT)

Contraindications:

1. Known allergy/sensitivity.
2. Wide complex tachycardias.
3. Wolff-Parkinson White syndrome (Use of diltiazem in setting of WPW w/atrial fibrillation can result in 1:1 condition to the ventricles [ventricular tachycardia])
4. Bradycardia.
5. Sick sinus syndrome.
6. 2nd or 3rd degree heart block..
7. Severe hypotensive/cardiogenic shock.
8. IV simultaneous use with beta blockers.
9. Newborns.

Cautions:

1. CHF.
2. Hypotension.
    - Consider co-administration/pretreatment with calcium in patients with SBP ≤ 100.

Dosage and Administration:

1. Adult 0.1-0.25 mg/kg bolus up to 25mg slow IV/IO over 2 minutes.
2. Dose may be repeated PRN up to every 5-10 minutes.

Adverse Effects:

- Cardiac dysrhythmias/ventricular slowing.
- Hypotension.

DEXAMETHASONE (DECADRON) MF10

Pharmacological Effects:

1. A corticosteroid steroid that up-regulates a complex anti-inflammatory cellular pathway with a variety of clinical effects including anti-inflammatory, immunosuppressive, and adrenal suppression. Dexamethasone has negligible mineralocorticoid activity, so has minimal effect on salt and water balance.

Metabolism:

1. Liver.
2. Onset: Up to 8-12 hours (clinically variable).
3. Duration: Up to 48-72 hours (clinically variable).

Indications:

1. Moderate to severe asthma or COPD exacerbation.
2. Anaphylaxis.
3. Croup.
4. Suspected/known adrenal insufficiency (required on-line medical control approval).

Contraindications:

1. Known hypersensitivity/allergy.
2. Premature infants.

Cautions:

1. Due to relatively slow onset of action, dexamethasone should be reserved until other therapeutic interventions with more rapid onset (e.g., epinephrine in anaphylaxis, bronchodilator therapy in asthma/COPD, etc.) have been completed. Administration may be appropriately deferred to the emergency department in setting of short transport times.
2. Has theoretical disadvantages/effects in setting of congestive heart failure (CHF) and may be deferred if diagnostic presentation is equivocal.

Dosage and Administration:

1. **Adult** Dose for asthma, COPD, anaphylaxis, or adrenal insuffiency: 10mg IV or PO. Note: IV preparation can be taken orally.
2. **Pediatric** Dose for asthma, COPD, anaphylaxis, or adrenal insufficiency: 0.6mg/kg IV or PO up to a maximum of 10mg.)

Adverse Effects:

- Side effects, aside from hyperglycemia (inform diabetics), following a single dose of dexamethasone are very uncommon; side effects from prolonged use are extensive.
- Headache
- Edema
- Nausea/vomiting
- GI Bleed
- Psychosis
- Hypertension

DEXTROSE 10% (D10W)

MF11

MEDICATION FORMULARY

⚠ **NOTE:** The use of D10W replaces the formerly used D50W (50% Dextrose) due to decreased tissue toxicity, less resultant hyperglycemia and no requirement for dilution in pediatric patients. Additionally, it is less irritating to veins and is easier to use in more fragile IV's.

Pharmacologic Effects:

1. Provides calories required for metabolic needs.
2. Supplies body water.
3. Spares body proteins.

Metabolism:

1. Broken down by most tissues to pyruvate which, with adequate oxygen, enters the Krebs Cycle and is converted into carbon dioxide, hydrogen, and water.
2. **Onset:** Minutes.
3. **Duration:** Variable (clinical context dependent).

Indications:

1. Suspected or known hypoglycemia.
2. Blood glucose <60 mg/dL OR blood glucose <70 mg/dL and potential symptoms/clinical concern (e.g., altered mental status, diaphoresis, weakness, neurological symptoms)

3. In newborns a blood glucose of <40 mg/dL is diagnostic, OR blood glucose <60 and clinical concern

⚠ **NOTE:** Whenever possible, draw sample for blood glucose estimation prior to the administration of dextrose.

Contraindications:

None.

Cautions:

None.

Dosage and Administration:

Using D10W (25 grams of Dextrose in 250mL, resulting in 1 gram glucose per 10mL)

1. **Adult dose**: 50-100mL (5-10g dextrose) IV push, repeat every 3-5 minutes PRN based on glucose and clinical response. (MAX TOTAL DOSE: None)
2. **Pediatric dose**: 5mL-10mL/kg (0.5-1g/kg dextrose) (max 5 grams/50ml per dose) IV push, repeat every 3-5 minutes PRN based on glucose and clinical response. (MAX TOTAL DOSE: NONE)

Using D50W

(⚠ **NOTE**: Use D50W only in the setting where D10W is not available (i.e., drug shortages)).

1. **Adult dose:** 25-50 mL (12-25g dextrose) D50W slow IV push. Remove and waste 50mL NS from a 250mL bag of NS and then add 50mL of D50W, to create a ~D10NS solution. Then administer 50-100mL (5-10g dextrose) IV push, repeat every 3-5 minutes PRN based on glucose and clinical response. Repeat every 3-5 minutes PRN based on glucose and clinical response. (MAX TOTAL DOSE: None)
2. **Pediatric dose**: Create a D10NS solution to approximate D10W. Remove and waste 50mL NS from a 250mL bag of NS and then add 50mL of D50W, to create a ~D10NS solution. Then administer ~D10NS 5mL-10mL/kg (0.5-1g/kg dextrose) (max 5 grams/50ml per dose) IV push, repeat every 3-5 minutes PRN based on glucose and clinical response. (MAX TOTAL DOSE: NONE)

Adverse Effects:

1. Hyperglycemia

(Change to D10W recommended by NAEMSP 2015)

DIPHENHYDRAMINE (BENADRYL)

MF12

MEDICATION FORMULARY

Pharmacologic Effects:

1. Antihistamine, sedative, and anticholinergic:
   - When released into the circulation following an allergic reaction, histamine acts on two different receptors. The first type called H1, causes bronchoconstriction and contraction of the gut. The second type of receptor, called H2, causes peripheral vasodilatation.
   - Antihistamines are administered after epinephrine in the treatment of anaphylaxis. Epinephrine causes immediate bronchodilation by activating B2 adrenergic receptors, while Diphenhydramine inhibits further histamine release.

Metabolism:

1. Excreted by the liver and kidneys.
2. Onset: Minutes (longer with IM, clinically variable).
3. Duration: ~1-4 Hours. (clinically variable).

Indications:

1. Anaphylaxis.
2. Allergic reactions.
3. Urticaria or pruritus (itching), including medication induced.
4. Severe dystonic reactions due to phenothiazines, or similar drugs.
5. Akathisia (sense of restlessness, anxiety) caused by medication (e.g., promethazine)

Contraindications:

1. Infants age <3 months (may result in paradoxical stimulant effects, including irritability and seizures).
2. Known allergy/sensitivity.

Cautions:

1. Nursing mothers.

Dosage and Administration:

1. Supplied in ampules and pre-filled syringes containing 50 mg/ml.
   a. **Adult dose**: 25-50 mg slow IV push (over 2 minutes) or by deep IM injection.
      - A maximal dose is indicated for anaphylaxis.
      - A reduced dose of 12.5mg may be given in the elderly if not being used for anaphylaxis.
      - A reduced dose of 12.5mg can be used for co-administration with promethazine to prevent/address akathisia. If akathisia not immediately responsive within minutes, administer full dose.

   b. **Pediatric dose:** 1-2 mg/kg up to 25mg slow IV push or deep IM injection

   c. A reduced dose may be given (12.5mg-50mg IV in adults) or 0.5-2mg/kg in pediatrics if used for reduction of histamine effects from narcotics

Adverse Effects:

1. Drowsiness (common).
2. Dry mouth.
3. Rare effects include: Blurred vision, hypotension, Urinary retention, Tachycardia.

DROPERIDOL (INAPSINE)

MF13

Pharmacologic Effects:

1. Droperidol is an antipsychotic drug which blocks dopamine, muscarinic, adrenergic, and histaminic receptors and that produces sedation at higher doses. At low dosages droperidol is a potent anti-emetic and an effective migraine medication. Droperidol can produce extra-pyramidal side effects, including dystonia, Parkinsonism (rigidity, tremor, and shuffling gait), akathisia (motor restlessness) and tardive dyskinesia. Droperidol is an effective agent and has a more rapid onset than haloperidol. The FDA issued a black box warning for droperidol in 2001 over concerns of QT prolongation and the potential for torsades to points. However, subsequent reviews (See American Academy of Emergency Medicine clinical practice statement 2013) concluded that the black box warning was not supported for the dosing regimens recommended here.

Metabolism:

1. Hepatic metabolism with biliary and renal excretion and inactive metabolites.
2. Onset: 5-20 Minutes (clinically variable).
3. Duration: ~2–6 hours after administration (clinically variable).
    - There is no significant difference in the onset of effect following IV or IM injection when used for sedation.

Indications:

1. Acute behavioral disturbances/agitation or patients requiring sedation. When there is an apparent risk of imminent and immediate harm to patient or personnel due to agitation (such as in excited delirium) ketamine should be used as the first line agent. Droperidol has a slower onset and a more variable response to dosing and is therefor less effective for immediate control in settings such as excited delirium.
2. Second line agent as an anti-emetic.
3. Migraine headache in patients with known pattern and diagnosis of migraine (do not use in undifferentiated headache).

Contraindications:

1. Known allergy/sensitivity, including known previous dystonic reaction
2. Parkinson's (may aggravate symptoms)
3. Known QT prolongation (QT > 450ms)
4. Age <8 years

Cautions:

1. Careful monitoring for respiratory depression when used in higher doses or in combination with other CNS depressants such as benzodiazepines.
2. May cause QT prolongation generally at higher doses (>20mg) than used prehospitally

Dosage and Administration:

1. Acute behavioral disturbances/agitation or patients requiring sedation:
   a. **Pediatric Dose (Age 9-18 years):** 0.1-0.2 mg/kg IV or IM (maximum single dose 10mg, May be repeated once at 15 minutes, maximum total dose 15mg).
   b. **Adult Dose (Age 18-65 years):** up to 10mg IV or IM, may be repeated once at 15 minutes, maximum total dose 20mg).
   c. **Adult Dose (Age ≥ 65 years):** up to 5mg IV or IM, may be repeated once at 15 minutes, maximum total dose 10mg).
2. Anti-emetic:
   a. **Pediatric Dose**: Use only as second line agent. Dose is 0.01 mg/kg up to max of 1.25mg IV, may repeat x1 at 20 minutes.
   b. **Adult Dose:** 0.625-1.25mg IV (Note: NOT mg/kg), May repeat dose x1 at 10 minutes
   - When administering IV for nausea or migraine, slow IV push is thought to reduce akathisia incidence.
3. Migraine:
   a. **Pediatric Dose (Age 9-18 years):** 0.5-1.25mg total dose IV or IM (Note: NOT mg/kg).
   b. **Adult dose:** 1.25mg IV or IM (Note: NOT mg/kg).
   - When administering IV for nausea or migraine, slow IV push is thought to reduce akathisia incidence.

Adverse Effects:

- Extra pyramidal side effects:
  - Dystonia (if occurs, treat with diphenhydramine per dystonic reaction protocol)
  - Parkinsonism (rigidity, tremor, and shuffling gait)
  - Akathisia (restlessness, treat with diphenhydramine if occurs)
  - Tardive dyskinesia (stereotyped involuntary movement such as lip smacking, tongue movements)
- An extremely rare potentially life-threatening neurologic syndrome called neuroleptic malignant syndrome (NMS). NMS resembles a very severe form of Parkinsonism with severe catatonia, fever, autonomic instability, and altered mental status.

DUO NEB (ALBUTEROL & IPRATROPIUM) MF14

MEDICATION FORMULARY

Pharmacologic Effects:

1. Combines albuterol (a selective beta-2 agonist primarily used to treat bronchial asthma and reversible bronchospasm) and ipratropium (an anticholinergic bronchodilator)

Metabolism:

1. Hepatic metabolism to inactive metabolites occurs.
2. Onset: Minutes, with peak bronchodilation occurs within 1-2 hours (clinically variable).
3. Duration: Continues for 3-4 hours after administration (clinically variable).

Indications:

1. Bronchodilator for the treatment of asthma and reversible bronchospasm.
2. Added anticholinergic bronchodilator may supplement effects of B2 agonist, particularly in setting of COPD.

Contraindications:

1. Known allergy/sensitivity.
2. May be contraindicated in setting of soy or peanut allergy (soya lecithin, a soy derivative has been used in the MDI formulation).

Cautions:

1. Tachycardia, this may be disease related. May be ineffective in patients on Beta-blockers.

Dosage and Administration:

Supplied in one pearl containing 2.5mg albuterol and 0.5mg ipratropium in 3ml NS

1. Solution for nebulization is administered in a dose of 2.5 albuterol/0.5mg ipratropium (Continuous nebulization may be used, if needed for respiratory distress.
2. Repeated dosing of ipratropium have not been demonstrated to have clinical effect, if repeat nebulize therapy is indicated, use albuterol. (If albuterol is not available, duoneb may be use. Additional dosing of ipratropium has not been found to be harmful.
3. Albuterol alone is preferred agent for hyperkalemia management, if only duoneb is available, then 20mg/4mg duoneb may be substituted.

Adverse Effects:

Adverse effects are usually minor and well tolerated, and they are generally dose dependent. For the full list see albuterol drug monograph. These are the most common effects:

- Tachycardia
- Tremor
- Palpitations
- Restlessness
- Nervousness
- Hypokalemia

RACEMIC EPINEPHRINE (NEBULIZED) MF15

MEDICATION FORMULARY

⚠ **NOTE:** **Racemic epinephrine** is composed of equal amounts of the D- and L-isomers of epinephrine. **Standard epinephrine** is the composed of the L-isomer. Racemic epinephrine was first used under the theory that the D-isomer muted the side effects of the active L-isomer. Studies randomizing patients to racemic epinephrine vs L-isomer for treatment of croup have not demonstrated a clinical difference between the two forms. Instructions for using **standard epinephrine** are included below as it may be routinely substituted for **racemic epinephrine**.

Pharmacologic Effects:

1. Alpha and beta adrenergic.
2. Reverses airway edema.

Metabolism:

1. Monoamine oxidase and catechol-o-methyltransferase in tissue and liver.
2. **Onset**: minutes.
3. **Duration**: 1-4 hours.

Indications:

1. Croup in pediatric patients with stridor at rest, respiratory distress.
2. Limited evidence for use in severe bronchiolitis (not routinely recommended)
3. May be considered in adult with upper airway obstructive process as adjunct.

Contraindications:

1. No contraindications in the setting of upper airway obstruction.

Cautions:

1. Effects may be temporary and initial symptoms (e.g., stridor) may resume as medication effect resolves within initial hours of administration (Referred to as "rebound").
2. Theoretical caution in setting of cardiac disease, hypertension, hyperthyroidism.

Dosage and Administration:

1. **Adult and pediatric dose** using **standard epinephrine**: Use up to 5mg (5mL) of 1mg/mL standard epinephrine (formerly 1:1,000) nebulized. Repeat PRN.
2. **Adult and pediatric dose** using **racemic epinephrine**: Comes as 2.25% solution. Use 0.5mL in 3mL NS nebulized. Repeat PRN.

Adverse Effects:

- Tachycardia
- Hypertension
- Possible return of stridor within 1-3 hours (rebound)
- Anxiety
- Tremor

EPHINEPHRINE (ADRENALIN)

MF16

Pharmacologic Effects:

1. Alpha and beta adrenergic effects:
    - Increases force of myocardial contraction.
    - Increases pulse rate and systolic blood pressure.
    - Increases conduction velocity through the A-V node.
    - Increases irritability of ventricles.
    - Dilates bronchi.

Metabolism:

1. In the liver and many other tissues.
2. **Onset**: IV immediate, IM ~2-10 minutes, Nebulized ~2-5 minutes
3. **Duration**: IV 5-10 minutes, IM ~20-30 minutes, Nebulized: ~10 minutes. (All clinically variable)

Indications:

1. Cardiac arrest (i.e. Asystole, PEA, VF, and pulseless VT).
2. Neurogenic shock.
3. Septic Shock.
4. Cardiogenic shock.
5. Undifferentiated Shock.
6. Anaphylaxis.
7. Severe status asthmaticus.
8. Severe bradycardia in pediatric and neonate patients.
9. Severe upper respiratory infection (croup / epiglottitis) with stridor/upper airway obstruction.

Contraindications:

1. None in the setting of anaphylaxis or cardiac arrest.
2. Severe cardiac disease (except in life-threatening conditions).
3. Hemorrhagic or hypovolemic shock (as primary therapy).
4. Dysrhythmias in the non-arrest patient.

Cautions:

1. Do not mix with Sodium Bicarbonate or similar alkaline solutions, or inactivation of epinephrine will result.
2. Hypertension.
3. Elderly patients not in cardiac arrest (increased potential for adverse cardiovascular effects).
4. Patients with known heart disease not in cardiac arrest (increased potential for adverse cardiovascular effects).

Dosage and Administration:

Epinephrine is available in **two** concentrations:

- 1mg in 1ml (labeled 1mg/ml, formerly labeled 1:1000) and
- 1mg in 10ml (labeled 0.1mg/ml, formerly labeled 1:10,000)

EPHINEPHRINE (ADRENALIN) (cont.)

1. Cardiac Arrest - Asystole, PEA, VF and Pulseless VT:
   - **Adult dose**: 1 mg (of 0.1mg/ml) IV/IO, then repeated every 3-5 minutes PRN.
   - **Pediatric**: 0.01 mg/kg (of 0.1mg/ml) up to 1mg maximum, repeated as above.
2. Anaphylaxis:
   - **Adult** 0.3mg (of 1mg/ml) IM. (Note: IM route is preferred over subcutaneous).
   - **Pediatric**: 0.01 mg/kg (of 1mg/ml) up to maximum 0.3mg IM. (Note: IM route is preferred over subcutaneous).
   - Repeat initial dose if continued signs of shock and/or respiratory compromise persist.
   - Critically ill patients experiencing circulatory collapse may be given **push-dose epinephrine** IV/IO (see instructions below)
   - Critically ill patients experiencing circulatory collapse may be given **epinephrine drip** (see instructions below) IV/IO
3. Severe Asthma:
   - **Adult:** 0.3mg (of 1mg/ml) IM. (Note: IM route is preferred over subcutaneous).
   - **Pediatric**: 0.01 mg/kg IM, minimum dose 0.15mg, maximum 0.3 mg (Note: IM route is preferred over subcutaneous).
4. Push dose vasopressor support (**Adult** Only):
   - Place 1mg epinephrine (either 1mg/ml 0.1mg/ml concentrations may be used) into 1 Liter of NS (resulting in a ~1mcg/ml concentration. Clearly label NS bag..
   - Then withdraw 10ml (10mcg) and administer **Adult Dose**: 5-20mcg IV/IO (5-20ml) every 2-5 minutes for pressor support.
5. Shock requiring vasopressor support (anaphylactic, septic, distributive, cardiogenic, or undifferentiated refractory shock states), an epinephrine drip may be initiated:
   - Place 1mg epinephrine (either 1mg/ml 0.1mg/ml concentrations may be use) into 1 Liter of NS (resulting in a ~1mcg/ml concentration. Clearly label NS bag.
   - Administer at a rate of 1ml/minute IV/IO, and titrate to clinical effect up to 10ml/minute.

⚠ **NOTE:** For patients Post-ROSC requiring vasopressor support start at 1-2mL/min, titrate up to **Adult**: 50mL/min (50mcg/min), **Pediatric**: up to 0.05mL/kg (0.05mcg/kg) max 25mL/min. The dose for post ROSC management is higher than the 10mL/min maximum for other indications.

- This dilute concentration can safely be administered without central line access.

⚠ **NOTE:** No data clearly demonstrate mortality benefit or clearly improved outcome superiority among vasopressors. Current trends are to use norepinephrine (levophed) as a vasopressor of choice in many hospitals or ICU's. However, due to the infrequency of use, the need for special access and monitoring, the use of levophed is problematic in the prehospital environment. Substantial data (>3,000 pre-hospital cases over 10 years experience) have been reported regarding the safety and utility of pre-hospital epinephrine drips for vasopressor support using this protocol as described. (Dr. Craig Ellis, EMS Today 2017)

6. Upper airway swelling with stridor (such as epiglottitis or croup):
   - **Adult and Pediatric Dose**: Nebulize 0.5 mg (5ml of 0.1mg/ml solution). Repeat x1 PRN.
7. Severe bradycardia in pediatric patients:
   - Contact medical control prior to use. **Pediatric dose**: 0.01 mg/kg (of 0.1mg/ml) up to maximum of 0.1mg slow IV/IO push, repeated every 3 – 5 minutes.

Adverse Effects:

- Hypertension.
- Supraventricular tachycardia.
- Anxiety/agitation.
- Ventricular Dysrhythmias: (Ventricular premature contractions. ventricular tachycardia and ventricular fibrillation.)
- High concentrations of epinephrine can result in tissue necrosis if extravasation occurs.

ETOMIDATE (AMIDATE)

MF17

Pharmacologic Effects:

1. It is a carboxylated imidazole derivative used as a sedative-hypnotic agent for rapid sedation of a patient undergoing intubation or procedural intervention. It is generally hemodynamically neutral and does not cause hypotension.
2. Onset is immediate and duration is 5-10 minutes.

Metabolism:

1. Liver
2. **Onset**: ~30-60 seconds (peak effect at ~1 minute).
3. **Duration**: ~5-7 minutes.

Indications:

1. Adjunct for sedation in rapid sequence intubation.
2. Emergent procedural sedation for synchronized cardioversion.

Contraindications:

1. Known allergy/sensitivity.

Cautions:

1. Should only be used in the process of rapid sequence intubation or procedural sedation for cardioversion once personnel and equipment are ready for appropriate airway and ventilatory management as onset of action is rapid.
2. Consider pre-treatment with ondansetron when using for procedural sedation if clinical situation permits.
3. Short duration of ~10 minutes results in need for additional medication(s) for sedation and analgesia for the intubated patient which can be administered following completion of the intubation procedure.

Dosage and Administration:

1. **For intubation** - the dose is 0.3mg/kg IV/IO. A dose of 20mg is adequate for most adults. Administer paralytic immediately following the administration of etomidate.
2. **For procedural sedation** - the dose is 0.15mg/kg IV/IO with maximum initial dose of 20mg.

Adverse Effects:

- Causes mild local burning and venous irritation on administration.
- Myoclonus (muscular contractions) - while not seen with co-administered paralytic for intubation, marked muscle contractions can be evident when used for sedation only.
- Rapid and deep sedation (intended effect).
- If used without concomitant paralytics nausea and vomiting can occur.
- Adrenal suppression (Continuous infusion in setting of sepsis is not recommended. Effects f single dose unclear. Consider alternative agent in sepsis.)

FENTANYL (SUBLIMAZE) MF18

Pharmacologic Effects:

1. A synthetic full opiate agonist that is similar in action to morphine, but much more potent (requiring much smaller doses). It has an extremely rapid onset (<30 seconds) and a much shorter clinical duration (20-40 minutes) than other opiates, including morphine. Additionally, fentanyl is hemodynamically neutral as it produces much less histamine release than other opiates, and even with large doses hypotension is extremely rare.
2. The combination of rapid onset, short duration, and stabile hemodynamic profile make fentanyl an excellent option for critically ill (e.g., trauma) patients and/or for those patient in whom there is a concern about masking components of the physical exam (e.g., abdominal pain).

Metabolism:

1. By the liver and kidneys.
2. **Onset**: IV or IN: Minutes with peak effect at ~2-5 minutes (clinically variable).
3. **Duration**: ~20-40 minutes (clinically variable).

Indications:

1. Control of moderate to severe pain in:
   a. Multi-system trauma patients.
   b. Critically ill patients with potential or existent hypotension or hemodynamic instability.
   c. Patients with abdominal pain requiring narcotics (short duration allows pain control but helps preserve the physical exam for the physician).
   d. Patient with adverse reactions (but not anaphylaxis) to other opiates such as morphine (fentanyl causes less nausea, vomiting, and itching (pruritus) compared to morphine).
   e. Transcutaneous pacing.

Contraindications:

1. Known allergy/sensitivity.
2. Not to be used in a neonate/infant <1 month of age due to association with bradycardia.

Dosage and Administration:

Fentanyl is dosed in micrograms, not milligrams. Concentration/Dosage note: 100 micrograms = 0.1 milligrams. Like other narcotics/opiates, fentanyl is best used via small doses that are titrated to adequate effect (analgesia). The key to analgesia with fentanyl is frequent patient assessment and titration to effect. Pain scale assessment is a component of pain assessment, but in determining opiate dosage, clinical judgement of the totality of the clinical presentation is required.

• Best used for both critically ill patients and for initial trauma patients due to neutral hemodynamic properties and rapid metabolism. Can be used for those with a reported morphine allergy. The key to analgesia with fentanyl is frequent patient assessment and titration to effect. Pain scale measurement is a component of pain assessment, but in determining opiate dosage, clinical judgement of the totality of the clinical presentation is required.

1. **Adult Dose**: Up to 1 - 2 mcg/kg slow IV push over 1 minute
   a. For most patients start with 25-100mcg slow IV initial dose.
   b. For patients with moderate/severe pain (most patients), give subsequent titrated doses up to every 5 minutes as needed with up to 0.5mcg/kg slow IV push (max 100mcg increments). CTD: 200mcg
   c. In cases of extreme pain (select population), repeat doses up to 1-2 mcg/kg slow IV dose up to every 3-5 minutes are permitted. Pulse oximetry monitoring is mandatory.
   d. In the intubated patient with a suspected painful condition, titrate in 100-200mcg IV increments.
   e. Intranasal administration up to 100mcg doses can be used in adults.

2. **Pediatric Dose**:

   ⚠ **NOTE:** Fentanyl is contraindicated in neonates/infants < 1 month due to bradycardia.
   Age >1 month consider up to 1 mcg/kg (maximum of 100mcg increment slow IV push over 1 minute or intranasal. Consider giving initial dose intranasal, then establishing IV for subsequent doses.

   a. For most patients start with 25mcg IV or IN.
   b. For patients with moderate/severe pain, give subsequent titrated doses up to 0.5mcg/ kg slow IV or IN up to every 5 minutes as needed. CTD: 100mcg.
   c. For patients in extreme pain (select population), repeat doses of up to 1mcg/kg IV or IN (up to 100mcg increment) every 3-5 minutes are permitted. Pulse oximetry monitoring is mandatory.
   d. In the intubated patient, titrate in 1mcg/kg IV increments.

3. Chest Pain **Adult Dose**: 25-50mcg IV increments titrated CTD: 200mcg
4. Analgesia/Sedation in intubated patient **Adult Dose**: 1-2mcg/kg IV, 100-200mcg IV increments recommended, titrated **Pediatric Dose:** 1mcg/kg up to 100mcg increments titrated

Adverse Effects:

- May cause respiratory depression and close monitoring is required. Like all narcotics, the respiratory depressive effects are synergistic (markedly worsened) with co-administration or use of benzodiazepines (e.g. midazolam). A reduced dose is recommended for patients with renal failure.
- Rarely associated with nausea, vomiting, pruritus.
- Fentanyl has no intrinsic anxiolytic or amnestic properties.
- Extremely rarely associated with a "chest wall syndrome" involving chest wall rigidity that occasionally can require supportive ventilation and/or pharmacologic paralysis but is often reversible with naloxone. This extremely rare condition has only been associated with extremely large and rapid bolus (>5 mcg/kg) administration.
- The effects of fentanyl are reversible with naloxone.
- Fentanyl tends to have more of a sedative effect in children than found with an equipotent dose in adults

NOTES:

- Continuous pulse oximetry is recommended if tolerated.
- Continuous pulse oximetry is required if fentanyl is combined with other potential respiratory depressants (e.g., midazolam), the patient is intoxicated, the patient has known pulmonary disease (e.g., COPD), or if more than (2) doses fentanyl administered.
- For non-intubated patients, side-stream ETCO2 monitoring is indicated if clinically evident sedation occurs following administration.
- Inadvertent overdose can be reversed with naloxone 0.5-4 mg IV, IM or Intranasal by Mucosal Atomization Device (MAD).
- Morphine to fentanyl conversion factor: Morphine 10mg IV ~ 100mcg fentanyl IV.

GLUCAGON

MF19

Pharmacologic Effects:

1. A protein secreted by the alpha cells of the pancreas. When released it causes a breakdown of stored glycogen to glucose. It also inhibits the synthesis of glycogen from glucose. Both actions tend to cause an increase in circulating blood glucose. While a return to consciousness is seen almost immediately following the administration of glucose, a return to consciousness following the administration of IM or SC glucagon usually takes from five (5) to twenty (20) minutes. Glucagon exerts a positive inotropic action by activating adenylate cyclase, causing an increased cyclic AMP, resulting in positive inotropy and chronotropy similar to beta-agonists.
2. Smooth muscle (lower esophageal sphincter) relaxant, no effect on skeletal muscles.
3. When given IV, effects begin within 1-3 minutes, are maximal at 5-7 minutes, and last 10-15 minutes.

Metabolism:

1. Rapidly metabolized in plasma, liver, and kidney.
2. Onset: ~4-12 minutes IM (clinically variable), peaks at 20-30 minutes.
3. Duration: ~30-90 minutes (clinically variable).

Indications:

1. Secondary choice for treatment of hypoglycemia (indicated in setting where oral glucose or IV dextrose are not possible).
2. Limited evidence indicates possible use for critically ill beta-blocker and/or calcium channel blocker overdose patients.
3. Limited evidence indicates possible use for esophageal food impactions.

Contraindications:

1. Known allergy/sensitivity.

Cautions:

1. Is only effective if there are sufficient stores of glycogen within the liver. In an emergency situation, IV dextrose is the primary agent of choice. Draw and check blood glucose level prior to administration.

Dosage and Administration:

Must be reconstituted before administration. It is supplied in rubber-stoppered vials containing one unit of powder and one milliliter of diluting solution.

1. For hypoglycemia:
   - Note - The IM route is thought to be absorbed faster than SC, and therefore IM is the preferred route for Skagit County EMS personnel.
   - **Adult dose**: Administer 1-2mg IM. May be repeat x1 in 15 minutes PRN.
   - **Pediatric dose**:
     - 1mg IM if patient >20kg or >5 years of age. May be repeat x1 in 15 minutes PRN.
     - 0.5mg IM if patient <20kg or <5 years of age. May be repeat x1 in 15 minutes PRN.

⚠ **NOTE:** Glucagon is also available in a powdered form in for intranasal route (brand name Locemia) which provides a 3 gram intranasal dose in a delivery device. If available at the scene, intranasal glucagon may be administered by EMS personnel.

2. For beta-blocker or calcium channel blocker: Contact medical control prior to use. Dose is 5mg IV, repeated in 5 minutes if no effect, followed by infusion. NOTE: Skagit EMS units do not stock glucagon in the quantities needed for this therapy.
3. For esophageal food impaction: **Contact On-Line Medical Control** prior to use. Dose is 1mg IV, IM, or SC.

Adverse Effects:

- Nausea and vomiting when given IV, less common when used IM/SC for hypoglycemia.

GLUCOSE, ORAL

MF20

MEDICATION FORMULARY

Pharmacologic Effects:

1. Provides calories for metabolic needs.

Metabolism:

1. Broken down by most tissues to pyruvate which with adequate oxygen enters the Krebs cycle and is converted to carbon dioxide, hydrogen and water.
2. Onset: immediate (clinically variable).
3. Duration: Minutes to hours (clinically variable).

Indications:

1. Hypoglycemia
   - Blood glucose <70 mg/dL
   - In newborns, a blood glucose of less than 40mg/dL is diagnostic

Contraindications:

1. Obtundation - altered level of consciousness to suspected level of inability to swallow oral preparation of glucose without airway compromise.

Cautions:

1. Patient needs to be alert and have intact swallowing capacity.
2. Must be swallowed as it is not absorbed sublingually or buccally.

Dosage and Administration:

Most preparations come in a single use container of 15-25 grams of glucose (dose varies by manufacturer), although multi-use tubes up to 45 grams are available.

1. **Adult**: Apply full contents of single use container gel to buccal (cheek) mucosa.
2. Pediatric: Administer ~0.5-1 gram/kg up to 25 grams (NOTE: Dose is not precise, and is estimated by **simple** visual fraction of tube used)

- Monitor patient response and repeat blood glucose level.
- Repeat x1 PRN.
- If inadequate response, place IV and treat per hypoglycemia protocol.

Adverse Effects:

- Aspiration
- Choking

HEPARIN

MF21

⚠ **NOTE:** Heparin is not to be initiated by paramedics during field response. Paramedic responsibility for heparin will be limited to maintaining heparin infusions during inter- facility transfers, at dosages that have been ordered by physicians prior to initiating the transfer.

Pharmacology:

1. Heparin is an anticoagulant used to prevent the formation of blood clots.

Indications:

1. Prevention or therapy for thrombosis or embolism (commonly used for conditions such as cardiac thrombosis, pulmonary embolism, atrial fibrillation, disseminated intravascular coagulation, or DVT.
2. **Onset**: Immediate.
3. **Duration**: ~2-6 hours.

Contraindications:

1. Known allergy/hypersensitivity to heparin.
2. Active bleeding.
3. High risk of bleeding.
4. Blood dyscrasia (certain pathologic blood conditions, e.g., hemophilia).

Cautions:

1. Decreasing level of consciousness or focal neurological signs may indicate intracranial bleeding.
2. Care should be used when handling patients who are receiving heparin infusion as rough handling can cause bleeding.

Dosing and Administration:

1. Heparin is frequently dosed as a bolus followed by an infusion. Dosing protocols vary based on condition and institution. Dosing should be clearly determined and set prior to initiation of transfer.
    - All heparin infusions in the ambulance will be administered using an IV pump to provide a controlled rate of infusion as determined by the physician.
    - If concern for a serious adverse event such as bleeding or allergy occurs, discontinue the infusion and contact medical control. Notify receiving facility upon arrival.
    - All patients receiving heparin require cardiac monitoring during transport.

Complications:

- Bleeding of any type.
- Decreasing level of consciousness or focal neurological signs may indicate intracranial bleeding.
- Allergic reactions can occur.

IBUPROFEN

MF22

⚠ **NOTE:** This medication is not carried by EMS,
but may be recommended by EMS Providers for patient home use.

Pharmacology:

1. Ibuprofen (Advil, Motrin), is a non-steroid anti-inflammatory (NSAID) with analgesic and antipyretic effects. NSAIDs are thought to exert their effects by inhibiting prostaglandin synthesis by inhibiting the cyclooxygenase (COX) enzyme, which catalyzes the conversion of arachidonic acid to prostaglandin and endoperoxide. Prostaglandins are a modulator of inflammation and are also involved in thermoregulation, pain transmission, and platelet aggregation.

Indications:

• Medication is not carried by EMS providers, but may be recommended to patients not being transported

1. Pain
2. Fever

Contraindications:

1. Known allergy/hypersensitivity to any NSAID (including Aspirin
2. Current or prior GI bleeding or peptic/gastric ulcer history
3. Chronic Kidney Disease
4. Pregnancy
5. Age less than 6 months

Dosing and Administration:

1. **Adult dose**: 400-800mg PO, may repeat dose in 6 hours
2. **Pediatric dose** (age >6 months): 10mg/kg PO, max dose 400mg

Adverse Effects:

1. Gastrointestinal upset or bleeding
2. Kidney injury

IPRATROPIUM BROMIDE (ATROVENT)

MF23

MEDICATION FORMULARY

Pharmacologic Effects:

1. Anticholinergic bronchodilator.

Metabolism:

1. Liver and kidneys.
2. **Onset**: within ~15 minutes, peak effect 1-2 hours
3. **Duration**: ~2-5 hours.

Indications:

1. Acute exacerbation of asthma or COPD as an adjunct to beta-agonist bronchodilator
2. Reserve for use in setting of isolated asthma (not COPD) such as for the pediatric or young adult patient only in moderate/severe exacerbations. (i.e., ipratropium use can be deferred to the emergency department in setting of mild asthma exacerbations.)

Contraindications:

1. Known allergy/sensitivity.

Cautions:

1. Ipratropium should not be used in isolation, but as an adjunct to beta-agonist bronchodilator therapy.
2. May increase weakness in myasthenia gravis.

Dosage/Administration:

Provided in single unit dose vial of 0.5mg. (Note: If used as duoneb, see duoneb drug monograph.)

1. **Adult and pediatric dose**: 0.5mg (one unit dose vial) via HHN
2. No indication for repeat dose of ipratropium pre-hospitally. If inadequate, response to therapy, continue repeated beta-agonist (albuterol) therapy.
3. Atrovent should be given in combination with albuterol, may be mixed in same nebulizer or given as duoneb (pre mixed unit dose vials).

Adverse Reactions:

- Chest Pain
- Palpitations
- Back Pain (rare)

KETAMINE (KETALAR)

MF24

Pharmacologic Effects

1. Ketamine is a Class III Phencyclidine (PCP) derivative that is a NMDA receptor antagonist that interferes with transmission of information originating outside the brain from getting recognized or processed within the brain. The result at threshold dosing is a "dissociative" anesthesia in which the patient's consciousness is detached from basal nervous system functions. This results in a patient with preserve airway reflexes, respirations, and cardiorespiratory function - but with reduced perception of external stimuli. Ketamine has analgesic, sedative, and amnestic properties to variable degrees depending on dosing use.
2. Minimal cardiac depression occasionally reported with rapid-high doses. May transiently (within 30-60 seconds) increase heart rate and blood pressure by central sympathetic stimulation. Return to normal values begins almost immediately, and is generally complete within 15 minutes. In general, ketamine is considered hemodynamically neutral and is not associated with hypotension encountered with many other agents.
3. Ketamine is a bronchodilator and has minimal to no respiratory depression with respiratory stimulation frequently seen. For this reason, ketamine is often considered for rapid sequence intubation and/or sedation in the asthmatic with respiratory failure.
4. The pharmacological effects can be roughly divided along a continuum of stages with more predictable responses at the low end of the dosing range and the high end of the dosing range. These stages can roughly be divided into dosing categories:
    a. The analgesic dose (~ 0.1-0.3 mg/kg): At this dose ketamine has minimal effect on perception of perception or emotion but has a potentially significant analgesic effect. In a normal sized adult a 10mg bolus will usually have minimal psychiatric effect but does not always give terrific analgesia. A 20mg dose in the same patient may provide more reliable analgesia but some patients will demonstrate perceptional distortion or hallucinations. Current theory is that pretreatment with fentanyl can have a synergistic effect with ketamine and potentiate the analgesic response to ketamine with lower doses. Analgesic doses may be best administered as a low dose infusion over 15 minutes.
    b. The recreational dose (~ 0.2-0.5mg/kg): At this dose analgesia occurs but is regularly accompanied by distortions of perceptions (hallucinations). This is the dose often encountered when used as a drug of abuse. Note overlap of dose with analgesic dose. Gentle redirection of patients who are hallucinating can be required.
    c. The partially dissociated dose (~ 0.4-0.8mg/kg): There are enough synapses left unaffected that often some awareness and purposeful action persists, but perception of the real world is significantly distorted. Some tolerated this, others find it terrifying. Emergence reactions generally occur when patients are partially dissociated.
    d. The dissociative dose (~ greater than 0.8mg/kg): The patient is isolated from all external stimuli. This is the desired state for agitated delirium, rapid sequence intubation., or procedures. Nystagmus and random reflexive movements often occur. Cardiorespiratory function is preserved. Patients do not recall this period.

Metabolism:

1. The liver microsomal enzyme system metabolizes ketamine.
2. Onset: Extremely rapid if given IV (seconds to 1 minute for onset), rapid (~3-10 minutes) if given IM.
3. Duration: Effects typically last 25-45 minutes with some variability and are dosage dependent.

Indications:

1. The agitated/combative patient, including excited delirium. (Requires dissociative dosing.) See **Agitated/ Combative Patient** Protocol
2. Induction agent or adjunct for rapid sequence indication, delayed sequence intubation, or optimal sequence intubation. (Requires dissociative dosing.) See **Intubation Protocol**.
3. Adjunct for analgesia. At lower doses ~0.1-0.3mg/kg ketamine has minimal effects on perception or emotion but can have significant analgesic effects. Dose response however is variable. As the dose approaches or exceeds 0.2mg/kg unwanted distortions of perception (hallucinations, etc…) can occur more frequently. Consider for use in trauma or patients at risk for hemodynamically unstable patients, usually in combination with fentanyl. (See **Pain Management** protocol)
   Caution: use may also adversely effect clinical exam reliability.
4. Non-narcotic pain management. At lower doses ~0.1-0.3mg/kg ketamine has minimal effects on perfection or emotion but can have significant analgesic effects. Dose response however is variable. As the dose approaches or exceeds 0.2mg/kg unwanted distortions of perception (hallucinations, etc…) occur more frequently. (See **Pain Management** protocol)
5. Procedural/chemical sedation - Not generally used pre-hospitally for this indication (dissociative dosing required). Contact medical control if concern for indication present.
6. Status epilepticus not responding to Midazolam
7. The entrapped/extrication/critical polytrauma patient. For most patients, Ketamine is not recommended as the primary medication used in pain management, other non-sedating medications should be used preferentially. While Ketamine can be an effective analgesic, it can completely obliterate the clinical exam. Ketamine may be combined with other analgesics and used with sub-dissociative dosing. Ketamine may be used as initial analgesic in the entrapped and/or critically ill (e.g. polytrauma) patient with limited/impaired access by the EMS provider, or in a critical patient for whom intubation is anticipated. In the setting of limited access, monitoring should be applied to the extent possible, and standard monitoring applied as soon as access is obtained.
8. CPR-induced consciousness: May be used for patient who demonstrates consciousness while undergoing cardiopulmonary resuscitation with no measurable spontaneous cardiac output displayed who is interfering with resuscitation efforts.

Contraindications:

1. Known allergy/sensitivity.
2. Relative contraindication - severe hypertension (greater than 180 systolic), particularly in the setting of suspected elevation of intracranial pressure.

Adverse Effects:

1. Rapid IV push can result in a brief (usually self-limited) period of apnea, so push slowly.
2. Cardiopulmonary and end-tidal CO2 monitoring are indicated in the patient receiving dissociative or near dissociative dosing. If agitated/combative patient receiving IM sedation, apply monitoring as soon as practical. If unable apply monitoring during transport for any reason, document reason in narrative of PCR.
3. Laryngospasm

Adverse Effects (continued):

4. Sedation (expected in dissociative dosing, monitor for occurrence with analgesic dosing
5. Hypertension.
6. Tachycardia
7. Nausea/vomiting (generally a delayed event following dissociative dosing, occurring as medication metabolizes - therefore often not encountered in pre-hospital phase of care. Consider pre-treatment with anti-emetic when practical. Deferral of management to receiving facility is recommended in critically ill or combative patient.)
8. Hallucinations/Anxiety/Disorders of Perception: As patients metabolize ketamine and enter the recreational dose level, they can hear and talk to you but are still experiencing perceptual difficulties that can be anxiety inducing. You can say, "Mr. Smith, you're in the ambulance because you broke your ankle. We gave you a drug that makes you feel weird but in a few minutes, you're going to start feeling like your normal self." In more severe cases consider anxiolysis with midazolam if practical.
9. Can cause mild hyper-salivation and secretions.
10. In the agitated, the elderly, or those with known heart disease, an EKG should be considered if conditions permit.
11. This medication is not well-studied for prehospital use in the elderly (Age ≥65) for analgesia and sedation use. Added caution is recommended
12. An *emergence reaction*: Uncomfortable or terrifying hallucinations which may occur as ketamine metabolizes and patient transitions through the partial dissociation continuum. This generally occurs when patient is awakening and is usually 20-40 minutes after dose has been given.
    Emergent reactions are uncommon in children, but become more frequent in adolescents/adulthood and increases frequency as age advances. Commonly simple redirection is helpful. In more severe cases, it may require a benzodiazepine such as midazolam 0.5-2.5mg IV/IO to calm patient.
13. Be aware that because ketamine can both obliterate and/or severe limit the clinical exam and produce a patient with a severely reduced GCS, the use of ketamine by a provider can complicate points of transition of care (e.g., prehospital to emergency department handoffs). The use of dissociative dose ketamine requires additional monitoring and staff, and can result in individual receiving nurse/physician discomfort depending on their familiarity with the medication and its effect. Be attentive and clearly communicate ketamine use at hand off report, and re-iterate expected or encountered dissociation.

KETAMINE (KETALAR) (cont.)

Dosage and Administration:

Ketamine is supplied in a variety of concentrations. Attention to careful dosing required.

⚠ **NOTE: Dose response can be variable at the lower doses.**

Ketamine is dosed based on weight, so Adult/Pediatric dosing are the same.

1. IV Analgesia dose: 0.1-0.15 mg/kg IV up to 100mg. Pretreatment with fentanyl is recommended. Monitor for sedation/distortion of perception. Analgesic doses may be best administered as an infusion over ~15 minutes to minimize the experience of perceptual disturbances by the patient. Add ketamine dose to 50 or 100ml of NS and administer slowly over ~15 minutes.
2. Agitated or combative (excited delirium): **Adult and Pediatric Dose**: 1-2mg/kg IV up to 250mg or 4-5mg/ kg IM up to 500mg.
3. Rapid Sequence Intubation: **Adult and Pediatric Dose**: 1-2mg/kg IV up to 500mg.
4. Delayed Sequence Intubation: **Adult Dose**: 50mg IV, re-dose IV as needed, **Pediatric Dose**: 0.5mg/kg up to 50mg IV, re-dose IV if needed.
5. Analgesia and sedation for the intubated patient: **Adult and Pediatric Dose**: 1-2mg/kg IV up to 250mg up to every 30-45 minutes PRN if intubated, or **Adult and Pediatric Dose**: 4mg/kg IM up to 500mg. Co-administration of benzodiazepine is reasonable, or can optimally be given 20 minutes after dose of ketamine administered.
6. For seizures: **Adult and Pediatric Dose:** 1mg/kg IV mixed in 50mL bag given wide open over 2 minutes (maximum 100mg) or 3mg/mg IM (maximum 300mg). Note: Dosing regimen is based on medical study that suggests benefit of Ketamine in refractory seizures.
7. Entrapped/extrication/critical polytrauma patient: **Adult Dose**: If reasonable airway access 0.5-2mg/kg IV/IO up to 250mg IV, and may follow with 0.25mg/kg IV IO up to 125mg every 10-15 minutes as needed. If IV/IO access is unable to be secured, or extremely limited access for monitoring may give 50mg IM and repeat every 5 minutes as needed up to 500mg IM. **Pediatric Dose**: 0.5-2mg/kg IV/IO up to 200mg and may follow with 0.25mg/kg IV/IO up to 100mg every 10-15 minutes. If IV/IO access is unable to be secured, or limited access for monitoring may give 2-5mg/kg IM up to 50mg and repeat dose up to every 5 minutes as needed max dose 250mg IM.
8. For CPR-induced consciousness: **Adult Dose**: 1mg/kg IV/IO, and may repeat x1 after 5 minutes if needed up to 250mg, **Pediatric Dose**: 1mg/kg IV/IO up to 250mg.
9. 📞 **Contact On-Line Medical Control** for perceived need for additional dosing.

Additional notes and requirements:

- Dose response is variable among patients when sub-dissociative dosing is used. The effects are more consistent at very small doses (0.1mg/kg) or a large dissociating doses (more than 2mg/ kg). Higher doses prolong the duration of action, but do not have other adverse effects. As patients begin to metabolize the drug, they will proceed through the other aspects of the continuum of effects.
- The use of ketamine **may obliterate the use of the clinical exam and interview for a prolonged period** for receiving providers. This may complicate evaluation, and has the potential to result in extensive additional testing in the emergency department. Dissociative doses require intensive monitoring and staff utilization. **Careful patient selection for use of ketamine is indicated**.
- Clearly a) communicate to receiving staff regarding indication for use and b) clearly document indication in narrative of PCR.

LACTATED RINGERS (Ringer's Lactate Solution) MF25

MEDICATION FORMULARY

⚠ **NOTE:** In Skagit County, Normal Saline is the preferred crystalloid therapy. Lactated Ringer's solution may be substituted in times of limited availability of normal saline.

Pharmacological Effects:

1. Isotonic crystalloid solution.

Metabolism:

1. N/A , renally excreted.
2. Onset: Minutes
3. Duration: Clinically variable.

Indications:

1. IV access in emergency situations.
2. Fluid replacement and/or resuscitation.
3. Used as a diluent or flush for medication adminsitration.

Contraindications:

1. Fluid/volume overload (relative contraindication).
2. Rapid and/or large volume administration of crystalloids is not recommended in patients with known severe hyponatremia (absent active seizures) due to the risk of precipitation osmotic demyelination syndrome.
3. Limited evidence suggest rapid and/or large volume (>20cc/kg) adminstration of crystalloids to the pediatric patient in diabetic ketoacidosis may contribute to developement of potentially injurious cerebral edema. Use minimal amount to resuscitate shock states and restore adequate perfusion.

Cautions:

1. Current practice and limited evidence indicate that crystalloid resucitation for hemorrhagic shock/ trauma may be harmful. Limit administration to minimal amount to achieve perfusion. Blood products are preferred for resuscitation. Notify receiving facility if need anticipated.
2. Certain medications (e.g., ceftriaxone) not used pre-hospitally are incompatible with lactated ringers.

Dosage and Administration:

1. Dose is dependent on clinical condition and situation, and ranges from TKO ("To Keep Open"), dosing aliquots, and volume resuscitation.

Adverse Effects:

- May result in volume overload. (Crystalloids have no colloidal pressure).

LIDOCAINE (XYLOCAINE)

MF26

Pharmacologic Effects:

1. Suppresses ventricular dysrhythmias.
2. Minimal effect on AV conduction, blood pressure, or cardiac output (at usual doses).
3. Local anesthetic.

Metabolism:

1. By the liver
2. **Onset**: 45-90 seconds for IV bolus.
3. **Duration**: ~20 minutes for IV bolus.

Indications:

1. Ventricular dysrhythmia (Ventricular tachycardia or ventricular fibrillation).
2. Local anesthesia following IO insertion (in patients alert to pain).

Contraindications:

1. Known allergy/sensitivity..
2. Second degree heart block type II.
3. Third degree heart block.
4. PVC's with sinus Bradycardia.
5. Adams-Strokes syndrome (a periodic syncope caused by transient high grade heart block).

Cautions:

1. Liver disease.
2. Congestive heart failure.
3. Hypovolemia.
4. Shock.
5. First and second degree heart block type I.

Dosage and Administration:

Generally provisioned in 100mg/5ml syringe (20mg per ml)

1. Ventricular dysrhythmia: Adult and pediatric dose: 1-1.5 mg/kg IV/IO may repeat every 5 minutes, maximum dose 300mg.
2. Local anesthesia following IO insertion (in patients alert to pain):
   - **Adult dose**: 40mg (2ml) over 1-2 minutes, followed by 10ml NS flush, followed by 20mg (1ml) over 30 seconds
   - **Pediatric dose**: 0.5mg/kg up to 30mg over 1-2 minutes, followed by 10ml NS flush, followed by a repeat dose of lidocaine at half the original dose over 30 seconds.
   - Alternatively, the Hixson lidocaine protocol may be used (see next page).

Adverse Effects:

(all unlikely at protocol dosage)

- Central nervous system
  - Muscle twitching.
  - Drowsiness.
  - Stupor.
  - Change or slurring of speech.
  - Convulsions.
- Respiratory:
  - Difficulty breathing.
  - Respiratory arrest.
- Cardiac:
  - Hypotension.
  - Heart block.
  - Bradycardia (rare).

LORAZEPAM

MF27

MEDICATION FORMULARY

⚠ **NOTE:** Lorazepam is a second-line medication in Skagit County and is indicated only in the setting of a shortage or lack of availability of Midazolam

Pharmacologic Effects:

1. Short acting benzodiazepine which functions by modulation of the GABA receptor.
2. Provides anxiolytic, sedative, hypnotic, and anticonvulsant effects. Has less amnestic features than midazolam

Metabolism:

1. In the liver and excreted by the kidneys.
2. **2. Onset** of Action: Clinically variable, approximately 15 minutes to peak action IV. IM absorption erratic and onset/effects much less predictable. (This is part of the reason for lorazepam being a 2nd line medication in Skagit County)
3. **Duration**: Clinically variable, half life is ~12-14 hours

Indications:

1. Seizures
2. Sedation, anxiolysis, and amnesia for the intubated patient
3. Sedation for the agitated patient
4. Treatment of emergency reactions from ketamine
5. Anxiolysis (relief from anxiety)
6. Dystonic Reaction
7. Alcohol Withdrawal
8. Cardioversion

Contraindications:

1. Known hypersensitivity (rare)

Cautions:

1. Causes respiratory depression and sedation (Studies have indicated up to a 20% incidence following isolated intravenous midazolam use.) Effect is dose dependent. Consider using reduced (half) dosing in elderly or medically frail.
2. Respiratory and CNS depressant effects are potentiated when used in combination with other potential respiratory depressants, particularly narcotics such as fentanyl. Pulse oximetry and end-tidal CO2 monitoring indicated if combination therapy employed, or if used on patients with suspected intoxication.
3. Causes hypotension, potentiated by acute severe illness, dehydration, or electrolyte disturbance. Adequately pre-hydrate or resuscitate where possible prior to use.
4. Has wide dosing variability among patients of all ages (meaning a given dose produces different effects in different patients). This applies to time of onset of effects as well as level and nature of effects.
5. Uncommon reaction is paradoxical agitation of agitation/hallucination (more common in pediatric patients).
6. Effects may be exaggerated and/or prolonged in the setting of liver or kidney disease. (Avoid or use reduced dose)
7. Lorazepam is highly irritant, extravasation may cause significant tissue damage. Monitor the injection site closely.

LORAZEPAM (CONT.)

MF27

Dosage and Administration:

1. **Seizure**: **Adult dose**: 1-2mg slow IV, may repeat in 1-2 minutes x1 PRN for status; **Pediatric dose**: 0.05-0.1 mg/kg slow IV (up to 2mg), may repeat in 1-2 minutes x1 PRN for status
   ⚠ **NOTE:** Unlike midazolam, lorazepam is poorly and erratically absorbed IM. For this reason, IV lorazepam should be attempted first and IM dosing should only be considered in the setting where IV/IO access is not obtainable.
   Adult IM dose 2-4mg IM (do not repeat IM dose)
   Pediatric IM dose 0.05-0.1 mg/kg up to 4mg (do not repeat IM dose)

2. **Sedation, anxiolysis, and amnesia for the intubated patient**: **Adult Dose:** 2mg IV up to every 15 minutes (CTD: 10mg)**, Pediatric Dose:** 0.1mg/kg up to 2mg every 15 minutes (CTD: 10mg)

3. **Sedation for the agitated patient**: Adult Dose 1-2mg IV or IM (IV preferred), **Pediatric Dose**: **Contact On-Line Medical Control** for Guidance if considering

4. **Treatment of emergency reactions from ketamine**: **Adult Dose** 1-2 mg slow IV, may repeat 1 in 10 minutes. **Pediatric Dose**: 0.05mg/kg up to 1mg slow IV, may repeat x1 in 10 minutes.

5. **Anxiolysis** (relief from anxiety): Adult: 0.5-1mg slow IV, may repeat x 1 in 10 minutes, Pediatric Dose: Not indicated (May result in paradoxical reaction)

6. **Dystonic Reaction**: Adult Dose: 1 mg slow IV, may repeat x 1 in 5-10 minutes, Pediatric Dose: 0.05mg/kg up to 1mg slow IV, may repeat x1 in 10 minutes.

7. **Alcohol Withdrawal**: Adult Dose: 1-2mg slow IV, may repeat x1 in 5 minutes **Pediatric Dose**: Not indicated

8. **Cardioversion:** Adult Dose 1-2mg IV, Pediatric Dose 0.05mg/kg IV up to 2mg IV

MAGNESIUM SULFATE

MF28

MEDICATION FORMULARY

Pharmacologic Effects:

1. An element essential for the activity of many enzymes and for normal function of the nervous and cardiovascular systems.

Metabolism:

1. Kidney
2. **Onset**: Immediate
3. **Duration**: ~60 minutes

Indications:

1. Eclampsia (including eclamptic seizures) and pre-eclampsia.
2. Cardiac dysrhythmias:
   a. Torsades de Pointes (drug of choice).
   b. Ventricular fibrillation.
   c. Ventricular tachycardia.
3. *Limited evidence* indicates may be useful in severe, refractory asthma. Magnesium is not first line therapy in asthma.
4. *Limited evidence* for use in tricyclic (TCA) overdose with associated cardiac dysrhythmias. Magnesium should only be used in this setting if refractory to sodium bicarbonate.
5. Tocolysis: Rarely used for this indication currently. Not initiated in the field. Infusion may be monitored during inter-facility transport.
6. Known or suspected hypomagnesemia (not initiated pre-hospitally).

Contraindications:

1. Renal disease (e.g., dialysis patients).
2. Heart block. (Exception: heart block attributed to digoxin toxicity)
3. Known hypocalcemia.

Cautions:

1. Extreme caution in renal disease (magnesium excreted solely by the kidney), still indicated in cardiac arrest. If known renal failure, reduce dose by half in the cardiac arrest patient.
2. Give slowly in an awake patient to avoid hypermagnesemia (respiratory depression, neurologic symptoms).
3. Do not use for asthma in age <2 (high risk of adverse side effects).

Dosage and Administration:

Often supplied in 50% concentration (e.g., 5 grams/10ml) **which must be diluted** and administered slowly for patients not in cardiac arrest. Add to 100ml D5W or NS, and administer per protocol below.

Dosage and Administration (continued):

1. Eclampsia: 4-6 grams IV (or IM in last resort) over ~4 minutes if actively seizing, otherwise ~10-20 minutes. After initial loading dose, begin infusion at 2 grams/hour IV.
   - If no IV access, give 10 grams magnesium IM in two doses (5 grams each buttock).
2. Pre-eclampsia: 2-6 grams IV over ~10-20 minutes. After initial loading dose, begin infusion at 2 grams/hour IV.
3. Torsades de Pointes and cardiac dysrhythmias: **Adult dose**: 1-2 grams IV push if in arrest, otherwise over ~5-10 minutes. **Pediatric dose**: 25-50mg/kg up to a max of 2 grams/dose.
4. Asthma: Adult dose: 2 grams over ~10-20 minutes. Pediatric dose: (only if age > 2 years) 40-50mg/kg up to a max of 2g IV over ~20 minutes.
5. Cardiac arrest from TCA overdose refractory to sodium bicarbonate: Adult dose: 2 grams IV push if in arrest, otherwise over ~5-10 minutes. Pediatric dose: 25-50mg/kg up to a max of 2 grams/dose.

- ⚠ **NOTE:** Patients receiving magnesium therapy should be carefully monitored for adverse effects. Discontinue or reduce the infusion if applicable. In the setting of suspected severe magnesium toxicity - i.e., respiratory depression not responsive to discontinuation of magnesium - administer calcium gluconate 500mg over 10 minutes.
- ⚠ **NOTE:** Reduce the dose in patients with known renal impairment. Reduce by half in cardiac arrest.

Adverse Effects:

- Adverse events and side effects are very uncommon in the ~2 gram over 10-20 minute dose range, but rise in frequency with increase of either dose or speed of administration. Rapid administration causes high plasma levels which can cause flushing, sweating, hypotension, depression of cardiac and central nervous function and/or respiratory depression.
- **Respiratory depression** is the most immediate dangerous adverse effect of hypermagnesemia.
- Loss of reflexes
- Neurologic symptoms (depressed mentation, generalized weakness, and other neurologic symptoms)
- Nausea/vomiting
- Hypotension
- Potential for delivery of newborn with depressive effects of hypermagnesemia. (Current literature indicates standard newborn resuscitation is adequate and specific pharmacological treatment is not required.)

Documentation

⚠ **NOTE:** Abbreviations for magnesium sulfate (e.g., MS or MgSO4) used in years past are not acceptable following the Joint Commission Sentinel Event Alert on the subject of medical abbreviations. Write out "magnesium sulfate" where necessary (avoids confusion with morphine sulfate).

METHYLPREDNISOLONE (SOLU-MEDROL) MF29

MEDICATION FORMULARY

Pharmacologic Effects:

1. A glucocorticoid (steroid) with complex activities that decrease inflammatory and immune responses by a variety of mechanisms.

Metabolism:

1. Liver and kidneys.
2. **Onset**: ~1-2 hours.
3. **Duration**: ~6-12 hours (clinically variable).

Indications:

1. Allergic Reaction
2. Asthma/COPD

Contraindications:

1. Known allergy/hypersensitivity.
2. GI Bleeding.

Cautions:

1. Due to a relatively prolonged onset of action, methylprednisolone should only be administered following optimization of other monitoring and treatments, and only if time and circumstances permit.
2. May be used in pregnancy, but should be reserved for presentation with severe allergic reaction or asthma.

Dosage and Administration:

1. Allergic Reaction
   - Adult dose: 125mg IV
   - Pediatric dose: 2mg/kg IV (up to 125mg)
2. Asthma/COPD
   - Adult dose: 125mg IV
   - Pediatric dose: 2mg/kg IV (up to 125mg)

Adverse Effects:

- Rare with short-term pre-hospital use. Numerous adverse effects with prolonged or recurrent use.
- Causes hyperglycemia (advise diabetics of this effect).

MIDAZOLAM (VERSED)

MF30

Pharmacologic Effects:

1. Short-acting benzodiazepine which functions by modulation of the GABA receptor.
2. Provides amnestic, anxiolytic, sedative, hypnotic, and anticonvulsant effects.

Metabolism:

1. In the liver and excreted in the urine.
2. **Onset** of action: 1-5 minutes IV/IO and ~15 minutes IM.
3. **Duration**: The elimination half-life is 2-5 hours. Typically produces sedation lasting roughly 30-60 minutes in standard doses.

Indications:

1. Seizures
2. Sedation, anxiolysis, and amnesia for the intubated patient.
3. Sedation for the severely agitated patient.
4. Treatment of emergence reactions from ketamine.
5. Anxiolysis (relief from anxiety).
6. Dystonic Reaction.

Contraindications:

1. Known allergy/hypersensitivity.

Cautions:

1. Causes respiratory depression and sedation (Studies have indicated up to a 20% incidence following isolated intravenous midazolam use.) Effect is dose dependent.
2. Respiratory and CNS depressant effects are potentiated when used in combination with other potential respiratory depressants, particularly narcotics such as fentanyl. Pulse oximetry indicated if combination therapy employed, or if used on patients with suspected intoxication.
3. Causes hypotension, potentiated by acute severe illness, dehydration, or electrolyte disturbance. Adequately pre-hydrate or resuscitate where possible prior to use.
4. Has wide dosing variability among patients of all ages (meaning a given dose produces different effects in different patients). This applies to time of onset of effects as well as level and nature of effects.
5. Uncommon reaction is paradoxical agitation of agitation/hallucination (more common in pediatric patients).
6. Effects may be exaggerated and/or prolonged in the setting of liver or kidney disease.
7. Midozolam is **IV incompatible** with sodium bicarbonate and furosemide. Flush tubing well prior to use.

MIDAZOLAM (VERSED) (cont.)

Dosage and Administration:

Consider using reduced dosage in age >70 or known history of liver/kidney failure.

1. Seizures, ongoing (prior to IV establishment): **Adult dose**: 2.5-10mg IM), **Pediatric dose**: 0.2mg/kg IM up to 10mg.
   - IM administration is recommended prior to attempting IV in the status epilepticus patient.
   - Dose may be repeated every 5 minutes PRN or until IV established.
2. Seizures (IV established): Adult dose: 2.5-5mg IV, Pediatric dose: 0.1mg/kg IV (up to 5mg IV).
   - Dose may repeated every 5 minutes up until 3 doses. (Contact medical control for recommendations).
   - Patients who receive more than (2) doses of midazolam are at the highest risk of respiratory depression and airway compromise. Use of ETCO2 monitoring is recommended.
3. Sedation, anxiolysis, and amnesia for the intubated patient: **Adult and pediatric dose**: 0.05mg/kg IV up to 10mg is recommended as an initial dose. A reduced dose may be used at the judgement of the provider based on the hemodynamic stability and clinical presentation.
   - Dose may be repeated in increments up to 0.05mg/kg IV every 5 minutes PRN. (Repeat doses may be reduced and titrated from the initial dose at the judgement of the provider.)
4. Emergence reaction to ketamine: 0.5-2.5mg IV, repeated every 5 minutes PRN.
5. Anxiolysis: **Adult dose**: 0.5–2 mg IV, titrated up to every 3-5 minutes PRN or 1-4mg IM **Pediatric dose:** (Use with caution, may result in paradoxical reaction) 0.25-50 micrograms/kg IV or IM, not to exceed 2mg/dose, titrated every 3-5 minutes PRN.
6. Dystonic reaction refractory to diphenhydramine: **Adult dose**: 1-2mg IV/IM **Pediatric dose**: 0.05mg/kg up to 1mg IV/IM.

Adverse Effects:

- Causes respiratory depression and sedation.
- Hypotension

NOTES:

- Continuous pulse oximetry is recommended if tolerated.
- Continuous pulse oximetry is required if midazolam is combined with other potential respiratory depressants (e.g., narcotics), the patient is intoxicated, the patient has known pulmonary disease (e.g., COPD), or if more than (2) doses midazolam administered.
- For non-intubated patients, side-stream ETCO2 monitoring is indicated if clinically evident sedation occurs following administration.

MORPHINE SULFATE

MF31

Pharmacologic Effects:

1. Potent titratable opiate analgesic. Optimal agent for hemodynamically stable patient with identified etiology and prolonged pain management requirements (e.g., extremity fracture).
2. Dosing response is widely variable. Has longer duration of action compared to fentanyl, but also higher histamine release and less hemodynamic stability (can cause hypotension).

Metabolism:

1. By the liver.
2. **Onset**: ~1-2 minutes IV with peak ~3-5 minutes, ~10-15 minutes IM (clinically variable).
3. **Duration**: 1-2 hours IV, 3-4 hours IM (clinically variable).

Indications:

1. Pain control requiring opiate therapy.
2. Cardiac chest pain and/or severe dyspnea. (NOTE: Use fentanyl in the patient with concern for STEMI)

Contraindications:

1. Known hypersensitivity/allergy.
2. Hemodynamically instability (use fentanyl).
3. Abdominal pain (use fentanyl).

Cautions:

- Respiratory depression. Additional caution for potentiation if combined with other respiratory depressants (e.g. midazolam, alcohol).
- Hypotension.
- Reduce dose in age >70, known pulmonary disease, or liver failure.
- Pre-treatment with anti-emetic is not required (literature does not support routine use), but may be considered.
- Limited evidence raises concerns that morphine might be deleterious in the setting of pulmonary edema/ CHF. Primary treatment for CHF remains nitrates and CPAP therapy.
- Limited evidence raises concerns that morphine may delay the effect of clopidogrel and other non aspirin anticoagulants in the setting of emergent cardiac catheterization caution warranted.

Dosage and Administration:

Morphine is supplied in a variety of doses and concentrations.

i. Best used for hemodynamically stable or non-trauma patients. Has longer duration of action than fentanyl, but more histamine release

ii. ⚠ **NOTE:** There is wide variability in dose response to morphine. Multiple studies indicated that a single 0.1mg/kg IV dose of morphine can result in inadequate pain relief in a sizeable percentage (>50% in some studies) of patients. The key to analgesia with morphine is frequent patient assessment and titration to effect. Pain scale measurement is a component of pain assessment, but in determining opiate dosage, clinical judgement of the totality of the clinical presentation is required.

iii. ***Morphine* Adult dose**: up to 0.1mg/kg IV slow IV push (maximum of 15mg incremental dose), with clinical judgement determining dose.

- For most patients start with 2-10mg IV initial dose.
- For patients with moderate/severe pain (most patients), give subsequent titrated doses up to every 5 minutes as needed with up to 0.05mg/kg slow IV push (maximum 7.5mg increments). CTD: 20mg.
- In patients in extreme pain (select population), repeat doses of up to 0.1mg/kg (up to 15mg increment) every 3-5 minutes are permitted. Pulse oximetry monitoring is mandatory.
- Generally a decreasing dose is recommended as pain improves. Adjust increments of dosing based on clinical situation and response.

iv. ***Morphine* Pediatric Dose**: up to 0.1mg/kg slow IV push (maximum of 5mg incremental dose), with clinical judgement determining dose
- For most patients start with 1-2mg IV initial dose.
- For patients with moderate/severe pain (most patients) give subsequent titrated doses up to every 5 minutes as needed with up to 0.05 mg/kg slow IV push (maximum 5mg increments). CTD: 10mg.
- In patients in extreme pain (select population), repeat doses of up to 0.1mg/kg (up to 15mg increment) every 3-5 minutes are permitted. Pulse oximetry monitoring is mandatory.
- Generally a decreasing dose is recommended as pain improves. Adjust increments of dosing based on clinical situation and response.

- In patients in extreme pain (select population), repeat doses of up to 0.1mg/kg (up to 15mg increment) every 3-5 minutes are permitted. Pulse oximetry monitoring is mandatory.
- Generally a decreasing dose is recommended as pain improves. Adjust increments of dosing based on clinical situation and response.

2. Chest Pain (Fentanyl preferred for use in suspected STEMI)/severe dyspnea: Use a lower dose of 2mg slow IV push, titrated in lower doses and longer intervals (5-10 minutes). CTD: 10mg.

⚠ **NOTE:** Morphine may be given IM or SC, although absorption is less predictable and medication is less titratable. Any repeat IM/SC dosing should be at an increment of a minimum 15-20 minutes.

Adverse Effects:

- Respiratory Depression
- Hypotension
- Sedation/CNS Depression.
- Nausea/vomiting.
- Pruritus/urticaria (caused by histamine release, treat with diphenhydramine, does not mean allergic to morphine).
- Myosis.

NOTES:

- Continuous pulse oximetry is recommended if tolerated.
- Continuous pulse oximetry is required if midazolam is combined with other potential respiratory depressants (e.g., narcotics), the patient is intoxicated, the patient has known pulmonary disease (e.g., COPD), or if more than (2) doses morphine administered.
- For non-intubated patients, side-stream ETCO2 monitoring is indicated if clinically evident sedation occurs following administration.
- Inadvertent overdose can be reversed with naloxone 0.5-4 mg IV, IM or Intranasal by Mucosal Atomization Device (MAD).
- Metabolism is slower than naloxone. Repeated doses (titrated) of naloxone may be indicated.
- Morphine to Fentanyl conversion factor: Morphine 10mg IV ~ 100mcg fentanyl IV.

NALOXONE (NARCAN)

MF32

Pharmacologic Effects:

1. Narcotic antagonist.

Metabolism:

1. By the liver.
2. **Onset**: IV: ~1-8 minutes, IM: ~4-9 minutes, IN:~4-12 minutes (clinically variable).
3. **Duration**: ~30-60 minutes (highly clinically variable).

Indications:

1. Primary indication is respiratory depression secondary to known or suspected narcotic(s)/narcotic analog (s).
   - Respiratory depression, sedation, and miosis (pinpoint) are common hallmarks of an opiate toxidrome. Note that not all opiates cause miosis (e.g, meperidine).
2. May be used in unconsciousness of unknown etiology.
3. Clonidine intoxication.

Contraindications:

1. There are no absolute contraindications in setting of respiratory depression or cardiopulmonary collapse.
2. Known hypersensitivity/allergy(relative).
3. Absence of indication.
4. NOTE: naloxone is no longer recommended in neonatal resuscitation, infants with respiratory depression should be resuscitated with positive pressure ventilation.

Cautions:

1. The clinical time to response to naloxone varies with a number of factors, but may frequently require up to ~10 minutes or longer (multiple studies). Do not delay standard cardiopulmonary support (e.g., airway and ventilatory support with oxygen) when indicated.
2. Induces acute withdrawal patients known to be physically dependent on narcotics. The patient may rapidly become conscious and combative following use. May cause agitation, vomiting and diarrhea.
3. Naloxone may metabolize faster than the narcotic, repeat doses may be indicated.
4. If no clinical response is noted after 10mg naloxone, re-evaluate and consider alternate potential cause. However, there are now synthetic opiates (e.g., carfentanil) for which abuse may require massive doses of naloxone (average ~10-16mg), so in the setting of strong clinical suspicion, continue naloxone up to 20mg (or max available) and contact medical control. **Notify MPD and EMS Agency QA/QI Officer for any patient requiring ≥ 10mg naloxone in the field.**

Dosage and Administration:

- Naloxone comes in a variety of dosages/concentrations. Check prior to administration.
- Naloxone may produce acute withdrawal symptoms in patients physically dependent on narcotics. Therefore the general goal of naloxone use, where practical, is titration to preservation of respiratory function. If the patient is not in respiratory arrest, use the lowest dose when possible and titrate to effect.
- There is no single effective dose for all opioid overdoses. Many (often unknown) factors determine an adequate dose. Known factors include:

a. Opioid related factors such as the specific opioid(s) consumed, the opioid dose/formulation, administration mode.
b. Concurrent medications use (e.g. benzodiazepines).
c. Patient related factors such as underlying diseases (e.g. respiratory illnesses), opioid tolerance, genetic make-up of the patient.
d. Exogenous stimulatory factors.

- The optimal route of administration depends on a number of factors including availability and the clinical circumstances.
- Dosage is also dependent on route of administration. An initial dose of 0.4mg IV or IM is reasonable to avoid severe withdrawal. Intranasal naloxone (adult and pediatrics) should start with a minimum dose of 1mg using the Mucosal Atomization Device (MAD). If no IV is initially available, IM or IN administration is recommended prior to attempts at IV insertion. Although the response to intranasal naloxone is longer compared to IV or IM use, multiple studies have indicated overall response time (from patient contact to clinical response) is similar.

1. **Adult dose:** 0.4-2.0 mg IV/IO, IO, IM, or IN. Titrate to respiratory effort/rate. Dose may be repeated every 2 -3 minutes until a response is noted.
2. **Pediatric dose**: 0.1mg/kg (up to maximum 2mg) IV/IO, IM, SQ, or IN. Titrate to respiratory effort/ rate. Dose may be repeated every 2-3 minutes until a response is noted.

Adverse Effects:

- Withdrawal symptoms:
  a. Agitation, belligerence.
  b. Nausea, vomiting, and/or diarrhea.
  c. Tachycardia
  d. Sweating, gooseflesh, tremor, sneezing.
  e. Dilation of pupils, tearing of eyes.
  f. Pain.
- *Limited evidence* indicates that in rare cases naloxone use has resulted in pulmonary edema.

NOTES:

- Although naloxone has no clear role in the treatment of confirmed cardiac arrest, administration can be lifesaving for patients who still have a pulse bur are are severely obtunded with decreased respiratory effort. Naloxone has not been associated with any known harms in the cardiac arrest patient.
- Naloxone has a good safety profile, with a very low incidence of side effects even when administered to patients who are ultimately determined not to have opioid toxicity.

Commonly Encountered Opiates

Codeine	Methadone
Fentanyl (Sublimaze)	Morphine
Heroin	Oxycodone (Percocet, Oxycontin)
Hydrocodone (Vicodin, Norco, Lortab)	Suboxone (Subutex, Buprenex)
Hydromorphone (Dilaudid)	Tramadol (Utram)

NITROGLYCERIN (NTG)

MF33

Pharmacologic Effects:

1. Releases nitric oxide with result of vascular smooth muscle relaxation resulting in dilation of both arterial and venous beds. Thought to reduce cardiac workload and myocardial oxygen demand.

Metabolism:

1. By the liver.
2. **Onset**: Rapid (minutes)
3. **Duration**: ~20-25 minutes.

Indications:

1. Cardiac chest pain (angina, acute coronary syndrome, myocardial infarction).
2. Acute Decompensated Heart Failure (ADHF).
3. Congestive Heart Failure (CHF).
4. Esophageal spasm (not a pre-hospital indication).

Contraindications:

1. Known hypersensitivity/allergy.
2. Hypotension (SBP < 100).
3. Patients who have used erectile dysfunction medications; **Viagra (sildenafil citrate), Levitra (vardenafil) and Cialis (tadalafil)**. In this setting NTG an cause profound refractory hypotension. For Viagra and Levitra, do not administer nitrates within 24 hours of last dose, for Cialis do not administer nitrates within 48 hours. Contact medical control if any uncertainty.

Cautions:

1. Cardiovascular monitoring is indicated when NTG is used. Repeat BP following use.
2. Inferior ischemia/infarction (STEMI involving leads II, III, aVF) as can reduce preload and result in severe hypotension. If used, use reduced dosing interval and careful attention to blood pressure.
3. Patient with suspected increase intracranial pressure (e.g. CVA) where hypotension could result in decreased cerebral perfusion pressure.
4. Nitroglycerin tablets are inactivated by light, heat, air and moisture. Tabs must be kept in amber glass containers with tight-fitting lids. Do not leave cotton in container. Once opened, nitroglycerin has a shelf life of ~3 months. Be aware patients frequently use expired NTG with decreased/absent clinical effect.

Dosage and Administration:

NTG Tab (0.4mg) or **Spray** (0.4mg/per spray):

1. Administer 0.4mg (400mcg) sublingual (SL) - one tab or one spray.
   - Repeat PRN every 5 minutes for chest pain up to 3 doses.
2. In setting of Acute Decompensated Heart Failure (ADHF, see protocol), administer 0.4mg SL up to every 3 minutes up to 8 doses.

Nitroglycerin Paste: Consider for use in chest pain when the patient has responded to sublingual treatment **AND** transport time is significant, or in the setting of ADHF after BiPAP initiated.

1. Apply 1/2 – 1 inch applied to upper chest wall for most patients.
2. In setting of ADHD and severe HTN after BiPAP initiated, apply 1-3 inches to upper chest wall.
3. NOTE: Remove paste if hypotension or other adverse effect occurs.

Adverse Effects:

- Hypotension
- Headache.
- Reflex tachycardia.
- Skin flushing, dizziness.

NOTES:

Nitroglycerin has not been demonstrated to have a morbidity or mortality benefit in the patient with acute coronary syndrome. If clinically unstable, prioritize other management/therapies prior to initiation of nitroglycerin.

Nitroglycerin and CPAP are the primary management tools for Acute Decompensated Heart Failure (ADHF, see protocol) patients and aggressive use of nitrates is recommended in that specific setting.

See separate protocol for nitroglycerin infusion.

NITROGLYCERIN DRIP

MF34

⚠ **NOTE:** Refer to nitroglycerin (NTG) sublingual drug monograph for additional drug information. This monograph refers to the intravenous infusion only.

Indications:

- This medication infusion is reserved for patients during inter-facility transfers. This medication should be administered using a IV pump. Ensure sufficient volume is taken to complete transport. Paramedic responsibility for NG will be limited to maintaining NG infusions during inter-hospital transfer, at dosages that have been ordered by physicians prior to initiating the transfer.
    1. Chest pain secondary to presumed cardiac ischemia (acute coronary syndrome, myocardial infarction, and/or unstable angina. Generally used after failure of SL NTG and other medications to completely control symptoms.
    2. Acute pulmonary edema.

Contraindications:

1. Hypotension (SBP < 100).

Dosing and Administration:

1. All NTG infusions in the ambulance will be administered using an dedicated IV infusion pump.
2. Dosing should be set prior to transfer. General dose ranges from 5mcg/min up to 200mcg/min IV infusion.
3. Continuous cardiopulmonary monitoring is required. Blood pressure measurements should be recorded at an interval of at least every 10 minutes. Monitor for hypotension.
4. Discontinue NTG infusion if SBP <100.
5. Contact medical control for assistance if concern for titration indicated.

Adverse Effects:

1. Hypotension.
2. Headache.
3. Reflex tachycardia.
4. Flushing, dizziness.

NORMAL SALINE (SODIUM CHLORIDE) MF35

MEDICATION FORMULARY

Pharmacological Effects:

1. Isotonic crystalloid solution.

Metabolism:

1. Renal.
2. **Onset**: Minutes
3. **Duration**: Clinically variable.

Indications:

1. IV access in emergency situations.
2. Fluid replacement and/or resuscitation.
3. Used as a diluent or flush for medication administration.

Contraindications:

1. Fluid/volume overload (relative contraindication).
2. Rapid and/or large volume administration of normal saline is not recommended in patients with known severe hyponatremia (absent active seizures) due to the risk of precipitation osmotic demyelination syndrome.
3. Limited evidence suggest rapid and/or large volume (>20cc/kg) administration of normal saline to the pediatric patient in diabetic ketoacidosis may contribute to development of potentially injurious cerebral edema. Use minimal amount to resuscitate shock states and restore adequate perfusion.

Cautions:

1. Current practice and limited evidence indicate that crystalloid resuscitation for hemorrhagic shock/trauma may be harmful. Limit administration to minimal amount to achieve perfusion. Blood products are preferred for resuscitation. Notify receiving facility if need anticipated.

Dosage and Administration:

1. Dose is dependent on clinical condition and situation, and ranges from TKO ("To Keep Open"), dosing aliquots, and volume resuscitation.

Adverse Effects:

- May result in volume overload. (Crystalloids have no colloidal pressure).
- Large volume (>3 L) administration may result in hyperchloremic acidosis.

OLANZAPINE (ZYPREXA)

MF36

MEDICATION FORMULARY

Pharmacologic Effects:

1. Olanzapine is a 2nd generation antipsychotic. Exact mechanism of action unknown, but thought to work primarily on dopamine and serotonin receptors. It is thought to be more specific to dopamine D2 receptors in mesolimbic pathway as an antagonist, blocking dopamine from potential action at the post-synaptic receptor.

Metabolism:

1. Metabolized by liver, excreted in urine
2. **Onset:** ~15-30 min
3. **Duration:** Clinically variable, half life ~21-50 hours

Indications:

1. Agitation (primary use for the cooperative, anxious, or mildly agitated patient)
2. Agitation with component of suspected psychosis (potentially cooperative, anxious, adult patient with history of psychiatric disorder)

Primary advantage of olanzapine is availability of Oral Dissolving Tablet (ODT). The use of ODT helps:

- Improve safety (reduce needle stick risk, reduce potential for dosing error)
- Reduce risk of over sedation (ODT less likely to result in over sedation compared with haloperidol or droperidol)
- Effective in patients with schizophrenia, bipolar, and methamphetamine psychosis
- • ODT has reduced risk of adverse side effects compared with parenteral medications

Contraindications:

1. Patients less than 6 years of age
2. Known Allergy
3. Known or suspected pregnancy
4. Known Parkinson's

Cautions:

1. Where possible, avoid combination with IM/IV benzodiazepine (do not administer concurrently).
2. If sedation occurs (meaning not cessation of agitation, but clinical sedation), cardiorespiratory monitoring with cardiac monitor, pulse oximetry, and sidsetream ETCO2 indicated).
3. Reduce dose by half if medically frail, age >65 years, or severe liver disease
4. Exercise extreme caution if clinical intoxication with other substances suspected

Dosage and Administration:

Adult dose: (Single Dose Only) 10mg Oral Dissolving Tablet (ODT) or 10mg IM
May Reduce dose by half if medically frail, age >65 years, or severe liver disease

Pediatric dose: (Single Dose Only): Age 12-18 years: 10mg ODT or IM, Age 6-12 5mg ODT, Age 0-6 years: Not indicated (Single Dose Only)

Adverse Effects:

1. CNS depression/sedation
2. Dystonic reaction, anticholinergic effects.

ONDANSETRON (ZOFRAN)

MF37

MEDICATION FORMULARY

Pharmacologic Effects:

1. Anti-emetic via CNS blocking agent of serotonin 5-HT3 receptors in the brain. Ondansetron has become the first line medication for nausea management due to its lack of side effects as compared to alternate classes of anti-emetics (namely the lack of sedation or akathisia).

Metabolized:

1. Metabolized in the liver.
2. **Onset**: ~3-10 minutes following IV/IO injection (longer IM). Full effect may not be apparent for 20 minutes
3. **Duration**: ~2-4 hours (dose dependent).

Indications:

1. Nausea and/or vomiting.
2. Pre-treatment prior to medications/interventions resulting in nausea.

Contraindications:

1. Known hypersensitivity or adverse reaction.
2. Known or suspected prolonged QT syndrome.

Cautions:

1. While generally considered safe in pregnancy, there are conflicting studies. The largest studies, including (NEJM, 2/28/2013) and (Reproductive Toxicology, 5/2016) did not find any evidence of harm. In the setting of treatment for hyperemesis gravidarum treated with ondansetron they reported fewer miscarriages and terminations, and higher live birth rates. Use in the pregnant patient should be individualized, and generally reserved for severe or refractory nausea.
2. May prolong QT interval on EKG (dose dependent, usually trivial in common dosing used, obtain EKG prior to use in the setting of known prior QT prolongation.

Dosage and Administration:

Ondansetron is available in both an Oral Dissolving Tablet (ODT) and parenteral solutions.

1. **Adult Dose:** Oral: 4-8mg ODT x1 or 4-8 mg IV/IO, IM (slow push), repeated every 10-15 minutes PRN. Do not exceed 16 mg without contacting medical control.
2. **Pediatric dose**: Oral: 2-4mg ODT or 0.15 mg/kg IV/IO (up to 8mg), IM (slow push). Dose may be repeated x1 in 10-15 minutes PRN.

Adverse Effects:

- Adverse clinical effect of ondansetron are very rare, but listed ones include:: blurred vision, dizziness, fatigue, diarrhea/constipation, and/or headache.

NOTES:

- Ondansetron is first line for most nausea/vomiting due to relative absence of side effects. In refractory or severe cases, consider addition of promethazine.
- Consider promethazine first-line for management in setting of vertigo. (The phenothiazines have anti-cholinergic properties that are thought to improve vertigo management.)

OXYGEN

MF38

Pharmacologic Effects:

1. A colorless, odorless gas essential for the production of cellular energy.

Metabolism:

1. N/A.

Indications:

1. Critial illnesses requiring high levels of supplemental oxygen (e.g., cardiac arrest, shock, active seizure, anaphylaxis, carbon monoxide poisoning, severe respiratory distress)
2. Hypoxia
   - In most patients the target oxygen saturation is 94-98%.
   - In the patient with known chronic lung disease at risk for loss of hypoxic drive, titrate to 89-92% if need for intubation or critical procedure is not anticipated.
   - In the setting of critical illness or intervention, maximal oxygen therapy is appropriate with goal of titration to avoid hyperoxia once patient is stabilized.
3. Pre/peri-procedural critical interventions (e.g., intubation, cardioversion, etc…).

Contraindications:

1. Known paraquat poisoning with oxygen saturation >88%.
2. Known bleomycin therapy with oxygen saturation >88%.

Cautions:

1. Increasing data indicate a potential harm from protracted hyperoxia, so there is a potential for harm in providing supplemental oxygen targeting 100% oxygen saturations.
2. Routine use of oxygen in patients who are not hypoxic is not recommended. (If the patient is maintaining a saturation ≥ 94% and is not critically ill or peri-procedural, there is no indication for supplemental oxygen.)
3. In patients with chronic lung disease and/or chronic hypoxia resulting in chronic hypercarbia, the use of supplemental oxygen may result in a reduced respiratory drive and result in hypercapnic respiratory failure. Consider ETCO2 monitoring in this patient population when an acute condition requires additional supplemental oxygen therapy. Do not withhold oxygen in critically ill patients for this possibility.

Dosage and Administration:

1. Oxygen is titrated to effect based on clinical presentation and scenario. May be administered nasal cannula, via nebulizer, non-rebreather, bag valve mask, CPAP, or endotracheal tube.

Adverse Effects:

- Reduced respiratory drive in patients with chronic lung disease
- Drying of the respiratory tract
- Prolonged use can result in direct lung injury

OXYMETAZOLINE (AFRIN)

MF39

Pharmacologic Effects:

1. A selective alpha-adrenergic agonist which causes vasoconstriction and decongestion.

Metabolism:

1. Primarily renal. Metabolized locally through the same mechanism as are the other catecholamines and alpha agonists. Used topically, dosing does not require adjustment for renal function.
2. **Onset**: Minutes
3. **Duration**: Half life is hours.

Indications:

1. Epistaxis..
2. Can be used to facilitate nasopharyngeal or nasogastric tube placement.

Contraindications:

1. Known hypersensitivity/allergy.

Cautions:

1. Topical use is safe and does not require careful dose titration.

Dosage and Administration:

It is supplied in a plastic squeeze bottle.

1. **Adult and pediatric dose**: Usual dosage is 2-3 sharp squeezes in the desired nostril(s).

Adverse Effects:

- Very rare; sinus tachycardia may occur

PROCHLORPERAZINE (COMPAZINE) MF40

MEDICATION FORMULARY

Pharmacological Effects:

1. Prochlorperazine is a phenothiazine. Exact mechanism unknown, thought to selectively antagonize dopamine D2 receptors. Used primarily as anti-emetic, but mechanism overlaps with other phenothiazines (haloperidol, droperidol) and can have similar effects.

Metabolism:

1. Metabolized by liver.
2. **Onset:** Clinically variable, 5-15 minutes IV
2. **Duration:** Clinically variable, half life ~7 hours.

Indications:

1. 2nd line antiemetic for management of symptoms of nausea or vomiting
2. Consider if inadequate response to ondansetron, which has fewer side effects and less sedation.
3. May be used as primary medication in setting of migraine and/or nausea/vomiting in setting of migraine. Clinical presentation of migraine should be typical (i.e., no clinical suspicion for CNS emergency or other emergent condition.)

Contraindications:

1. Documented hypersensitivity
2. Patients already demonstrating CNS depression
3. Children <2 years age (or 12kg size)
4. Avoid in patient's with known Parkinson's

Cautions:

1. Exercise caution in pregnancy (not contraindicated, but general restraint for medications during pregnancy encouraged)

Dosage and Administration:

1. Adults: 5-10mg slow IV or IM (Start with 5mg for most patients, may repeat x1 PRN in 10 minutes). Note: May be added to 50-100ml of NS and administered over several minutes.
    - Reduce dose by half if medically frail, age >65 years, history of liver or renal disease, or any clinical concern for risk of sedation
2. Pediatrics (age > 2 years AND weight >12kg): 0.1mg/kg slow IV or 0.1mg/kg IM Note: May be added to 50-100ml of NS and administered over several minutes.

Adverse Effects:

1. Frequently causes sedation (risk increases with dose given and increased age/medical frailty of patient)
2. Frequently causes extrapyramidal side effects (akithisia, dystonia). Slow administration IV may reduce frequency. Use of diphenhydramine (see drug monograph) indicated if significant extrapyramidal side effects occur.

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Indications:

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2. Consider if inadequate response to ondansetron, which has fewer side effects and less sedation.
3. May be used as primary medication in setting of migraine and/or nausea/vomiting in setting of migraine. Clinical presentation of migraine should be typical (i.e., no clinical suspicion for CNS emergency or other emergent condition.)

Contraindications:

1. Documented hypersensitivity
2. Patients already demonstrating CNS depression
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Adverse Effects:

1. Frequently causes sedation (risk increases with dose given and increased age/medical frailty of patient)
2. Frequently causes extrapyramidal side effects (akithisia, dystonia). Slow administration IV may reduce frequency. Use of diphenhydramine (see drug monograph) indicated if significant extrapyramidal side effects occur.

PROMETHAZINE (PHENERGAN) MF41

MEDICATION FORMULARY

Pharmacologic Effects:

1. Phenothiazine antiemetic, antagonist of central and peripheral histamine H1 receptors.
2. Anticholinergic (sedating).
    - Promethazine is an effective anti-emetic. Due to the side effect profile frequently causing sedation and infrequently causing akathisia, it is generally used a second-line anti-nausea medication. However, addition to being used in severe or refractory nausea, it can be considered a first line agent for vertigo or migraine.

Metabolism:

1. Liver.
2. **Onset**: ~10-20 minutes.
3. **Duration**: ~4-6 hours.

Indications:

1. Nausea and vomiting. For this indication it is generally a second line agent to ondansetron. Use in cases refractory or allergic to ondansetron.
2. Vertigo.
3. Migraine headache.

Contraindications:

1. Known hypersensitivity/allergy.
2. Known hypersensitivity/allergy to phenothiazines (metoclopramide (Reglan), prochlorperazine (Compazine), etc..)
3. Children under the age of 2.

Cautions:

1. **Arterial or subcutaneous administration or tissue extravasation may cause severe tissue damage. See NOTE section below.**
2. Frequently causes sedation. Reduce dose for age > 60 years.
3. Has anticholinergic effects and can cause: dry mouth, urinary retention, blurred vision.
4. Extrapyramidal symptoms; dystonia, akathisia (akathisia is a sense of restlessness and a need for constant motion that commonly occurs with this medication, some studies indicating up to 20%). If it occurse, primary treatment of akasthisa is with diphenhydramine.
5. Extremely rare: Neuroleptic Malignant Syndrome (NMS), a potentially life threatening neurologic condition characterized by muscle rigidity, fever, cognitive changes, and autonomic instability. Contact medical control if suspected.

Dosage and Administration:

Generally available as 25mg/mL. Also available 50mg/mL (for IM injection only). Dosing for nausea/ vomiting, vertigo, and migraine is identical.

1. **Adult dose:** 12.5mg-25mg deep IM injection (do NOT administer SC) or 6.25-25mg slow IV/IO.
   - IM is the preferred route compared to direct injection IV.
   - Dilution by adding to 50 or 100ml NS or D5W and administering over 10-20 minutes is recommended for IV use.
   - Use reduced dose for age > 60 years. Start with 6.25-12.5mg for IV dose.
   - When reduced dose used, may titrate in repeated dose up to every 10-15 minutes IV or 30 minutes IM until a maximum of 25mg administered.
2. **Pediatric dose** (**Age > 2 years only**): 0.25-0.5 mg/kg IM (up to a maximum of 25mg) or 0.2-0.5mg IV (up to a maximum of 25mg). Same dose range for IV/IM.
   - Dilution by adding promethazine to 50ml NS or D5W and administering over 10-20 minutes is recommended for IV use.

NOTES:

- Further dilution of the 25mg/mL strength for IV administration is strongly recommended. to reduce the vesicant effects and enable slow administration to reduce risk of tissue injury. Add to 50 or 100ml NS or D5W and administer over 5-10 minutes.
- Using large, patent veins for IV administration is strongly encouraged.
- Promethazine and diphenhydramine may be safely mixed in the same syringe for IM administration.
- If tissue extravasation or intra-arterial injection occurs, notify receiving facility immediately upon arrival. Also notify Agency EMS QA/QI Officer and MPD for sentinel event QA review.
- If any patient is known or suspected to develop tissue necrosis and/or Neuroleptic Malignant Syndrome following prehospital promethazine use, **notify Agency EMS/QA Office and MPD for sentinel event QA review.**

ROCURONIUM (ZEMURON)

MF42

MEDICATION FORMULARY

Pharmacologic Effects:

1. Non-depolarizing neuromuscular blocking agent (NMBA). Rocuronium competes with acetylcholine for receptor sites at the motor end plate causing muscular paralysis.
   - **NOTE**: Rocuronium is a paralytic only and has no effect on patient's level of consciousness or pain sensation.
   - Use of rocuronium has traditionally been for when the use of succinylcholine was contraindicated, however rocuronium is now acceptable as a first line agent for intubation. Absent contraindications to succinylcholine or drug availability the choice between rocuronium and succinylcholine is by clinician preference.

Metabolized:

1. In the liver and excreted by the kidneys.
2. **Onset**: ~60-90 seconds, particularly when combined with rapid sedative agent, depending on dose and age of patient. Onset is typically slightly slower in elderly patients and faster in pediatric patients.
3. **Duration** of paralysis is typically between ~30 to 60 minutes (clinically variable).

Indications:

1. Paralytic for rapid or delayed-sequence emergent intubation.
2. Use to facilitate prolonged paralysis after a successful intubation.

Contraindications:

1. Known anaphylactic allergy to rocuronium.

Cautions:

1. Paralytics including rocuronium should not be administered until equipment and personnel are prepared for airway and ventilation management.
2. Under-dosing of rocuronium can lead to longer onset and/or incomplete paralysis. Do not use 0.6mg/kg dose for emergent intubation as recommended in outdated references.
3. Hypotensive shock states may require higher dose (up to 2mg/kg reported), with subsequent longer duration of action.
4. Patients who receive a paralytic should also receive sedation and analgesia. Development of hypertension and tachycardia following administration may indicate inadequate sedation/ analgesia.

Dosage and Administration:

1. **Emergent Intubation: Adult and pediatric dose**: 1-1.2mg/kg IV/IO push.
   - Use higher dose in hypotensive shock states.
   - Dose for actual body weight for obese patients, not ideal body weight.
2. Maintenance of paralysis in the intubated patient: **Adult and pediatric dose**: 1mg/kg IV/IO.

SODIUM BICARBONATE

MF43

Pharmacologic Effects:

1. Increases serum bicarbonate, raising pH.

Metabolism:

1. Bicarbonate is excreted in the urine and by the lungs as CO2., sodium is excreted in the urine.
2. **Onset**: minutes.
3. **Duration**: clinically variable.

Indications:

1. Hyperkalemia.
2. Tricyclic antidepressant overdose with QRS widening >100ms.
3. *Limited, contradictory* evidence for use in setting of severe metabolic acidosis (e.g., DKA). NOTE: current evidence and practice suggest the practice may be harmful and routine use is not indicated. Do not initiate for this indication except under direction of medical control physician.)

Contraindications:

1. Metabolic alkalosis.
2. Hypokalemia.
3. Hypocalcemia.

Cautions:

1. **Do not mix in same IV line** with either calcium (chloride or gluconate) and/or epinephrine. Flush line with NS after sodium bicarb use and/or prior to administration of either agent.
2. Limited, contradictory evidence exists for routine use in cardiac arrest, and current guidelines explicitly state that routine use of sodium bicarbonate is **not** recommended. No data have indicated improved outcomes attributable to use. Use **only** in cases of suspected hyperkalemia.
3. Congestive heart failure. (Sodium load may worsen.)
4. Hypertension.
5. Although previously administered in setting of severe metabolic acidosis (e.g., DKA), current evidence and practice suggest the practice may be harmful and routine use is **not** indicated. Use only under direction of medical control physician.

Dosage and Administration:

1. Hyperkalemia: **Adult dose**: Cardiac arrest 50-100mEq IV push. In the non-arrest patient give 50 mEq IV/IO. **Pediatric dose**: 1 mEq/kg up to maximum adult dose.
2. Tricyclic Overdose with QRS widening: **Adult and pediatric dose**: 1-2 mEq/kg IV/IO up to 100mEq IV. Repeat x1 PRN.

Adverse Effects:

1. Exacerbation of congestive heart failure.
2. Metabolic alkalosis.
3. Edema.
4. Hypernatremia.
5. Seizures (extremely rare) - Report any occurrence to EMS Agency QA/QI and MPD for QA review.
6. Tetany (extremely rare) - Report any occurrence to EMS Agency QA/QI and MPD for QA review.

SUCCINYLCHOLINE (ANECTINE, QUELICIN) MF44

Pharmacologic Effects:

1. A short-acting, depolarizing, neuromuscular blocking agent (NMBA). Chemically similar to the neurotransmitter acetylcholine, it combines with cholinergic receptors in the motor nerves to cause depolarization, blocking further neuromuscular transmission. Muscle relaxation begins in the eyelids and jaw. It then progresses to the limbs, the abdomen, and finally the diaphragm and intercostal muscles.
   - ⚠ **NOTE**: Succinylcholine is a paralytic only and has no effect on patient's level of consciousness or pain sensation.
   - Due to rapid onset and short duration, succinylcholine has been traditionally favored as the first line agent for intubation. Rocuronium is an acceptable alternative. Absent contraindications to succinylcholine or drug availability the choice between rocuronium and succinylcholine is by clinician preference.
   - At room temperature succinylcholine retains 90% of its activity for up to 3 months. Therefore if stored at room temperature (i.e., not refrigerated) it should be dated and stock rotated after 3 months.

Metabolism:

1. Excreted by the kidneys (10%) and is hydrolyzed by plasma pseudocholinesterase (PCHE) (90%).
2. **Onset**: ~60 seconds
3. **Duration**: ~8-10 minutes.

Indications:

1. Emergent intubation.

Contraindications:

1. History of hypersensitivity to the drug
2. History of malignant hyperthermia.
3. Patients a *risk of succinylcholine-induced hyperkalemia (see more information under adverse effects):*
   - Known neuromuscular disease such as muscular dystrophy, amyotrophic lateral sclerosis and/or any denervation syndrome.
   - Includes stroke or trauma victims with muscle paralysis (e.g. hemiplegia, paraplegia) who are 5 or more days post injury.
   - Includes patients with a transient neurological disorder such as Guillane-Barre or wound botulism who are 5 or more days post injury.
   - Patients with major burns or crush injuries who are 5 or more days post injury.
   - Patients with severe infections (sepsis) who are 5 or more days post onset of severe infection -risk resolves when illness resolves. (Relevant for ICU/CCU transfer patients.)
   - *Limited evidence for suspected hyperkalemia (elevated potassium)*
   - Patients for whom paralysis is unnecessary (e.g., cardiac arrest).
   - Patients for whom orotracheal intubation and/or successful ventilation by bag valve mask is predicted to be impossible.

Cautions:

1. Paralytics including rocuronium should not be administered until equipment and personnel are prepared for airway and ventilation management.
2. Succinylcholine provides paralysis without sedation or analgesia. Sedation and analgesia are indicated concurrently.
3. Under-dosing of succinylcholine can lead to longer onset and/or incomplete paralysis. A minimum dose of 1.5mg/kg is recommended (replaces previously used 1mg/kg dose), and routine use of 2mg/kg is encouraged.
4. Hypotensive shock states may require higher dose. (Use 2mg/kg dose.)
5. Succinylcholine will cause fasciculations (muscle twitching) as paralysis develops.
6. Succinylcholine can cause profound bradycardia, particularly in pediatric patients. Although pre-treatment with atropine is no longer routinely recommended atropine (0.02 mg/kg IV with a minimum dose of 0.1mg IV) should be prepared and available for use should bradycardia occur.
7. Any patient requiring a second dose of succinylcholine should be pre-treated with atropine 0.5-1 mg IV in adults or 0.02 mg/kg IV with a minimum dose of 0.1mg IV for the pediatric dose.
8. In the extremely young pediatric population, neuromuscular disorders that ordinarily would provide a contraindication to the use of succinylcholine may not yet have been identified. Monitor cardiac rhythm for signs of hyperkalemia following its use.
9. Succinylcholine is thought to increase intraocular pressure.

Dosage and Administration:

1. Emergent intubation: **Adult dose**: 1.5-2.0 mg/kg IV/IO. (Use 2mg/kg dose in setting of hypotensive shock states.) **Pediatric dose**: 2mg/kg IV/IO
   - The preferred route is IV/IO. However, in extreme circumstances it can be administered IM. If given IM a 4mg/kg dose should be used. The onset of paralysis will be slower with the IM route.

Adverse Effects:

- Hyperkalemia– In most patients succinylcholine causes a mild, transient potassium elevation of no clinical consequence. However, in certain settings there is an increased risk of potentially life-threatening hyperkalemia occurring with the use of succinylcholine, and in these settings the drug should be avoided in the setting of:
  A. Neuromuscular disorders or myopathies such as Polio, Muscular Dystrophy, Amyotrophic Lateral Sclerosis (ALS)
  B. Acquired neuromuscular disorders that are more than 5 days old such as
  C. Stroke with major muscle deficits (e.g, paraplegia, hemiplegia)
  D. Spinal cord injury (e.g., paraplegia, hemiplegia)
  E. Guillane-Barre
  F. Wound Botulism
- Burns (>8% TBSA) or severe crush injuries that are more than 5 days old,
- Severe infections (sepsis in the ICU setting) that are more than 5 days into the infection - risk resolves as infection resolves.
- Suspected or pre-existing hyperkalemia the resulting hyperkalemia can potentially be severe and life threatening.
- Report any suspected incidence of clinically significant hyperkalemia following succinylcholine to EMS Agency QA/QI officer and MPD for QA review.

- Fasciculations.
- Prolonged paralysis can be seen in some populations - typically in the setting of a deficiency or inhibition of pseudocholinesterase (PCHE), which normally breaks down succinylcholine. Certain conditions (liver disease, chronic cocaine use, pregnancy) or medications (metoclopramide and esmolol among others) can rarely lead to an acquired deficiency of PCHE. A very severe deficiency can lead to prolonged paralysis lasting 4-8 hours.
- Malignant Hyperthermia - a rare but life threatening condition characterized by increased metabolism, muscular rigidity, autonomic instability, hypoxia, hypertension, severe lactic acid doses, hyperkalemia, myoglobinuria, and disseminated intravascular coagulation. Temperature elevation is a late manifestation. The presence of more than one of these clinical signs is suggestive of malignant hyperthermia. If suspected, call the receiving ED immediately and indicate your concern to facilitate the rapid administration of therapy of Dantrolene. Report any suspected incidence to EMS Agency QA/QI officer and MPD for QA review.
- Trismus/Masseter spasm - On occasion, succinylcholine may cause transient trismus/masseter muscle spasm, especially in children. This manifests as jaw muscle rigidity associated with limb muscle flaccidity. Pretreatment with defasciculating doses of non depolarizing NMBAs will not prevent masseter spasm. If masseter spasm interferes with intubation, an intubating dose of a competitive non depolarizing agent (e.g., rocuronium) should be administered and will relax the involved muscles. The patient may require bag mask ventilation until relaxation is complete and intubation as possible. Masseter spasm should prompt serious consideration of the diagnosis of malignant hyperthermia (parenthesis see previous discussion). Report any suspected incidence to EMS Agency QA/QI officer and MPD for QA review.

NOTES:

- Routine pretreatment with atropine in pediatric patients is no longer recommended.
- Pretreatment with defasciculating neuromuscular blocking agent is no longer recommended.
- Pretreatment with lidocaine for patients with possible increased intracranial pressure (ICP) is no longer recommended.

TRANXEXAMIC ACID (TXA)

MF45

⚠ **NOTE:** TXA is an AGENCY OPTIONAL medication and requires individual EMS providers complete specialty MPD endorsed training and sign off. Agencies with generally short transport times may defer use of TXA given training requirement and pharmaceutical costs involved.

Pharmacological Effects:

1. TXA is a synthetic analog of the amino acid lysine that serves as an anti-fibrinolytic by preventing plasmin from binding to and degrading fibrin. It is a medication used to treat or prevent excessive blood loss from major trauma/hemorrhage. The potential benefits of TXA use were first demonstrated in the literature in the CRASH-2 trial which claims a reduction in all-cause mortality when used as bolus followed by an infusion in a specific protocol. TXA use in trauma patients has been studied in subsequent trials (CRASH-3, TAMPITI, STAMP, ROC, and PATCH-Trauma) with variable degrees of success.

Metabolism:

1. Kidneys.
2. **Onset:** ~5-15 minutes to pharmacological activity (clinical effects vary).
3. **Duration:** ~3 hours for initial bolus.

Indications:

1. Traumatic injury with potentially life-threatening hemorrhage with signs of shock and at least one episode of hemodynamic instability (SBP <90) **AND** drug administration is within 3 hours of injury **AND** transport time and resources permit initiation.

⚠ **NOTE**: Administration of TXA in the prehospital trauma patient is not a critical priority and should be deferred until all other resuscitative/transport priorities have been addressed.

⚠ **NOTE**: Administration of TXA may be deferred to aeromedical transport providers.

⚠ **NOTE**: Studies have *not* demonstrated a clear benefit for Traumatic Brain Injury, GI bleed, or epistaxis. Administration in Skagit County is limited to an indication of clinically suspected hemorrhage with hemodynamic instability.

Contraindications:

1. The initial benefit of TXA was identified in clinical studies occurs only if bolus is given within 3 hours of injury *followed by an infusion over 8 hours.* However, a number of guidelines, including 2020 TCCC Guideline update, have shifted to recommended a single 2 gram bolus. This practice has been adopted at a multitude of trauma centers. This 2 gram bolus dosing simplifies logistics of administration and frees up IV access. However, it also requires careful handoff information that a 2 gram dose was given and therefore the infusion is *not* indicated.
2. EMS personnel may perform the 2g bolus in the field, but in patients for whom there is an indication and TXA was not given in the field, some facilities may initiate a 1g bolus followed by a 1g infusion over 8 hours. In the setting of inter-facility transfers, EMS personnel may assist completion an infusion during transport. .
3. TXA may be harmful if given outside 3 hours window.
   Therefore, it is critical to communicate to receiving facility (and document) both time of traumatic injury and time and dosing of TXA given.
4. Do not administer concurrently in the same line as blood or blood products. (Blood products should be prioritized over TXA.)
5. Clinical evidence for TXA use in pediatric trauma patients is limited, however its use is still endorsed by many trauma centers, and is endorsed by the WA DOH.

Dosage and Administration:

1. **Adult** Dose: TXA is given as a 2 gram IV bolus over 1-2 minutes
   - Communicate at patient hand off that a **2 gram (and not 1 gram)** bolus has been given, so that in patients who have received this dose, a 1 gram infusion is **not** accidentally initiated by receiving agency or facility
   - EMS Providers may continue a previously initiated infusion for inter-facility transfers.

2. Pediatric Bolus Dose 30mg/kg IV over 1-2 minutes (up to a maximum of 2000mg)

- Communicate at patient hand off that a **30mg/kg (and not 15mg/kg)** bolus has been given, so that in patients who have received this dose, a subsequent infusion is **not** accidentally initiated by receiving agency or facility
- EMS Providers may continue a previously initiated infusion for inter-facility transfers.

Adverse Effects:

1. Changes in color vision.
2. Blood clots (extremely rare).
3. Hypotension may occur with rapid injection.
4. Allergic reaction (rare)
5. Nausea, Vomiting, and Diarrhea (rare)

SECTION 11:

APPENDICES & REFERENCE MATERIAL

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HOSPICE of the northwest

Comfort Medications – How to Use

FOR PAIN/BREATHLESSNESS		
Medication and Strength	**Dose and Administration**	**Symptoms to Watch for:** 1. Facial Grimacing 2. Moaning, restlessness, shielding/guarding body area 3. Increased irritability or agitation due to pain or breathlessness 4. Rapid and/or labored breathing 5. Complaints of pain/breathlessness **Try this First:** 1. Repositioning 2. Check briefs, bed linens, catheters 3. Redirect (if anxious): Music, TV, other activity 4. Check oxygen tubing (if in use) 5. Elevate head of bed 30 degrees 6. Open a window or have a fan lightly blowing on face (for breathlessness)
Morphine 20mg/mL	5mg (0.25mL) orally	
Hydromorphone 1mg/mL	1mg (1mL) orally	
Oxycodone 5mg tabs	5mg (1 tab) orally*	
	**If unable to swallow, crush and dissolve in warm H2O*	
Call hospice nurse if symptoms not improving after 30 minutes	May repeat dosing of ANY of above **every one hour** as needed	

FOR SECRETIONS		
Medication and Strength	**Dose and Administration**	**Symptoms to Watch for:** 1. Persistent drooling 2. Gurgling, wet respirations **Try this First:** 1. Reposition to one side or the other, avoiding flat on the back 2. Elevate head of bed to 30 degrees 3. Provide oral care with oral swab/toothette
Atropine Sulfate 1% drops	2 drops under the tongue	
Hyoscyamine 0.125mg tabs	0.25mg (2 tabs) orally*	
	**If unable to swallow, crush and dissolve in warm H2O*	
Call hospice nurse if symptoms not improving after 2-4 hours	May repeat dosing of ANY of above every **2-4 hours** as needed	

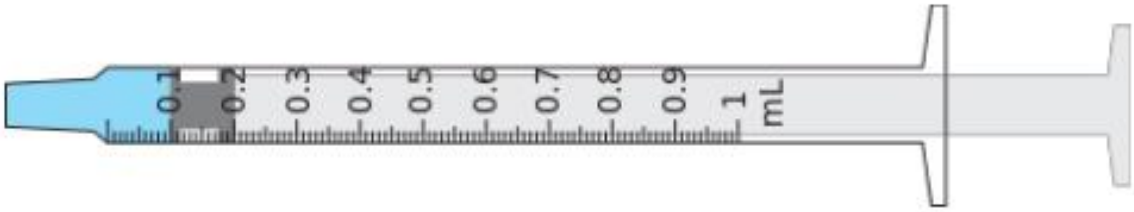
FOR CONSTIPATION		
Medication and Strength	**Dose and Administration**	**Symptoms to Watch for:** 1. Decrease in normal stool pattern 2. Increased straining and/or hard stools 3. Complaints of lower abdominal pressure/fullness/discomfort **Try This First:** 1. Increase fluid intake 2. Add prunes/prune juice to daily diet 3. Increase physical activity (i.e. walking)
Senna 8.6mg tabs	8.6mg (1 tab) orally	
Lactulose 10gm/15mL syrup	10gm (15mL=1 TBSP) orally	
Call hospice nurse if symptoms not improving after 1-2 days	May repeat dosing of ANY of above up to **twice a day** as needed	

Appendix 1: Hospice Comfort Medications

A1

FOR ANXIETY/BREATHLESSNESS		
Medication and Strength	**Dose and Administration**	**Symptoms to Watch for:** 1. Unable to sit/lay quietly 2. Increased irritability 3. Abnormal or increased fidgeting 4. Complaints of breathlessness, rapid and/or labored breathing 5. Inability to sleep **Try this First:** 1. Redirect (if anxious): Music, TV or other activity 2. Repositioning 3. Decrease environmental stimuli 4. Open a window or have a fan lightly blowing on face (for breathlessness)
Lorazepam 2mg/mL	0.5mg (0.25mL) orally	
Lorazepam 1mg tabs	0.5mg (1/2 tab) orally*	
Call hospice nurse if symptoms not improving after 30 minutes	**If unable to swallow, crush and dissolve in warm H2O* May repeat dosing of ANY of above every **2 hours** as needed	

FOR AGITATION/NAUSEA		
Medication and Strength	**Dose and Administration**	**Symptoms to Watch for:** 1. Nausea, even without vomiting 2. Active vomiting 3. Persistent hiccups 4. Restlessness/angry statements 5. Resistance/combativeness with care 6. Distressing hallucinations **Try this First:** 1. Nausea: Cool cloth on forehead/neck 2. Nausea: Fan blowing lightly on face 3: Agitation: Change caregiver/distract 4. Provide calm, soothing atmosphere
Haloperidol 2mg/mL	0.5mg (0.25mL) orally	
Call hospice nurse if symptoms not improving after 30 minutes	May repeat dosing of above every **2 hours** as needed	



*Syringe currently drawn up to 0.1mL **Please Note:**		
***Milliliter (mL)** is a measurement of liquid volume in a syringe	**A milliliter is not equal to a milligram**. The measurements on a syringe are in milliliters, NOT milligrams. The amount of medication in milligrams is NOT reflected on this syringe.	Draw up and administer medications based on how many **milliliters** are needed to give the correct milligram dosage of a medication. Call Hospice if you have concerns about administering the correct amount of medication.
***Milligram (mg)** is a measurement of the strength of a medication		
Syringe from: By Timothy W Ford (Own work) [CC BY-SA 3.0 (http://creativecommons.org/licenses/by-sa/3.0)], via Wikimedia Commons		

Appendix 2: Pediatric Transport Restraint Devices

A2


FOX LABS INTERNATIONAL'S
Sudecon®
Irritant Spray Decontamination Wipes
Really! Nothing in the world works like Sudecon® towelettes.
DIRECTIONS FOR USE:
FIRST: Tear open package and unfold towelette. Wipe off entire facial area using at least one towelette. It is imperative to thoroughly wipe eyebrows, forehead, around eyes, cheeks, hands, (the entire contaminated area) allowing SUDECON'S® foaming action to wash away the irritant spray particles. DO NOT RUB EYES!
SECOND: With eyes closed* (using a new, clean towelette) squeeze towelette over the eyes allowing membranes to absorb the solution. It is of the utmost importance to squeeze the towelette over the closed eyes* while allowing the liquid to flow around the eyes. After doing so, lay towelette over face to soothe burning sensation.
*This product is not designed to be an eyewash.
Special Note: You may wish to use one or two additional towelettes to help ease the burning sensation.
Remember, Do Not Use Water, it will only dilute the decontamination solution and prevent it from working properly.
STOP! Don't Bail Out Early!
Give the SUDECON® formula the time it needs to work.
In approximately 7 to 15 minutes the contaminated individual should feel 85 to 95 percent recovered. Due to the active ingredients in the SUDECON® formula the skin will feel sticky. This is a normal condition.
VERY IMPORTANT:
Persons exposed to an irritant spray have a tendency to panic. You must be patient when using SUDECON®. Allow SUDECON® to do its' job, and in about seven to fifteen minutes SUDECON® will work — and do so spontaneously!
We market the best products in the world. So, what are you using?
FOX LABS INTERNATIONAL
www.foxlabs.com
sales@foxlabs.com
1-800-FOX LABS (369-5227) U.S. Only
1-586-783-5100 International
1-586-783-5151 Fax
Nothing in the world works like...
Sudecon®
The Leader In Defense Spray Aftercare
Irritant Spray Decontamination Wipe

Appendix 4: MARCH PAWS

A4

In the **Universal Patient Care Guideline** the traditionally taught Primary Survey (with ABC's) and Secondary Surgery algorithmic format was described. However, in some programs (particularly those with a military background) a different algorithm that covers the same bases is used. This is the MARCH algorithm (some time extended to MARCH- H- PAWS). In Skagit County, using the the MARCH PAWS algorithm is an acceptable alternative - with the exceptions below (marked with an*):

Components of the MARCH algorithm include:

M - Massive Hemorrhage
A - Airway
R - Respiratory
C - Circulation
H - Head Injury

H - Hypothermia
P - Pain
A* - Antibiotic. (NOT PART OF SKAGIT EMS PROTOCOLS)
W* - Wounds (MAY DEFER WOUND CLEANING TO EMERGENCY DEPT.)
S - Splinting (Following Skagit EMS protocols)

***NOTE: Antibiotics are not a component of prehospital EMS in Skagit, and wound cleaning is also generally deferred to the emergency department where anesthesia and resources for more in depth wound cleaning are available.**

Appendix 5: Approved Abbreviations

A

Symbols

@	At
~	approximately
#	number
=	equal
↑	increase/increasing
↓	decrease/decreasing
Δ	change
≠	not equal
≈	nearly equal to
≃	approximately equal to
x	times
+	positive or plus
-	negative or minus
°	degree
♂	male
♀	female
∅	no, none
1°	primary, first degree
2°	secondary, second degree
3°	tertiary, third degree
4”	inches (four inches in this example)
5’	feet (five feet in this example)

A

A	Assessment
A&O	Alert and oriented
A&Ox3	Oriented to person, place, and time
A&Ox4	Oriented to person, place, time, and event
AAA	Abdominal Aortic Aneurysm
ABG	Arterial Blood Gas
abd	Abdominal or abdomen
AC	Antecubital
ACLS	Advanced Cardiac Life Support
ACS	Acute Coronary Syndrome
ADD or ADHD	Attention Deficit (Hyperactivity) Disorder
AED	Automatic External Defibrillator
AERO or Aero	Aero-Skagit EMS *
AFD	Anacortes Fire Department *
A-Fib or Afib	Atrial Fibrillation
AKA	Above the Knee Amputation
AICD	Automated Implantable Cardiac Defibrillator
AIDS	Acquired Immunodeficiency Syndrome
ALNW or Airlift NW	Airlift Northwest *
ALS	Advanced Life Support
ALOC	Altered Level of Consciousness

AMA	Against Medical Advice
AMI	Acute Myocardial Infarction
AMS	Altered Mental Status
amt or AMT	Amount
Ant	Anterior
APAP	Acetaminophen (Tylenol)
APD	Anacortes Police Department *
APGAR	Appearance, Pulse, Grimace, Activity, Respiration
approx or appx	Approximately
appy	appendix or appendectomy
ARDS	Acute Respiratory Distress Syndrome
ASA	aspirin
ASAP	as soon as possible
ASCVD	Arteriosclerotic Cardiovascular Disease
assoc	associated
ATV	All Terrain Vehicle
AV	Atrioventricular
AVPU	Alert, Verbal, Pain, Unresponsive

B

B/L	Bilateral
BAC or BAL	Blood Alcohol Level or Blood Alcohol Content
BBB	Bundle Branch Block
BC	Battalion Chief
BFD	Burlington Fire Department *
BG or BGL	Blood Glucose
bi-lat or BILAT	Bilateral
BiPAP	Bi-Level Positive Airway Pressure
BKA	Below Knee Amputation
BLS	Basic Life Support
BM	Bowel Movement
BP	Blood Pressure
BS	Breath Sounds
BSA	Body Surface Area
BPD	Burlington Police Department *
BPH	Benign Prostatic Hypertrophy
bpm	beats per minute
BTL	Bilateral Tubal Ligation
BVM	Bag Valve Mask
BX	Breathing (used by dispatch)

C

C1-C7	Cervical Vertebrae 1 through 7 (or nerve root if specified)
C-Section	Caesarian Section
CA	Cancer
CA&Ox1,2,3, or 4	Conscious, Alert, and Oriented, Person, Place, Time, Event
Ca++	Calcium
CABG	Coronary Artery Bypass Graft

CaCl	Calcium Chloride
CAD	Coronary Artery Disease
CAT or CT	Computed Axial Tomography (CT Scan)
CATH or cath	Catheter
CC or C/C	Chief Complaint
CDIF or c-diff	Clostridium Difficile
CCU	Critical Care Unit
CH	Children's Hospital *
CHF	Congestive Heart Failure
chole	Gallbladder or cholecystectomy
CISD	Critical Incident Stress Debriefing
CIT	Crisis Intervention Team *
CKD	Chronic Kidney Disease
Cl	Chloride
cm	Centimeter
CNS	Central Nervous System
C/O or c/o	complains of
CO	Carbon Monoxide or County (context dependent)
CO2	Carbon Dioxide
COPD	Chronic Obstructive Pulmonary Disease
CP	Chest Pain
CPAP	Continuous Positive Airway Pressure
CPR	Cardiopulmonary Resuscitation
CRF	Chronic Renal Failure
CSF	Cerebrospinal Fluid
CSM	Circulation, Sensation, Movement
CSMO	Central Skagit Medic One *
CVA	Cerebrovascular Accident (Stroke)
CVH	Cascade Valley Hospital *
CX	Conscious (used by dispatch)
CXR	Chest X-Ray

D

D5NS	Dextrose 5% in Normal Saline
D5W	Dextrose 5% in Water
D10 or D10W	Dextrose 10% in Water
D25 or D25W	Dextrose 25% in Water
D50 or D50W	Dextrose 50% in Water
D/C	Discontinue
Ddx	Differential Diagnosis
dexi	Dextrose (blood glucose) level
Dig	Digoxin
DJD	Degenerative Joint Disease
DKA	Diabetic Ketoacidosis
dL	deciliter
DL	Direct Laryngoscopy

DM	Diabetes Mellitus
DNI	Do Not Intubate
DNR	Do Not Resuscitate
DO	Doctor of Osteopathic Medicine
DOA	Dead on Arrival
DOB	Date of Birth
DOE	Dyspnea on Exertion
DP	dorsalis pedis pulse
DSI	Delayed Sequence Intubation
DTaP	Diptheria, Pertussis, Tetanus Vaccine
DTs	Delirium Tremens
DVT	Deep Vein Thrombosis
Dx, Dx, or dx	Diagnosis (context dependent, see next entry)
DX	Difficulty (used by dispatch)

E

EBV	Ebola Virus
ECG or EKG	Electrocardiogram
ED	Emergency Department
EDD	Estimated Date of Delivery (due date)
EDC	Estimated Date of Confinement (due date)
EEG	Electroencephalogram
EJ	External Jugular
EMS	Emergency Medical Services
EMT	Emergency Medical Technician
EMT-B	Emergency Medical Technician Basic
EMT-P	Emergency Medical Technician Paramedic
ENT	Ear Nose Throat
EOM	Extraocular Movement
Epi	Epinephrine
ePCR	Electronic Patient Care Reporting
ESKD or ESRD	End Stage Kidney (Renal) Disease
ESO	ESO Solutions, inc *
ETA	Estimated Time of Arrival
ETCO2	End Tidal CO2
ETOH	Alcohol (Ethanol)
ET or ETT	Endotracheal Tube
ETI	Endotracheal Intubation
ER	Emergency Room (Department)
EXT	External or Extremities (context dependent)

F

F	Female
°F or Degrees °F	Temperature in Fahrenheit
Fx or fx	Fracture

FB	Foreign Body
FBAO	Foreign Body Airway Obstruction
FD	Fire Department (or Fire District if followed by number)
FEV	Forced Expiratory Volume
FFP	Fresh Frozen Plasma
FH or FamHx	Family History
FHR	Fetal Heart Rate fluid
fl	fluid
fl oz	fluid ounces
flex	flexion
FTND	Full Term Normal Delivery
FTO	Field Training Officer
FUO	Fever of Unknown Origin

G

G followed by a number	Gravida (pregnancies)
g or gm	grams
GCS	Glasgow Coma Scale
GI	Gastro-intestinal
GLF	Ground Level Fall
GSW	Gun Shot Wound
Gtt	drop or drops

H

H2O	Water
HAV or Hep A	Hepatitis A
HBV or Hep B	Hepatitis B
HCV or Hep C	Hepatitis C
HDV or Hep D	Hepatitis D
HEV or Hep E	Hepatitis E
HA	Headache
HAZMAT	Hazardous Materials
HCO3	Sodium Bicarbonate
HCTZ	Hydrochlorothiazide
HD	Hemodialysis
Hemi	half
HEENT	Head, Eyes, Ears, Nose, and Throat
Hg	Mercury
HI	Homicidal Ideation
HIV	Human Immunodeficiency Virus
HMC	Harborview Medical Center *
HPI or HxPI	History of Present Illness
HR	Heart Rate
HX or Hx	History of Present Illness
hyst	hysterectomy

I - J - K	
IC	Incident Command
ICP	Intracranial Pressure
ICU	Intensive Care Unit
ID	Identification
IDDM	Insulin Dependent Diabetes Mellitus
IH or ISH	Island Hospital *
IM	Intramuscular
inf	inferior
IFx	Interfacility
IO	Intraosseous
irreg	irregular
ITA	Involuntary Treatment Act
IUD	Intrauterine Device
IV	Intravenous
IVP	Intravenous Push
J	Joules
JVD	Jugular Vein Distension
K+	Potassium
KCL	Potassium Chloride
Kg	Kilogram
KVO	Keep Vein Open

L	
L	Liter or Left (context dependent)
L1 - L5	Lumbar Vertebrae, or nerve root if specified
L & D	Labor and Delivery
lac	laceration
LAD	Left Anterior Descending or Left Axis Deviation (context dependent)
lat	lateral
lb	pound(s)
LBBB	Left Bundle Branch Block
LCA	Left Coronary Artery
LLE	Left Lower Extremity
LLL	Left Lower Lobe
LLQ	Left Lower Quadrant
LMP	Last Menstrual Period
LOC	Level of Consciousness or Loss of Consciousness (context dependent)
lpm	liters per minute
LR	Lactated Ringer's
LUE	Left Upper Extremity
LUQ	Left Upper Quadrant
LVH	Left Ventricular Hypertrophy

M	
m	meter(s)
M	Male

mm	millimeter
Mag or mag	Magnesium
MAL	Mid Axillary Line
MAP	Mean Arterial Pressure
MAT	Multifocal Atrial Tachycardia
mcg	micrograms
MCI	Mass Casualty Incident
MCL	Mid Clavicular Line
MD	Medical Doctor
MDI or mdi	Metered Dose Inhaler
MED or med(s)	Medication(s)
medic	Paramedic
MEQ or mEq	Milliequivalents
mg	milligrams
MI	Myocardial Infarction
min	minutes or minimum (context dependent)
ml	milliliter(s)
mmHg	Millimeters of Mercury
MMR	Measles, Mumps, and Rubella
MPD	Medical Program Director
MRI	Magnetic Resonance Imaging
MRSA	Methicillin Resistant Staph Aureus
MS	Multiple Sclerosis
MSO	Medical Support Officer *
MSSA	Methicillin Sensitive Staph Aureus
MVA	Motor Vehicle Accident
MVC	Motor Vehicle Collision
MVAHR	MVA High Risk (used by dispatch)
MVAU	MVA Unknown (used by dispatch)
MVFD	Mount Vernon Fire Department *
MVPD	Mount Vernon Police Department *

N

N	Nausea
N/A	Not Applicable
N/V	Nausea, Vomiting
N/V/D or NVD	Nausea, Vomiting, Diarrhea
Na	Sodium
NaCL and NACL	Sodium Chloride
NAD	No Apparent Distress
NaHCO3	Sodium Bicarbonate
NC	Nasal Cannula
NCNP	North Cascades National Park *
NEB or neb	Nebulizer
neuro	neurological
NG	Nasogastric

NICU	Neonatal Intensive Care Unit
NIDDM	Non Insulin Dependent Diabetes Mellitus
NKA or NKDA	No Known (Drug) Allergies
NP	Non-Priority
NPA	Nasopharyngeal Airway
NRB or NRBM	Non-Rebreather Mask
NPO	nothing by mouth
NPS	National Park Service *
NS	Normal Saline
NSAID	Non-Steroidal Anti-Inflammatory
NSR	Normal Sinus Rhythm
NSTEMI	Non ST Segment Elevation MI
NTG	Nitroglycerine

O

O	Objective
O2	Oxygen
O2 Sat	Oxygen Saturation
OB or OB/GYN	Obstetrics/Gynecology
OD	Overdose
OPA	Oropharyngeal Airway
OR	Operating Room
OSI	Optimal Sequence Intubation
OTC	Over the counter (non-prescription)
oz	Ounces

P

P	Pulse or Plan
p	After
PAC	Premature Atrial Contraction
PALP	Palpation
Para	delivery history (live births)
PAT	Paroxysmal Atrial Tachycardia
PCN	Penicillin or Pioneer Center North * (context dependent)
PCP or PMD	Primary Care Physician
PCR	Patient Care Report
PD	Police Department
PE	Pulmonary Embolus
P.E.	Physical Exam
PEA	Pulseless Electrical Activity
ped	Pedestrian
peds	pediatrics
PEARL/PERRL	Pupils Equal (Round) Reactive to Light
Pharm	Pharmacy
PICC	Percutaneous Inserted Central Catheter
PID	Pelvic Inflammatory Disease
PO	By mouth

PMD	Primary Medical Doctor
PND	Paroxysmal Nocturnal Dyspnea
PMH or PMHx	Past medical history
PMI	Point of Maximal Impulses
POV	Privately Owned Vehicle
PRN or prn	as needed
PROV	Providence (Everett) Hospital *
prox	proximal
PSVT	Paroxysmal Supraventricular Tachycardia
Pt	Patient
PTA	Prior to Arrival
PTSD	Post Traumatic Stress Disorder
PTX or Pneumo	Pneumothorax
PUD	Peptic Ulcer Disease
PVC	Premature Ventricular Contraction
PWD	Pink, Warm, Dry
PX	Pain (used by dispatch)

Q - R

QA	Quality Assessment
QI	Quality Improvement
R	Right
R/O	Rule Out
RBBB	Right Bundle Branch Block
RCA	Right Coronary Artery
reg	regular
rhabdo	rhabdomyolysis
RLQ	Right Lower Quadrant
RLE	Right Lower Extremity
RML	Right Middle Lobe
RN	Registered Nurse
ROM	Range of Motion
ROS	Review of Systems
ROSC	Return of Spontaneous Circulation
RR	Respiratory Rate
RSI	Rapid Sequence Intubation
RUE	Right Upper Extremity
RUL	Right Upper Lobe
RUQ	Right Upper Quadrant
Rx	Prescription
RXN	Reaction

S

S	Subjective
S/P or s/p	Status Post
s/s	Signs and Symptoms

S1-5	Sacral Vertebrae or nerve root
SA	Sinoatrial
SAR	Search and Rescue
sat	saturation
SCFPD	Skagit County Fire Protection District
SCH	Swedish Hospital Cherry Hill Campus *
SCMO	Skagit County Medic One
SCSO	Skagit County Sheriffs Office
SFH	Swedish Hospital First Hill Campus *
SI	Suicidal Ideation
SIDS	Sudden Infant Death Syndrome
SL	Sublingual
SOAP	References a specific format of a medical note
SOB	Shortness of Breath
St. Joe's	Peace Health Saint Josephs Hospital *
STAT	immediately
STD	Sexually Transmitted Diseases
STEMI	ST Segment Elevation MI
SubQ	subcutaneous
SVH	Skagit Valley Hospital *
SVT	Supraventricular Tachycardia
SWFD	Sedro-Woolley Fire Department *
SWPD	Sedro-Woolley Police Department *
Sx	Symptoms
Symmet	Symmetrical
SZ or Sz	Seizure

T - U - V

T	Temperature in Fahrenheit
T1 - 12	Thoracic Spine Vertebrae or nerve root
T-Spine	Thoracic Spine
T&A	Tonsillectomy and Adenoidectomy
TB	Tuberculosis
TCA	Tricyclic Antidepressant
temp	Temperature
TIA	Transient Ischemic Attack
TKO	To Keep Open
TMJ	Temporomandibular Joint
TURP	Transurethral Resection of Prostate
Tx	Treatment
UA	Urinalysis
UC	Urgent Care
UGH	Peace Health United General Hospital *
Unk	Unknown
UO	Urinary Output
UOA	Upon our Arrival

URI	Urinary Incontinence
UTI	Urinary Tract Infection
UTL	Unable to Locate
UW	University of Washington Hospital *
VA	Veteran's Administration
vent	ventilator
VF or Vfib	Ventricular Fibrillation
VM	Virginia Mason Hospital *
VL	Video Laryngoscopy
VT or Vtach	Ventricular Tachycardia
VS	Vital Signs
VSD	Ventral Septal Defect

W - X - Y - Z

WAP	Wandering Atrial Pacemaker
WCMO	Whatcom County Medic One *
wt	weight
WNL	Within Normal Limits
w/o	without
WPW	Wolff-Parkinson-White Syndrome
WSP	Washington State Patrol *
X or x	times (as in multiple)
y or yr	year
y/o or yo	year old
Zoll	Zoll (brand name) Monitor/Defibrillator

*** Abbreviations Specific to Skagit County**

AERO or Aero	Aero-Skagit EMS *
AFD	Anacortes Fire Department *
ALNW or Airlift NW	Airlift Northwest *
APD	Anacortes Police Department *
BFD	Burlington Fire Department *
BPD	Burlington Police Department *
CH	Children's Hospital *
CSMO	Central Skagit Medic One *
CVH	Cascade Valley Hospital *
ESO	ESO Solutions, inc *
HMC	Harborview Medical Center *
IH or ISH	Island Hospital *
ITA	Involuntary Treatment Act
MSO	Medical Support Officer *
MVFD	Mount Vernon Fire Department *
MVPD	Mount Vernon Police Department *
NPS	National Park Service *
PCN	Pioneer Center North
PROV or PGMC	Providence (Everett) Hospital *
SCFPD	Skagit County Fire Protection District
SCMO	Skagit County Medic One

SCH	Swedish Hospital Cherry Hill Campus *
SHF	Swedish Hospital First Hill Campus *
St. Joe's	Peace Health Saint Josephs Hospital *
SWFD	Sedro-Woolley Fire Department *
SWPD	Sedro-Woolley Police Department *
SVH	Skagit Valley Hospital *
UGH	Peace Health United General Hospital
UW	University of Washington Hospital *
VM	Virginia Mason Hospital *
WCMO	Whatcom County Medic One *
WSP	Washington State Patrol *

DON'T USE

~~ATF~~	Arrived to find
~~cc~~	Cubic Centimeter (forbidden by JCAHO)
~~DCAP-BTLS~~	(most RN's and MD's are not familiar with this mnemonic)
~~HBD~~	Has Been Drinking (police and dispatch may still use)
~~MS or MSO4~~	Morphine (forbidden by JCAHO)
~~MgSO4~~	Magnesium Sulfate (forbidden by JCAHO)
~~µg~~	micrograms (forbidden by JCAHO)
~~SQ~~	subcutaneous (forbidden by JCAHO)
>	greater than (forbidden by JCAHO)
<	less than (forbidden by JCAHO)

Writing Numbers and Doses

Never write a zero by itself after a decimal point (X mg), and always use a zero before a decimal point (0.X mg)

PATIENT REFERRAL FORM

Community Response and Support through the Skagit and Whatcom Fire/EMS and the Northwest Regional Council.
**** All italicized fields must be completed ****

First Responder: _____

Station/Shift: _____

Incident Number: _____ ***Incident Date:*** _____

PATIENT INFORMATION:

Patient's Name: _____ ***Age:*** _____ Date of Birth: _____ ☐Male ☐Female

Patient's Address: _____

City: _____ State: _____ Zip: _____ ***Phone #*** _____

Alternative Contact: _____ Relationship: _____ Phone # _____

MEDICAL INFORMATION:

Primary Complaint/Injury Description: _____

_____

Medical History/Medications: _____

_____

CLINICAL PREDICTOR RULE:

1. Any problems in the home with ADLs (dressing, eating, ambulating, toileting, or hygiene)? ☐**YES** ☐**NO** ☐**UNKNOWN**
2. Are the patient's medications disorganized (no clearly labeled, old, mixed, etc.)? ☐**YES** ☐**NO** ☐**UNKNOWN**
3. Has the patient used 911 in the last 30 days (prior to current call)? ☐**YES** ☐**NO** ☐**UNKNOWN**

TRANSPORT:

☐No Transport ☐Fire/EMS Transport to Hospital _____ ☐Fire/EMS Transport to PCP

☐Other: _____

REASON FOR REFERRAL:

☐Inadequate Social Support	☐Inadequate Housing	☐Behavioral Health Concerns
☐Environmental Concerns	☐Abuse or Neglect	☐Transportation Not Available
☐Substance Abuse	☐Food Insecurity	☐Safety Hazards
☐Health Management Concerns	☐Durable Medical Equip.	☐In-Home Care Options
☐Ground Level Fall	☐Other_____	

PATIENT RELEASE OF INFORMATION TO NORTHWEST REGIONAL COUNCIL:

I, _____ do hereby give permission to release information about my service call to the Northwest Regional Council's Aging & Disability Resources (ADR). I also give permission for ADR to contact me, at no charge, in order to screen for services that may be available to assist in meeting my current needs. I understand that I am not obligated to accept the services offered and can revoke my authorization at any time by calling 1-800-585-6749.

Signed: _____ ***Date:*** _____

Witness (print): _____ ***(sign):*** _____

*** **PLEASE SEND COMPLETED REFERRAL TO THE APPROPERATE NWRC OFFICE** ***

Skagit Fax: 360-428-1302 **Whatcom Fax: 360-738-2451**
adrcskagit@dshs.wa.gov **adrcwhatcom@dshs.wa.gov**

Social Service Connections Criteria

EMS providers assess patients in their homes or other environments and have the benefit of direct observations of the patient's circumstances. This, along with the medical evaluation performed, provides information that often leads to the conclusion that there are physical and/or mental health threats that may exist beyond the immediate medical issue for which EMS was originally contacted. The social service connection process enables EMS to document this information and provide it to social service liaisons that can connect the individuals to social support services that may be able to assist.

Below are situations that would necessitate a social service referral.

- **Inadequate Support System:** the individual does not have family or other support in place to support their ability to manage an illness or complete activities of daily living such at bathing, toileting, preparing meals, managing medications, cleaning, etc.
- **Inadequate or Lack of Housing:** the individual lacks a fixed, regular and adequate nighttime residence.
- **Behavioral Health Concerns:** the individual is displaying signs and/or symptoms of behavioral health problems that are either undiagnosed and for which the person is not receiving professional care, or appear as to be so severe as to interfere with activities of daily living.
- **Environmental Concerns:** the individual has living conditions that are not hygienic or present other threats such as no heat during the winter.
- **Abuse or Neglect:** there is suspicion that the individual or others in the household are victims of physical or other forms of abuse or neglect.
- **Transportation Not Available:** for various reasons the individual does not have access to transportation that would enable the person to go to the store for food, get to doctor's appointments or other necessary purposes in order to function more optimally.
- **Substance Abuse:** the individual admits to, or there is evidence that there is substance abuse leading to interference in their ability to function more optimally and complete activities of daily living.
- **Health Limitations:** the individual is suffering from a chronic or acute illness that is being inadequately managed under the present circumstances due to lack of compliance with medications or other medical interventions, lack of access to or inability to pay for ongoing medical care or supervision.
- **Food Insecurity:** the individual does not have enough food in their residence to prepare meals for that day and no plan in place to obtain the food product needed.
- **Safety Hazards:** there is evidence in the individual's residence that would indicate there is a fire, fall-risk or other type of hazard in the environment.
- **Other:** There are other circumstances that can represent a threat to the physical or mental health and well-being of the individual or interfere with activities of daily living that need to be addressed.

Social Service Connections Criteria

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- **Other:** There are other circumstances that can represent a threat to the physical or mental health and well-being of the individual or interfere with activities of daily living that need to be addressed.

Appendix 7: Detailed Intubation Reference

A7

Criteria: 1. Patient experiencing clinical failure of airway maintenance or protection (includes patients with ~GCS ≤ 8) **OR**
2. Patient experiencing clinical failure of ventilation or oxygenation unable to be managed by less invasive means **OR**
3. Anticipated clinical course is such that there is concern for the near term development of one or both of the above conditions, and/or resources or access limited (e.g., thermal airway injury, Airlift).

NOTE: This is a guideline for optimal advanced airway management. Clinical and logistical circumstances may influence options. Although listed sequentially many steps can be performed simultaneously.

PRE-INTUBATION (PREPARATION) PHASE

1. Initiate support of ABC's, including initiation of pre-oxygenation.
2. Maintain spinal precautions if clinically indicated.
3. For cardiac arrest, refer to the special circumstances section of this protocol as medication adjuncts are generally unnecessary.
4. Apply cardiac monitor, O2 monitor, obtain vitals, and prepare all necessary equipment including rescue airway device and suction device to include Ducanto suction catheter.
5. Evaluate for rapidly reversible causes. (e.g., removable foreign body, tension pneumothorax, opiate overdose, and anaphylaxis responding to medication…)
6. Evaluate airway for anticipated difficulties.
7. Prepare patient.
   A. Pre-oxygenate patient.
      - Maximal flow rates through O2 regulator should be used. Alternately use Non- rebreather at 15 Lpm AND nasal cannula at 15 Lpm.
   B. De-nitrogenate patient (to maximize oxygenated apnea time).
      - Three minutes of tidal volume breathing (normal respirations) with a high FiO2 source is generally acceptable for most patients.
      - Cooperative patients can be asked to take 8 vital capacity breaths (maximal exhalation followed by maximal inhalation). This method can generally reduce pre-oxygenation times by about 60 seconds.
   C. Optimize initial patient positioning (for pre-oxygenation and de-nitrogenation):
      - If initially found supine and clinically possible, the (approximately) twenty-thirty degree heads up position is optimal for pre-oxygenation over the supine position.
      - If patient is on a backboard reverse Trendelenberg position can be used.
      - Conscious and alert patients can remain sitting in an upright position.
   D. Re-evaluate airway for anticipated difficulties.
      - Look in mouth (e.g., dentures - leave dentures in place for pre-oxygenation phase if BVM or initial NiPPV is required as dentures facilitate proper mask seal. Remove dentures just prior to laryngoscopy.)
   E. Apply and prepare monitoring (includes preparing for ETCO2 monitoring).
   F. Establish reliable access (IV/IO).
      - Maximize resuscitation efforts such as fluid administration if patient is hemodynamically unstable as the transition to positive pressure ventilation may initially worsen hemodynamics.
        - Consider **push-dose epinephrine** 10mcg IV in setting of ongoing hypotension/inadequate perfusion. (May repeat PRN.)
   G. When possible, set up for apneic oxygenation.
      - Apneic oxygenation using a nasal cannula at 15 lpm or greater during apnea phase can prevent desaturation. Apply nasal cannula oxygen during pre-oxygenation phase, if high flow rate not tolerated, increase the flow rate during apnea phase.
   H. Finalize all equipment preparation and rescue airway materials.
   I. Verbalize plan with partner/team for airway and ventilation management.
   J. Verbalize failed airway plan.

K. Establish Cricon status using Cricon^2 model (+/- Mark or Inject) - See **Table 5**.

8. If patient is resistant to pre-intubation preparations (i.e., delirium or agitation) initiate delayed sequence intubation (DSI).
   A. Administer dissociative dose of **Ketamine** 1mg/kg up to 50mg slow IV push and repeat via slow IV push as needed to achieve conditions that permit airway management preparations.

9. Evaluate effectiveness of pre-oxygenation prior to medication administration of intubation phase.
   A. Goal is O2 sat of at least >93%.
   B. If O2 sat ≤ 93 % after initial attempt at oxygenation with high flow non-rebreather mask then initiate Non-invasive Positive Pressure Ventilation (NiPPV) such as CPAP/BiPAP to maximize oxygenation for at least 3 minutes prior to administration of paralytic. Alternately use BVM with PEEP valve AND nasal cannula at 15 Lpm.
   C. Be aware: oximetry generally reflects a delayed value of central oxygenation by 30-120 seconds, depending on circulatory status.

INTUBATION PHASE

1. Administer induction (sedative) medication.
   A. **Ketamine** 1-2mg/kg up to 500mg IV push.
      - If ketamines was used for DSI ***and*** patient is adequately disassociated, a repeat, separate induction is not required. However, a repeat induction dose *is* indicated if there is clinical concern for need further sedation/analgesia prior to intubation..
      - Ketamine is not recommended for patients with severe hypertension (e.g, isolated head bleed with severe HTN).
      - Ketamine is the preferred agent for the hypotensive patient.
      - Alternate: **Etomidate** 0.3mg/kg IV
2. If no contra-indications are present, administer paralytic (neuromuscular blocking agent).
   A. Succinylcholine (depolarizing agent) 1.5-2mg/kg IV.
      - In the setting of severe hypotension or pediatric patient use 2mg/kg IV.
   B. First-line alternate option (non-depolarizing agent): **Rocuronium** 1-1.2 mg/kg IV.
      - NOTE: If using rocuronium or vecuronium as paralytic, the pharmacodynamics are such that administration of the paralytic agent *first*, followed by the induction agent *second.*
   C. Second-line alternate option (non-depolarizing agent): **Vecuronium** 0.15-0.3mg/kg IV.
3. Finalize patient position for optimal intubating conditions.
   - Maximize upper airway dimensions and facilitate direct laryngoscopy by positioning of the patient with their external auditory meatus on the same horizontal plane as their sternal notch.
   - The face plane of the patient should be parallel to the ceiling.
   - Raise the torso and head 20-30 degrees or use reverse Trendelenberg.
4. Assess need for ventilations during medication onset (apnea phase).
   - In patients at low risk for desaturation, manual ventilation during the onset phase of muscle relaxants (paralysis) is not necessary or recommended.
   - Ventilations may be required in the hypoxemic, high risk patient.
   - When required, ventilations should be given slowly (over 1-2 seconds), using a low volume (6-7 mL/kg), and at a low rate (6-8 ventilations per minute). A PEEP valve recommended to be used on BVM for hypoxic patients.
   - Whenever possible, perform apneic oxygenation with nasal cannula at 15 lpm or higher to extend apnea time without desaturation.
5. Perform Intubation.
   A. Video Laryngoscopy (VL) to be used for laryngoscopies.
      - The intubation should be recorded for dedicated QA/QI purposes.
      - Consider brief period of suctioning prior to insertion of VL to remove secretions and improve VL view.
   B. Consider external laryngeal manipulation to maximize view as needed.
      - Once optimal positioning identified, can hand off to partner to maintain external laryngeal manipulation.
   C. Apneic oxygenation is recommended when feasible.
   D. Laryngoscopy attempt should be aborted if hypoxia occurs during attempt.
      - BVM with airway adjuncts (oral/nasal airway) and PEEP valve is recommended.
      - A supraglottic airway is also an alternative.

E. The number of attempts at endotracheal intubation should be no more than 2 for a single provider if an alternate provider is available.
F. An Eschmann stylet (gum elastic bougie) is recommended if difficult airway anticipated or encountered, and is also appropriate for the initial laryngoscopy.
G. If a third laryngoscopy is required, it should be performed by an experienced provider.
H. After 3 unsuccessful attempts at endotracheal intubation, move rapidly to the placement of a supraglottic rescue airway or quality BVM ventilation.
I. Should rescue techniques be ineffective at providing oxygenation or ventilation move to surgical cricothyrotomy or transtracheal jet ventilation.

6. Confirm tube placement.
   A. Visualization
      - Record ET placement using video laryngoscope for dedicated QI/QA purposes.
   B. Immediately perform ETCO2 monitoring with waveform capnography.
      - Use of the suction esophageal detecting device or esophageal bulb detector is indicated only in the setting of cardiac arrest where the endotracheal tube (ET) is suspected to be in the trachea clinically but there is an absence of an ETCO2 waveform.
   C. Auscultate chest and epigastrium.
      - Evaluate for bilateral and equal breath sounds to confirm depth of placement and absence of gastric sounds.
   D. Re-assess oxygenation status.

It is required that the intubated and supraglottic airway be monitored with continuous waveform capnography and pulse oximetry. (Includes surgical airways)

POST-INTUBATION PHASE

1. Secure Endotracheal Tube.
   A. Monitor (and record) depth of insertion and landmark (e.g. - "22cm at teeth")
      - Average depth for adult female is 21cm, adult male is 23cm - adjust for patient size .
   B. If the patient is pediatric (age less than 12), even in the absence of trauma, routine use of a C-collar is indicated to reduce movement of the neck and decrease likelihood of accidental extubation.
   C. Consider placing a C-collar for *all* patients to decrease likelihood of accidental extubation.

2. Reassess Patient.
   A. Continuous oximetry, telemetry, and ETCO2 monitoring are mandatory.
      - Evaluate quality and nature of ETCO2 waveform (See Table 6).
   B. Recheck blood pressure and heart rate immediately following intubation.
   C. Recheck and document vitals at least every 5 minutes on an intubated patient or if clinical change in condition occurs.
      - Hypotension can frequently occur post-intubation with the transition to positive pressure ventilation and the resultant potential impairment on cardiac preload.
      - Be prepared to bolus patients with normal saline.
      - In the meta-stable or critically ill patient who is not yet hypotensive but who is at high risk for developing hypotension and who is not in florid, hypoxic pulmonary edema, consider empiric crystalloid bolus of 500ml normal saline. Note: current trauma recommendations are to minimize crystalloid use in setting of hemorrhage.
      - In the patient who is hypotensive pre-intubation, administer 500ml normal saline bolus and immediately re-evaluate need for additional boluses to obtain minimum goal of SBP >90 and/or Mean Arterial Pressure (MAP) of > 65.
   D. Carefully re-evaluate post intubation ventilation.
      - Aggressive post-intubation hyperventilation should be avoided. Use an external auditory mechanism to assist calculating ventilation rate (e.g. - "1 Mississippi" or physical metronome).
      - General goal is to maintain O2 sat >90% and ETCO2 ~35-45 mmHg
      - Rapid hyperventilation is not recommended even in the setting of initial hypercarbia, and can be detrimental.
      - In the setting of reactive airways disease (asthma, COPD), air trapping is common as the small airways restrict effective exhalation. This can lead to "breath stacking" (auto-PEEP or intrinsic PEEP) and can result in severe barotrauma,

ineffective gas exchange, and/or hypotension due to high intra-thoracic pressures. In the reactive airway disease patient, monitor for decreased BVM compliance, use a slow ventilatory rate, and allow time for exhalation.

- The patient population that requires hyperventilation post-intubation is the patient with a primary metabolic acidosis, for which the severe tachypnea is the result of the patient's compensatory mechanism to drive off CO2 (induced hypocapnia). These patients can be very difficult to determine accurately pre-hospitally. Think of severe metabolic acidosis in the setting of suspected DKA and or known ethylene glycol ingestions. In this isolated setting of suspected primary metabolic acidosis driving tachypnea the goal is hyperventilation with a goal ETCO is 20. If possible, online medical control consultation is recommended if this condition is suspected.

E. Protect from hypothermia.

F. If the clinical scenario permits, elevate the head of bed to at least 20-30 degrees in order to both improve lung mechanics and reduce the risk aspiration. Current data suggest this positioning reduces the frequency of ventilator associated pneumonia (VAP).

G. Consider placement of gastric tube

H. If there is concern for potential displacement of endotracheal tube, re-confirm with video laryngoscope. Record visualization for dedicated QA/QI review purposes.

3. Evaluate need for post-intubation analgesia and sedation.

A. Ketamine 1-2 mg/kg slow IV push every 30 minutes as needed.

- Appropriate for use in the hemodynamically unstable patient.
- If time permits *and* patient hemodynamically stable, consider midazolam 0.05mg/kg up to 10mg IV to reduce probability of an emergence reaction, particularly in teenagers and adults.
- May repeat up to every 15-30 minutes as needed.
- NOTE: If ketamine is used for induction sedation, a repeat dose immediately following successful intubation is not indicated, but a repeat dose can still be given after 15-30 minutes after induction dose.
- Fentanyl 2mcg/kg IV up to every 5 minutes may also be given in setting of suspected severe pain.

B. Fentanyl 1-2 mcg/kg IV up to every 5 minutes is an alternative and/or adjunct to ketamine.

- Appropriate for use in the hemodynamically unstable patient.
- Recommended in the patient with an apparent painful condition (e.g., trauma).
- May repeat the 1-2 mcg/kg doses every 5 minutes as needed.

C. Midazolam 0.05mg/kg IV up to 10mg is a first line choice in the setting of seizures.

- May be repeated in that setting up to every 3-5 minutes as needed.
- Midazolam dosage should be reduced and/or avoided for the severely hypotensive, unstable patient unless seizures are present.

4. Evaluate need for post-intubation paralysis.

A. Administration of a post-intubation paralytic is indicated when needed for patient safety, monitoring, or procedures.

B. Perform a neurologic exam prior to paralytic administration.

C. Repeat doses of succinylcholine have been associated with severe bradycardia. Therefore succinylcholine is not recommended for post-intubation paralysis, especially if used for induction for the procedure itself.

D. Ensure adequate analgesia/sedation prior to post intubation paralysis.

E. Rocuronium 1mg/kg IV.

F. Alternate: **Vecuronium** 0.1mg/kg up to 10mg IV (Note: lower dose than for intubation)

G. Elevation in HR and BP following administration of post-intubation paralytics *can* indicate inadequate sedation. Pay careful attention to heart rate and blood pressure.

Special Circumstances

1. Special Circumstances - Cardiac Arrest

A. Key Points:
- The role of airway and ventilatory management during CPR is controversial and not well understood.
- Current evidence indicates that high-quality CPR is measured by maintaining a high compression fraction, satisfactory compression depth, appropriate compression rate, and the limiting of peri-shock pauses—and is essential to optimizing survival with good neurological outcome.
- Studies are conflicted, but some observational data describe an association, but not proven causation, between advanced airway management and poorer outcomes. The question arises as to whether the choice of the type of airway utilized during resuscitation—i.e., BVM vs. advanced airway—is an independent predictor of survival or whether the airway choice is associated with other factors that may affect the chance for survival.

B. The current recommended approach to the cardiac arrest patient involves a change in priorities: Circulation, Airway, Breathing (instead of Airway, Breathing, Circulation).

C. The first priority in the management of the cardiac arrest patient is the initiation of chest compressions and quality CPR.

D. The first attempt at intubation should be made with CPR ongoing (no cessation of compressions) with goal of minimizing interruptions to CPR.
- Use of the bougie (Eschmann Stylet) is highly recommended .

E. Primary use of a supgraglottic airway is an appropriate approach to managing the airway and ventilation for the patient in cardiac arrest.

F. ETCO2 monitoring is still mandatory in the setting of cardiac arrest. If there is an initial absence of detectable ETCO2 and the ET tube is thought to be properly placed in the trachea, esophageal suction device confirmation should be employed and documented.
- Consider ETCO2 of <10mm Hg a marker of potentially inadequate quality CPR.

2. Special Circumstances - The Pediatric Airway

In general the overall procedure and approach to intubation in children is the same as for adults with a few important differences outlined as follows:

A. Preparation
- Use the Broselow tape and/or similar resuscitation aid to help calculate drug dosages and choose equipment sizes.
- Atropine (0.02 mg/kg IV with a minimum dose of 0.1mg IV) should be prepared.

B. Positioning
- Due to relatively larger head in proportion to body, support underneath *shoulders* to create proper alignment is often needed.

C. Pre-oxygenation and de-nitrogenation
- Additional emphasis is warranted as children desaturate more rapidly than adults.

D. Pretreatment
- Routine pre-treatment with atropine is **no longer required** but can be administered. **Atropine** (0.02 mg/kg IV with a minimum dose of 0.1mg IV) should be available and administered if bradycardia occurs.

E. Paralysis with Induction
- Choice of medications is same as for adults.
- Succinylcholine should be dosed at 2 mg/kg IV (not 1.5 mg/kg).

F. Consider supraglottic airway vs. endotracheal tube
- Management and transport with ventilation via supraglottic airway placement is a recommended alternative to endotracheal intubation particularly in children < 2 years old. See **Special Circumstances - Rapid Sequence Airway/ Drug Assisted Airway Management.**

G. Tube placement confirmation*
- Use pediatric compatible ETCO2 detector circuit for pediatric patients.

- NOTE: Pediatric ETCO2 colorimetric devices are required for patients <15kg (too much dead space in adult circuit for accurate readings), while an adult colorimetric device works for those >15kg.

H. Secure Endotracheal Tube
- Use C-collar to minimize neck movement and reduce probability of tube dislodgment.

NOTES:
- Seattle Children's Hospital recommends using cuffed ETT tubes for all pediatric patients except neonates (this would mean pink (6-7kg) and above on the Broselow chart). They recommend using the *same size* ETT as the uncuffed tube and inflating the cuff *only* if there is an air leak, and *only* with enough air to stop the leak. (Formal manometry of cuff insufflation pressure can be deferred to the hospital/CCU environment.)
- Management and transport with bag valve mask ventilation alone is also an accepted alternative to endotracheal intubation, particularly in children <2 years old.
- **Caution:** Intubation is **not recommended** for cases of suspected epiglottitis. Bag valve mask ventilation is recommended for primary management of ventilation.

See chart on next page for a summary of the clinically relevant anatomical differences with the pediatric airway.

Anatomical Differences between Adults and Children (Adapted from Walls, p281)

Anatomy	Clinical Significance
Large tongue occupies proportionally larger volume of the oral cavity, and epiglottis is proportionally larger	Straight blade often preferred over curved to push distensible anatomy out of the way
High tracheal opening: C-1 in infancy vs C-3 to C-4 at age ~7, C-5 to C-6 in the adult	High anterior airway position of the glottic opening compared with that in adults
Large occiput that may cause flexion of the airway, large tongue that easily collapses against the posterior pharynx	Sniffing position is preferred. The large occiput actually elevates the head into the sniffing position in most infants and children. A towel may be required under the shoulders to elevate torso relative to head in small
Cricoid ring is the narrowest portion of the trachea as compared with the vocal cords in the adult	Uncuffed tubes can provide adequate seal because they fit snugly at the level of the cricoid ring
Consistent anatomical variations with age with fewer abnormal variations related to body habitus, arthritis, and/	Younger than 2 years, high anterior; Age 2-9, transition period and variable, Ages > 8, small adult
Large tonsils and adenoids may bleed; more acute angle between epiglottis and laryngeal opening results in	Blind nasotracheal intubation not indicated in children
Small cricothyroid membrane landmark, surgical cricothyrotomy impossible in infants and small children	Needle cricothyrotomy recommended and the landmark is the anterior surface of the trachea, not the cricoid
Shorter endotracheal tube can lead to susceptibility for dislodgment from patient movement	Consider use of C-collar to help minimize potential movement of neck with attendant risk of ET

3. Special Circumstances - Trauma

There are a few important components of managing the airway of a trauma patient:

A. Preparation
- In the setting of patients requiring C-spine immobilization, a dedicated individual should remove the C-collar and maintain manual stabilization while the intubation is being performed. It is not possible or appropriate to attempt intubation while the patient is in a C-collar.
- Assess for injuries to the airway, neck, or chest that may complicate intubation or patient care.

- Maximize resuscitation efforts during preparation phase of the hemodynamically unstable trauma patient to minimize risk of decompensation during transition to positive pressure ventilation. Attempt to manage/control hemorrhage (e.g, tourniquet, pelvic binder) prior to intubation attempt where feasible. Current guidelines recommending minimizing crystalloid use in hemorrhagic trauma where possible. See Trauma protocols Consider reducing induction dose of ketamine or etomidate, while maximizing dose of succinylcholine or rocuronium.
- Careful attention to maximizing pre-oxygenation and attempting to prevent and/or address hypotension are critical, as *a single episode of either hypoxia or hypotension has a significant adverse effect on prognosis* for the head injured patient. In the setting of suspected head injury, crystalloid use is appropriate.

B. Induction Agent choice
- Ketamine is the preferred induction agent in the hemodynamically unstable (hypotensive) trauma patient.

C. Tube Placement confirmation
- Careful attention to tube depth, auscultated breath sounds, bag valve compliance, and patient hemodynamics are indicated in the patient with suspected chest trauma. Monitor carefully for tension pneumothorax.

4. Special Circumstances - Proximity to Hospital

In the instance of immediate proximity (~ few minutes) to the hospital it is a reasonable option to maximize preparation components but consider performing the intubation itself at in the emergency department. Notify hospital ASAP whenever possible.

5. Special Circumstances - Severe Bronchospasm (e.g. Asthma/Severe COPD)

Severe bronchospastic illnesses such as asthma and COPD are characterized by small airway disease and are not relieved or improved by the act of intubation itself. While the process of direct intubation itself is not altered by the presence of asthma and/or COPD, extreme care and attention are required for the mechanical ventilation of such patients. Ventilated air can enter the lungs with ventilation, but can not easily or rapidly escape - and this leads to "air-trapping" and "Auto-PEEP". Hyperventilation should be carefully avoided due to this risk. Additional time to permit a slower exhalation is required, otherwise hyperinflation can occur. Hyperinflation can result in direct barotrauma, or IVC compression leading to hypotension. Monitor BVM compliance carefully. Additional extrinsic PEEP should be avoided in the severely bronchospastic patient. In severe cases, briefly disconnecting the BVM and manually compressing the chest intermittent can improve exhalation and improve lung compliance. In the severe asthmatic the focus is on maintaining adequate oxygenation first, even at the cost of hypercapnia ("permissive hypercapnia"). Provide aggressive paralysis, analgesia, and sedation in this setting.

6. Special Circumstances - Anticipated Difficult Airway with low likelihood of success

It is appropriate to defer the administration of a paralytic for an attempt at intubation where successful intubation is anticipated to be improbable. In this setting alternate means to maintain oxygenation and ventilation should be attempted first.

- The critical decision making components regarding management are dependent on the *ability to maintain oxygenation and ventilation.*
- If initial alternate means (such as BVM, NiPPV, or supraglottic airway) are not adequately maintaining oxygenation or ventilation, it is reasonable to use paralytics even in the setting of anticipated difficulties. Simultaneously prepare for and anticipate use of a planned failed airway technique, most commonly a surgical airway and/or transtracheal jet ventilation.
- A delayed or rapid sequence airway (attempt at placement of a supraglottic device following induction and paralytic administration) is an appropriate rescue technique.

7. Special Circumstances - The contaminated airway

When the hypopharynx and/or airway is contaminated (blood or emesis being the most common), visualization and successful intubation become more difficult. Several techniques can be utilized to help manage the contaminated airway:

- *Technique 1:* The Suction Assisted Laryngoscopy and Airway Decontamination (SALAD) approach can be utilized to improve laryngoscopy. Holding the laryngoscope with the left hand and the suction catheter with an overhand grip in the right hand (*as if* holding a dagger) you use the suction catheter to open the mouth (no scissor technique with the finger) and suction out the hypopharynx, then still holding suction like a dagger push out and up to open the mouth and be able to insert the laryngoscope. *Leading with the suction as you advance* so as to keep the optics and light of the laryngoscope clear. You will then *leave the suction catheter in the tip of the esophagus* to continue suctioning as you intubate. However, you will not be able to leave the suction catheter on the right side of the mouth, so you will need to move it to the left side. This can be done either by pushing the laryngoscope forward and passing the suction under the laryngoscope, or by removing suction and replacing on the *left* side of the laryngoscope and advancing into the tip of the esophagus. Once the tip of the catheter is in the esophagus it can *be left in place*

and not fall out while intubation is being performed. If possible suction the endotracheal tube before ventilation. Remove suction catheter only after intubation complete and balloon inflated (or leave suction in place).

- *Technique 2:* Suction Assisted Airway Catheter insertion (Note: This technique is *not possible* with a traditional Yankauer suction catheter - it requires either a DuCanto or Hi-D suction catheter, both of which are large enough in diameter to permit a bougie (ETI, Eschmann Stylet) to be placed thru the suction catheter) Start with the SALAD technique described above. If possible place suction catheter into larynx itself, then disconnect the suction catheter and place bougie (ETI) through the suction catheter in and intubate the trachea. Remove the suction catheter over the ETI, reattach the suction catheter and place on left side into tip of esophagus again (same as original SALAD technique) Place endotracheal tube over the ETI into the trachea and inflate cuff. . If possible suction the endotracheal tube before ventilation.
- *Technique 3*: *Esophageal ET tube placement:* For high volume airway contaminant where above techniques are not working. Start with SALAD technique (place tip of suction catheter in to esophagus, keep/place suction catheter on left side of laryngoscope). If suction is overwhelmed by contaminant, or suction stops working, then place the ET tube purposely into the esophagus, remove the stylette, and inflate the cuff - allow the contaminant to come up through the esophageal ET tube and freeing up the airway. Move the esophageal tracheal tube to the left side of the laryngoscope, and now complete the intubation with a second endotracheal tube.

NOTE: For an excellent visual reference to the above techniques, view the video by Dr. Jim DuCanto at:
https://vimeo.com/158978573

8. Rapid Sequence Airway/Drug Assisted Airway Management

Rapid Sequence Airway (RSA) is a particular form of Drug Assisted Airway Management (DAAM) where induction agents (+/- paralytic) are used to facilitate placement of a supraglottic airway instead of an endotracheal tube. The technique was initially referred to as RSA following an initial description of the technique by Dr. Braude. The use of RSA in Skagit County began during the COVID pandemic. The primary advantage of RSA is the relative speed of the procedure as compared to endotracheal tube placement. The extra time needed to set up and perform endotracheal tube placement may lead to more desaturation, hypoventilation, and/or hemodynamic instability. For example, studies using experienced personnel and prepared equipment in a simulated trauma patient scenario demonstrated that RSA was performed and average of 145 seconds faster than endotracheal tube placement, and with less peri-procedure hypoxia.

- At the discretion of the clinical provider, RSA remains an acceptable option for any patient for airway management in Skagit County.
- RSA may have advantages over initial endotracheal tube placement in specific circumstances:
    A. Patients with certain predicted anatomic challenges/predicted difficult airway
    B. Patients whose physiology can not be fully optimized prior to airway insertion
    C. Patients for whom the relative speed of RSA vs endotracheal tube placement is clinically judged to confer higher likelihood of patient benefit and/or lower risk of patient decompensation
    D. Patients for who require minimization of aerosolization and exposure time to the provider (e.g., concern for highly infectious agent)
    E. Pediatric Patients
- For RSA, induction agent (+/- paralytic) may be utilized for the placement of the supraglottic airway. In general, for the paramedic provider, use of the paralytic is generally recommended to maximize success as the procedure is generally being performed due to a perceived clinical need for expediency and success. There are no prehospital studies directly comparing sedation only to induction + paralytic, and very limited studies in the anesthesia setting. The anesthesia studies, limited as they are, suggest a benefit to the paralytic."
- Except for the components specific to the endotracheal tube itself, *all other components of the procedure as outlined for endotracheal intubation apply to RSA*.
- NOTE: While the use of an induction only agent for placement of a supraglottic airway (RSA) has been demonstrated as appropriate, *outside of the cardiac arrest management, induction only placement of endotracheal tube is not appropriate due to high complication rates*.'
- NOTE: RSA is only indicated when using a second generation or later supgralottic airway device (such as the i-gel). RSA is not appropriate for King Tube or Combitube SGA devices, devices that are no longer in use in Skagit County.

9. Removal/Replacement of a Previously Placed Supraglottic Airway

Removal of a previously placed supraglottic airway (SGA) and replacement with and endotracheal tube is *not* a an automatic requirement (or even recommendation) for pre-hospital airway management

- Clinically evaluate and document assessment of a supraglottic airway per protocol. Include lung sounds, chest ride, end-tidal CO2, and pulse oximetry
- If adequate ventilation/oxygenation is being provided by SGA, there is no need to remove and replace in the field
- If a clinician determines that a SGA should be removed and endotracheal intubation or alternate airway performed, document reason for SGA removal.

Table 1: Intubation Medications

DRUG	Normotensive Dose	Normotensive 70 kg Patient
Ketamine	1-2mg/kg	140mg
Etomidate	0.3mg/kg	20mg
Succinylcholine	1.5-2mg/kg	140mg
Rocuronium	1-1.2mg/kg	70mg
Vecuronium	0.15-0.3mg/kg	20mg

Table 2: Comparison of Paralytics

DRUG	Class	Time to intubation paralysis (sec)	Duration (min)	Pregnancy Class	Drawbacks
Succinylcholine	depolarizing	45	6-10	C	multiple contraindications, severe bradycardia if repeated, hyperkalemia, malignant hyperthermia
Rocuronium	non-depolarizing	60	40-60	B	long duration allergy (rare)
Vecuronium	non-depolarizing	75-90	60-75	C	slow onset, long duration allergy (rare)

Table 3: Sequence for Pre-oxygenation and Prevention of Desaturation

Sequence of Pre-oxygenation and Prevention of Desaturation
(Assuming 2 oxygen regulators*)

Pre-oxygenation Period
Position the patient in a semi-recumbent position (~20-30°) or in reverse Trendelenberg. Position the patient's head in the ear-to-sternal-notch position using padding if necessary
Place a nasal cannula in the patient's nares. Do not hook the the nasal cannula to oxygen regulator.
Place the patient on a non-rebreather mask at the maximal flow allowed by the regulator (at least 15 lpm, but many allow a much greater uncalibrated flow).
If patient is not saturating >90%, remove face mask and switch to non-invasive CPAP by using ventilator, non-invasive ventilation machine, commercial CPAP device, or BVM with PEEP valve attached. Titrate between 5-15cm H_20 of PEEP to achieve an oxygen saturation >98%. Consider this step in patients saturating 91-95%.
Allow patient to breath at tidal volume for 3 minutes or ask the patine to perform 8 maximal exhalations and inhalations.
Attache a BVM to oxygen regulator and set it to maximal flow (at least 15 lpm). If the patient required CPAP for pre-oxygenation, attach a PEEP valve to the BVM set at the patient's current CPAP level.

Apneic Period
Push sedative and paralytic (preferably rocuronium**, if the patient is at risk for rapid desaturation).
Detach face mask form the oxygen regulator and attach the nasal cannula. Drop the flow rate to 15 lpm.
Remove the facemask from the patient.
Perform a jaw thrust to maintain pharyngeal patency.
If the patient is high risk (required CPAP for pre-oxygenation), consider leaving on CPAP during the apneic period or providing 4-6 ventilations with the BVM with a PEEP valve attached. Maintain a two hand mask seal during the entire apneic period to maintain the CPAP.

Intubation Period
Leave the nasal cannula on throughout the airway management period to maintain apneic oxygenation.

*If 3 regulators are available, attach reservoir face mask, BVM, and nasal cannula to them. If only one regulator is available, consider using a stand-alone supplemental oxygen tank to offer a second source of oxygen.
**Rocuronium recommended by article authors, but for Skagit County EMS succinylcholine or rocuronium may be used.

Table 4: Risk Categorization of Patients During Pre-Oxygenation

Risk categorization of patients during preoxygenation.*

Risk Category, Based on Pulse Oximetry While Receiving High-Flow Oxygen	Preoxygenation Period (3 Minutes)	Onset of Muscle Relaxation (≈60 Seconds)	Apneic Period During Tracheal Intubation (Variable Duration, Depending on Airway Difficulty; Ideally <30 Seconds)
Low risk, SpO_2 96%–100%	Nonrebreather mask with maximal oxygen flow rate	Nonrebreather mask and nasal oxygen at 15 L/min	Nasal oxygen at 15 L/min
High risk, SpO_2 91%–95%	Nonrebreather mask or CPAP or bag-valve-mask device with PEEP	Nonrebreather mask, CPAP, or bag-valve-mask device with PEEP and nasal oxygen at 15 L/min	Nasal oxygen at 15 L/min
Hypoxemic, SpO_2 90% or less	CPAP or bag-valve-mask device with PEEP	CPAP or bag-valve-mask device with PEEP and nasal oxygen at 15 L/min	Nasal oxygen at 15 L/min

* Risk categories are based on patient's initial response to high-flow oxygen through a tightly fitting nonrebreather mask. Patients who are already hypoxemic exhibit shunt physiology and are prone to rapid desaturation during the peri-intubation. Patients with saturations of 91% to 95% have values close to the precipice of the steep portion of the oxyhemoglobin dissociation curve and should be considered high risk. Patients with saturations greater than or equal to 96% are at low risk for peri-intubation desaturation. Patients in all risk categories should receive preoxygenation in a head-elevated position (or reverse-Trendelenburg if there is a risk of spine injury).

Table 5: Cricon[2] status (adapted from Weingart)

Level One: Ready (All Patients)	Discuss/Feel/See Kit
Level Two: Set (Difficult Airway patient)	Mark/Kit at bedside
Level Three: Go (crashing/hypoxemic patient)	Prep, Open, and Set Kit

- Evaluate all patients undergoing laryngoscopy for potential surgical airway. Estimate risk. Discuss plan for surgical airway as backup with partners/team, feel the anatomy and landmarks, and ensure surgical airway kit is available for *all* patients.
- For the anticipated difficult airway, have surgical kit visible and on hand, and consider marking the neck with a pen at site of potential cricothyrotomy, or even injecting local anesthetic if available.
- For highest risk patient, have the neck prepped and surgical airway kit open prior initiation of laryngoscopy attempt.

Table 6: End Tidal CO2 Waveform Analysis

Sudden loss of waveform

- ET tube disconnected, dislodged, kinked or obstructed
- Loss of circulatory function

Decreasing $EtCO_2$

- ET tube cuff leak
- ET tube in hypopharynx
- Partial obstruction

CPR Assessment

- Attempt to maintain minimum of 10mmHg

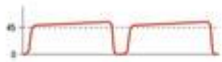
Sudden increase in $EtCO_2$

- Return of spontaneous circulation (ROSC)

Bronchospasm ("Shark-fin" appearance)

- Asthma
- COPD

Hypoventilation



Hyperventilation

Decreased $EtCO_2$

- Apnea
- Sedation

Sudden loss of waveform

- ET tube disconnected, dislodged, kinked or obstructed
- Loss of circulatory function

Decreasing $EtCO_2$

- ET tube cuff leak
- ET tube in hypopharynx
- Partial obstruction

CPR Assessment

- Attempt to maintain minimum of 10mmHg

Sudden increase in $EtCO_2$

- Return of spontaneous circulation (ROSC)

Bronchospasm ("Shark-fin" appearance)

- Asthma
- COPD

Hypoventilation

Hyperventilation

Decreased $EtCO_2$

- Apnea
- Sedation

EDUCATIONAL NOTES

Main Sources:

*Manual of Emergency Airway Managemen*t 4th Edition, Ron Walls, et. al.

The Weingart and Levitan Article on Pre-Oxygenation is available free in PDF format at:
http://www.annemergmed.com/article/S0196-0644(11)01667-2/fulltext

A discussion from *Manual of Emergency Airway Managemen*t 4th Edition, Ron Walls, et. al:

Which induction agents are the most hemodynamically stable when used for RSI?

In RSI a predetermined dose of an induction agent is given at the same time as a muscle relaxant. The physician makes his or her best estimation of the dose of induction agent required and the dose is not titrated. The physician aims to give a large enough dose of induction agent to prevent awareness, while minimizing risk of hemodynamic collapse. Although virtually all induction agents could be used for RSI, not all are appropriate. We want to avoid both patient awareness and hemodynamic compromise. The ideal induction agent in RSI will have rapid and reliable onset and few adverse (particularly hemodynamic) effects.

Etomidate results in the least variation in blood pressure and heart rate when compared with the other agents used for induction of anesthesia. This cardiovascular stability is seen in both children and adults, including the elderly. The drug is delivered to the CNS in a timely and dependable manner. It is for these reasons that etomidate remains the standard choice for RSI.

Propofol is a very popular induction agent for elective procedures, when the induction dose is titrated against the patient response. It is a poor choice of induction agent in hemodynamically compromised patients, who run the risk of further hemodynamic deterioration coupled with awareness during intubation.

Benzodiazepines are generally not suitable as induction agent in RSI. Midazlolam is 95% protein down. Both midazlolam and lorazepam require closure of an imidazole ring to have enough lipid solubility to cross the blood brain barrier, which takes as long as 10 minutes. Some authors have referred to benzodiazepines as being "almost useless" for RSI.

Ketamine offer several advantages as an induction agent in hemodynamically compromised patients. Ketamine is a sympathomimetic medication, increasing heart rate, arterial pressure, and cardiac output in animal models. Data on the use of ketamine as an induction agent in RSI are sparse. Conversely, there is significant clinical experience using ketamine for RSI, although much of it is in the resource-poor developing world or in warfare, neither of which lend themselves to clinical trials. In 2009 Jabre, et. al. published the largest clinical trial date involving ketamine 2 mg per kilogram for RSI in adults, and comparing it to etomidate 0.3 mg per kilogram, both with succinylcholine as the neuromuscular blocking agent. There were no significant hemodynamic differences between the two groups. The study concluded that ketamine is a safe alternative to etomidate for endotracheal intubation in critically ill patients, and should be considered in those with sepsis.

In the hemodynamically unstable patient ketamine or etomidate offer the most reliable method of rapidly achieving unconsciousness while limiting further hemodynamic compromise.

What is the risk of ketamine in the brain injured patient?

For many years, the use of ketamine was thought to be contra-indicated in brain injured patients because of the risk of increasing Intracranial pressure (ICP) through increased cerebral blood flow (CBF). Subsequent animal models and later clinical data have refuted this earlier hypothesis.

In an injured brain, CPP = MAP - ICP where CPP is the cerebral perfusion pressure, MAP is the mean arterial pressure, and ICP is the intracranial pressure. Following brain injury, there is a loss of cerebral auto-regulation and cerebral blood flow is largely dependent on cerebral perfusion pressure, which is in turn largely dependent on mean arterial pressure. Consequently, agents such as etomidate and ketamine that maintain mean arterial pressure will maintain cerebral blood flow. This is particularly true in patients with poly-trauma where traumatic brain injury and shock may coexist.

The dangers of hypotension on the injured brain are well known, and any mechanism by which hypotension can be avoided in traumatic brain injury should be encouraged. In ventilated patients with controlled ventilation, ketamine does not increase ICP. In addition to the neuro-protective effects of maintaining cerebral blood flow through cerebral perfusion pressure, ketamine has also been found to have other neuro-protective properties. A comprehensive review of the available experimental and clinical evidence for the neuro-protective properties of ketamine was recently published. Animal models show that ketamine inhibits the NMDA receptor activation, reduces neuronal apoptosis, and reduces the systemic inflammatory response to tissue injury. In the last few years, increasing clinical evidence of the safety of ketamine in brain injured patients has emerged. It is becoming increasingly clear

that ketamine is likely not dangerous in brain injured patients, and instead may confer advantages over other agents. Most clinical data come from neurosurgical units with invasive intracranial pressure monitoring using ketamine as a sedative agent.

Very little of these data have been generated using ketamine as an induction agent in the emergency department setting. They are not yet sufficient data to support ketamine induction for RSI in all brain injured patients. If the brain injured patient is also hypotensive, then ketamine is an excellent choice.

What is the best induction agent for patients with severe bronchospasm?

Most of the data on the use of induction agents and asthma comes from the anesthesia literature in elective surgical cases, from animal models, and from experience using ketamine as a sedating agent in intubated asthmatic patients. Although ketamine is widely accepted and recommended as the induction agent of choice for severe asthma, the data on ketamine use for induction in RSI for asthmatic patients in the emergency department are sparse. Etomidate caused a mild increase in airway resistance in a very small study of non-asthmatic intubated patients. Midazolam data are lacking. Ketamine and propofol both cause bronchodilation in asthmatic patients. In the emergency department, severe bronchospasm raises concerns of significantly decreased venous return and cardiovascular collapse, especially following intubation. While propofol may have some bronchodilatory properties, this possible benefit is outweighed in the unstable asthmatic patient by risks of hemodynamic instability, making ketamine the best choice for induction agent in severe bronchospasm. Etomidate also is a good choice as an induction agent in severe bronchospasm because its excellent hemodynamic stability. Following intubation, either propofol or ketamine are excellent choices for sedation in the patient with severe bronchospasm.

Is etomidate safe safe for use in septic patients?

Etomidate has become the preferred agent for emergent RSI in North America and in much of the rest of the world because of its simple dosing strategies, reliable onset of action, and cardiovascular stability. The debate about the safety of etomidate in patients with sepsis has been raging for much of the last decade. The debate regarding the safety of etomidate in patients with sepsis has occurred within the larger discussion of critical illness relative corticosteroid insufficiency (CIRCI) and the role of corticosteroids in the management at critically ill patients. CIRCI, however, is more complicated than a simple reduction in circulating cortisol levels, and likely stems from a dysfunction at the level of the hypothalamic-pituitary axis. Many of the features of CIRCI are still being identified, but likely include decreased production of corticotropin-releasing hormone, ACTH, cortisol, and perhaps critically, dysfunction of the glucocorticosteroid receptors.

Confounding in this is the inability to precisely characterize the nature and role of adrenal insufficiency in critical illness and how this may or may not relate to total cortisol levels or response to ACTH.

A single dose of etomidate causes a reversible inhibition of adrenal hormone synthesis. It was for this reason that etomidate infusions ceased to be used for ICU sedation in the early 1980s. Following a single dose of etomidate, there is an immediate inhibition of adrenal hormone synthesis that lasts 12 to 24 hours, and may extend on to 72 hours in some patients. What remains unclear is whether or not there are any significant clinical sequelae from the transient inhibition adrenal hormone synthesis.

For the most part, there is broad agreement that a patient without sepsis or sepsis-like syndrome, the advantages of etomidate significantly outweigh concerns about possible inhibition of adrenal hormone synthesis.

For patients with sepsis or sepsis-like syndrome, there remains much debate as to the potential risk of etomidate. The literature is significantly divided. Much of the data has emerged from observational studies and post hoc analysis. There been many review articles and several meta-analyses. However, very few patients have been enrolled in randomized controlled trials, and several studies used cortisol levels as the primary outcomes, and did not address mortality or length of stay. In 2009 Jabre, et. al. published a RCT comparing 234 patients in the etomidate group and 235 in the ketamine group. Although the percent of the patients with adrenal insufficiency was significantly higher in the etomidate group, they found no serious adverse events with either study drug. The number of patients with sepsis is the final diagnosis was 41 in the etomidate group and 35 in the ketamine group. In August 2010, a comprehensive meta-analysis concluded that although etomidate suppresses adrenal function transiently, there is no significant mortality affect based on current data.

In November 2010 Tekwani et. al. published a RCT comparing etomidate and midazlolam as induction agents of patients with a primary infectious cause the illness, with a primary outcome measure of hospital length of stay and secondary outcomes of ICU length of stay, ventilator days, and mortality. They found no significant differences in their primary or secondary outcomes. To date, no study has adequate power to detect a small difference in mortality or in hospital, ICU, or ventilator length of stay.

The debate over the safety of etomidate in sepsis patients has expanded in recent years. There's recognition at some degree of adrenal insufficiency occurs in many patients, and that measurement of total cortisol levels is likely oversimplifying the problem.

For the emergency physician who relies upon a time date for the simple dosing regimen, rapid onset of action, and lack of cardiovascular compromise, even in patients who are hemodynamically unstable, there are three main choices in a patient with presumptive sepsis:

(1) *Avoid etomidate use entirely in patients who are presumed to be septic.* Some advocates of this approach emerged early in the debate, but as further data have emerged, the possible risk of etomidate use in septic patients appears to have been overstated and a clinical equipoise has developed. The risk of using etomidate must be balanced against the risk of an alternative agent. Only ketamine provides the hemodynamic instability comparable with etomidate, and ketamine is not available many settings were merging into patient

(2) *Routinely administer glucocorticoids to patients with septic shock who have received etomidate.* The emerging recognition of the relationship between critical illness and adrenal insufficiency (CIRCI) has made this question both simpler and more complex. Studies of supplemental corticosteroids in patients with sepsis have had equivocal results. Although is posited that glucocorticoids should be given immediately after the administration of etomidate when the adrenal suppression is likely be greatest, there is no evidence of this approach improves patient outcome. The current international consensus is that supplemental glucocorticoids should be considered in the management of septic patients whenever they have responded poorly the fluid resuscitation and vasopressor of agents.

(3) *Communicating clearly the critical care staff that the patient was given a dose of etomidate induction.* It is almost impossible to argue against this commonsense approach

Additional Notes from *Manual of Emergency Airway Managemen*t 4th Edition, Ron Walls p250-251:

Adverse affects of succinylcholine

The recognized effects of succinylcholine include fasciculations, hyperkalemia, bradycardia, prolonged neuromuscular blockade, malignant hyperthermia, and trismus/masseter muscle spasm. Each is discussed separately.

1. ***Fasciculations***

Fasciculations are believed to be produced by stimulation of the nicotinic acetyl choline (ACH) receptors. Fasciculations occur simultaneously with increases in intracranial pressure, intraocular pressure, and intragastric pressure, but these are not the result of concerted muscle activity. Of these, only the increase in ICP is potentially clinically important.

The exact mechanisms by which these effects occur are not well elucidated. In the past, it was recommended that non-depolarizing agents be given in advance of succinylcholine to mitigate ICP elevation, but there is insufficient evidence to support this practice.

The relationship between muscle fasciculation and subsequent post operative muscle pain is controversial. Studies have been variable with respect to prevention of fasciculations and subsequent muscle pain. Although there exists a theoretical concern regarding the extrusion of vitreous in patients with open globe injuries who were given succinylcholine, there are no published reports of this potential complication. Anesthesiologists continue to use succinylcholine as a muscle relaxant in case of a “in cases of open glove injury, with or without an accompanying defasciculating agent. Similarly, the increase in intragastric pressure that is been measured has never been shown to be of any clinical significance, perhaps because it is offset by the corresponding increase in the lower esophageal sphincter pressure.

2. ***Hyperkalemia***

Under normal circumstances, serum potassium increases minimally (0 to 0.5 mEq perL) when succinylcholine is administered. In certain pathologic conditions, however, a rapid and dramatic increase in serum potassium can occur in response to succinylcholine. These pathologic hyperkalemic responses occur by two distinct mechanisms: receptor up-regulation and rhabdomyolysis. In either situation potassium may increase may as much as 5 to 10 mEq per L within a few minutes and result in hyperkalemic dysrhythmias or cardiac arrest.

Two forms of post junctional receptors exist: mature (junctional)and immature (extra-junctional). Each receptor is composed of five proteins arranged in a circular fashion around a common channel. Both types of receptors contain two Alpha subunits. ACH must attach to both alpha subunits to open the channel and effect depolarization and muscle contraction. When receptor up-regulation occurs, the mature receptors at and around the motor endplate or gradually converted over 4 to 5 day period to immature receptors that propagate throughout the entire muscle membrane. Immature receptors are characterized by low conductance and prolonged channel opening times (four times longer than mature receptors), resulting in an increasing release potassium. Most of the entities associated with hyperkalemia during emergency use of succinylcholine are the result of receptor up-regulation. Interestingly, these same extra junctional nicotinic receptors are relatively refractory to non-depolarizing agents, so larger doses of vecuronium, pancuronium, or rocuronium he may be required to produce paralysis. This is not an issue in emergency RSI, where full intubating doses several times greater than the ED95 for paralysis are used.

Hyperkalemia also may occur with rhabdomyolysis, most often that associated with myopathies, especially inherited forms of muscular dystrophy. When severe hyperkalemia occurs related to rhabdomyolysis, the mortality approaches 30%, almost 3 times higher than that in cases of receptor up-regulation. This mortality increase may be related to coexisting cardiomyopathy. Succinylcholine is a toxin to unstable membranes in any patient with a myopathy and should be avoided.

Patients with the following conditions are at risk of succinylcholine induced hyperkalemia:

I. Receptor Up-regulation

a. In burn victims, the extra junctional receptor sensitization becomes clinically significant five days post burn. It lasts an indefinite period of time, at least until there is a complete healing of the burned area. If the burn becomes infected or healing is delayed, the patient remains at risk for hyperkalemia. It is prudent to avoid succinylcholine in burn patients beyond day five post-burn if any questions exist regarding the status of their burn. Percent of body surface area burn does not correlate well with the magnitude of hyperkalemia. Significant hyperkalemia has been reported in patients with as little as 8% total body surface area burn (less in the service of one arm), but this is rare. The majority of emergent intubations for burn patients are performed with in the safe five day window. Should a later intubation become necessary, however, rocuronium or vecuronium provide excellent alternatives.

b. Denervation - The patient who suffers a denervation event, such as a spinal cord injury or stroke, is at risk for hyperkalemia from approximately the fifth day post event, until six months post event. Patients with progressive neuromuscular disorders, such as multiple sclerosis or amyotrophic lateral sclerosis (ALS), are perpetually at risk for hyperkalemia. Likewise, patients with transient neuromuscular disorders, such as Guillane-Barre syndrome or wound botulism can develop hyperkalemia after day five, depending on the severity of their disease. As long as the neuromuscular disease is dynamic, there will be augmentation of the extra junctional receptors, which increases the risk for hyperkalemia. These specific clinical situations should be considered absolute contraindications to succinylcholine during the designated time periods.

c. Crush injuries - The data regarding crush injuries are scant. The hyperkalemic response begins about five days post injury, similar to denervation, and persists for several months after healing seems complete. The mechanism appears to be receptor up-regulation

d. Severe infections - This entity seems to relate to established, serious infections, usually in the ICU environment. The mechanism is receptor up-regulation, but the initiating event is not established. Total body muscular disuse atrophy and chemical denervation of the ACH receptors, particularly related to long-term infusions of NMBAs (neuromuscular blocking agents), appear to drive the pathologic receptor changes. Again, the at-risk time begins five days after initiation of the infection and continues indefinitely as long as the disease process is dynamic. Intra-abdominal sepsis has most prominently been identified as the culprit, but any serious, prolonged, debilitating infection should prompt concern.

II. Myopathy

Succinylcholine is actually contraindicated in patients with inherited myopathies, such as muscular dystrophy. Myopathic hyperkalemia can be devastating because the combined effects of a receptor up regulation and rhabdomyolysis. This is a particularly difficult problem in pediatrics, when a child with occult muscular dystrophy receives succinylcholine. Succinylcholine has a black box warning advising against its use in elective pediatric anesthesia, but it continues to be the muscle relaxant of choice for emergency intubation. Any patients suspected of a myopathy should be intubated with non-depolarizing muscle relaxants rather than succinylcholine.

III. Pre-existing Hyperkalemia

Hyperkalemia, per se, is not an absolute contraindication to succinylcholine. There is no evidence that succinylcholine is harmful in patients with pre-existing hyperkalemia, but who are not otherwise at risk of severe succinylcholine induced hyperkalemia by one of the mechanisms described in the preceding section. There is wide spread concern that patients with acute hyperkalemia secondary to acute renal failure or diabetic ketoacidosis are more likely to exhibit cardiac dysrhythmias from succinylcholine administration than in patients with chronic or recurrent hyperkalemia. There is, however, no evidence to support this claim. Patient with pre-existing hyperkalemia are subject to the same potential rise of 0 to 0.5 mEq per L of potassium as for "normal" patients. The only study that examined the use of succinylcholine in patients with chronic renal failure (including documented hyperkalemia before intubation) failed to a identify any adverse effects related to succinylcholine. A reasonable approach is to assume that succinylcholine is safe to use in patients with renal failure unless the EKG - either monitor tracing the EKG 12 lead - shows evidence of acute hyperkalemia (peaked T waves or prolongation of QRS).

3. ***Bradycardia***
In both adults and children, repeated doses of succinylcholine may produce bradycardia, and administration of atropine may become necessary.

4. ***Prolonged Neuromuscular Blockade***

Prolonged neuromuscular blockade may result from an acquired pseudocholinesterase (PCHE) deficiency, a congenital absence of PCHE, or the presence of an atypical form a PCHE, any of the three which will delay the degradation of succinylcholine and prolong paralysis. Acquired PCHE deficiency may be a result of liver disease, chronic cocaine abuse, pregnancy, burns, medications such as oral contraceptives, metoclopramide (Reglan), bambuterol, or esmolol. A 20% reduction in normal levels will increase apnea time about 3 to 9 minutes. The most severe variant (0.04% of the population) will result in prolonged paralysis for 4-8 hours.

5. ***Malignant Hyperthermia***

A personal or family history of malignant hyperthermia (MH) is an absolute contraindication to the use of succinylcholine. MH is a myopathy characterized by a genetic skeletal muscle membrane abnormality of the Ry reyanodine receptor. It can be triggered by halogenated anesthetics, succinylcholine, vigorous exercise, and even emotional stress. Following the initiating event, its onset can be acute and progressive, or delayed for hours. General awareness of MH, earlier diagnosis, and the availability of dantrolene (Dantrium) have decreased the mortality from as high as 70% to less than 5%. Acute loss of intracellular calcium control results in a cascade of rapidly progressive events manifested primarily by increased metabolism, muscular rigidity, autonomic instability, hypoxia, hypertension, severe lactic acid doses, hyperkalemia, myoglobinemia, and disseminated intravascular coagulation. Temperature elevation is a late manifestation. The presence of more than one of these clinical signs is suggestive of malignant hyperthermia.

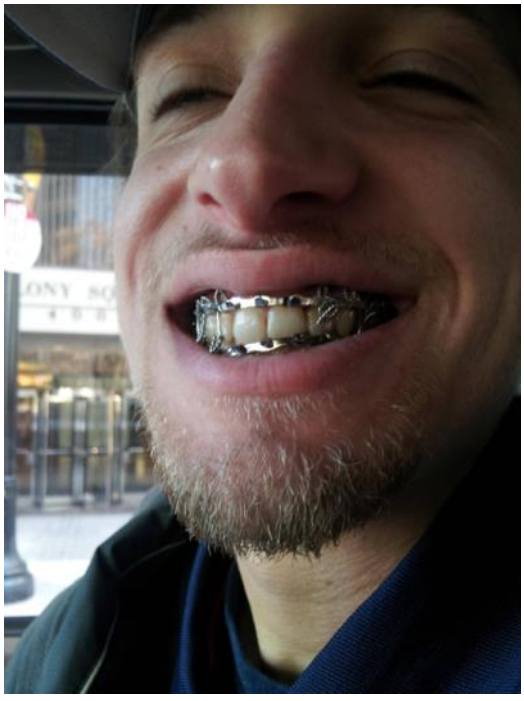
Masseter spasm, once claimed to be the hallmark of MH, is not pathognomonic. Succinylcholine can promote isolated master spasm as an exaggerated response at the neuromuscular junction, especially in children.

The treatment for MH consists of discontinuing the known or suspected precipitant and the immediate administration of dantrolene sodium (Dantrium). Dantrolene is essential to successful resuscitation and must be given as soon as the diagnosis is seriously entertained. Dantrolene is a hydantoin derivative that acts directly on skeletal muscle to prevent calcium release from the sarcoplasmic reticulum without affecting calcium reuptake. The initial dose is 2.5 mg per kilogram IV, repeated every five minutes until muscle relaxation occurs or the maximum dose of 10 mg per kilogram is administered. Dantrolene is free of any serious side effects. In addition, measures to control body temperature, acid-base balance, and renal function must be used. All cases of MH require constant monitoring of pH, arterial blood gases, and serum potassium. Immediate and aggressive management of hyperkalemia with administration of calcium gluconate, glucose, insulin, and sodium bicarb may be necessary. Interestingly, full paralysis with non-depolarizing NMBAs will prevent succinylcholine triggered MH. MH has never been reported related to the use of succinylcholine in the emergency department. The MH emergency hotline number is 1-800 MH-HYPER or 1-800-644-9737 24 hours a day, seven days a week. Ask for “index zero”. The email address for the malignant hyperthermia association United States is mhaus@Norwich.net and the website is www.mhaus.org.

6. Trismus/Masseter muscle spasm

On occasion, succinylcholine may cause transient trismus/masseter muscle spasm, especially in children. This manifests as jaw muscle rigidity associated with limb muscle flaccidity. Pretreatment with defasciculating doses of non-depolarizing NMBAs will not prevent masseter spasm. If masseter spasm interferes with intubation, an intubating dose of a competitive non- depolarizing agent (e.g., rocuronium) should be administered and will relax the involved muscles. The patient may require bag mask ventilation until relaxation is complete and intubation as possible. Masseter spasm should prompt serious consideration of the diagnosis of malignant hyperthermia (see previous discussion).

The following photograph is for Endnote 4 - While the LEMON mnemonic is not perfect, assessment of the patient for potential barriers to intubation - such as having the jaw wired shut - is strongly recommended.



ENDNOTES

[i] If there is anticipated deterioration, impending airway compromise, or if there is a possibility of either during transport or a period of limited resources. The threshold for securing the airway for concern about anticipated clinical course is much lower for high risk transports with limited access and/or resources (e.g., Airlift).

[ii] If resources permit, 2 lines of O2 are recommended, one for BVM/Mask, one for supplementary NC.

[iii] If anaphylaxis is present, administer epinephrine as early as possible, but proceed with airway securement as clinically indicated.

[iv] **No technique for predicting difficult airways has been demonstrated to accurately predict encountered difficulties with reasonable sensitivity or specificity.** The LEMON mnemonic is the most commonly used: L- Look Externally, E - Evaluate 3-3-2, M - Mallampati score, prediction, a rapid O - Obstruction/Obesity, and N - Neck Mobility. While no technique has been demonstrated to have perfect assessment for barriers to success is recommended. See picture on previous page of an example where an examination would identify a difficult airway.

[v] See Table 3: Sequence for Pre-oxygenation and Prevention of Desaturation

[vi] Weingart and Levitan, p166 Standard non-rebreather masks with O2 Flow rates of 15 pm deliver only 60-70% FiO2 and do not provide complete de-nitrogenation. Standard non-breather masks can deliver FiO2 approaching 90% by increasing the flow rate to 30 - 60 lpm. NOTE: A Bag Valve Mask hovering over a patients face provides only ambient O2.

[vii] Weingart and Levitan, p166

[viii] Weingart and Levitan, p168 Studies (Lane et al, and Rumkumar et al) have demonstrated in randomized controlled studies that the the 20 degree heads up position improved the time to desaturation by ~100 seconds over the supine position following 3 minutes of pre oxygenation.

[ix] In setting of no IV/IO access, medications ketamine 4mg/kg and succinylcholine 4mg/kg can be given intramuscularly for sedation and paralysis.

[x] Adapted from Scott Weingart, EMCRIT podcast. See Table 5: Cricon^2 status

[xi] Apnea may result from rapid pushes of ketamine, so push slowly or expect a brief period of apnea to result.

[xii] See Table 4: Risk Categorization of Patients During Pre-Oxygenation from Weingart and Levitan article.

[xiii] All induction and paralytic agents can also be given intraosseous (IO).

[xiv] Example: Orotracheal intubation success is anticipated to be improbable/impossible (e.g., jaws wired shut with no ability to remove).

[xv] Intubating conditions are directly related to dose. Doses less than 1.5mg/kg are suboptimal. Increasing the dose from 0.5 to 2mg/kg increased duration of action minimally from 5.2 to 7.5min (see p262 Ron Walls).

[xvi] Ron Wall 1mg/kg "is optimal", Weingart "1.2mg/kg). NOTE from Weingart and Levitan, The choice of paralytic agent may influence the time to desaturation during airway management. In a study of operative patients, the time to desaturation to 95% was 242 seconds in patients receiving succinylcholine versus 378 seconds in a group given rocuronium. Similarly, in obese patients undergoing surgery, the succinylcholine group desaturated to 92% in 283 seconds versus 329 seconds in the rocuronium group. When used at a dose of greater than or equal to 1.2 mg/kg, rocuronium provides intubating conditions identical to those of succinylcholine.

It is hypothesized that the fasciculations induced by succinylcholine may cause increased oxygen use. Pretreatment medications to prevent fasciculations minimize the difference in desaturation times. Recommendation: In patients at high risk of desaturation, rocuronium may (or may not) provide a longer duration of safe apnea than succinylcholine.

[xvii] Administration of paralytic first when using rocuronium or vecuronium and induction sedative ketamine/etomidate second, is to reduce the sedation lag time. (The interval between onset of sedation and when complete paralysis occurs. During this lag time respiratory efforts drop, alveoli start to de-recruit, PaO2 falls, and PaCO2 rises.) See PulmCrit/EMCrit reference by Weingart 4/24/17.
[xviii] Ron Walls 0.15mg/kg, Weingart 0.3mg/kg
[xix] Weingart and Levitan, p171 Apneic oxygenation requires a patent airway for oxygen to reach the hypopharynx and be entrained into the trachea; once the patient is sedated and paralyzed, it is imperative to keep the posterior pharyngeal structures and tongue from occluding the passage of gas. Head elevation, chin lift, and jaw thrust will accomplish this in most patients; a jaw thrust alone should be used if there is risk for cervical spine injury. In some patients, a nasal trumpet or oral airway may also be required. Patients with sleep apnea or obesity often need a combination of jaw distraction, lifting of submandibular soft tissue, and nasal or oral airways.
Positioning the patient with their external auditory meatus on the same horizontal plane as their sternal notch maximizes upper airway dimensions and facilitates direct laryngoscopy. Head elevation relative to the thorax also permits optimal jaw distraction, and conversely atlanto-occipital extension pivots the base of tongue and epiglottis against the posterior pharynx and promotes obstruction. In all but the thinnest patients, a head-elevated position requires lifting of the head of the bed somewhat, plus padding under the head and upper shoulders. The face plane of the patient should be parallel to the ceiling. For the super-obese, this positioning requires a very large ramp. In cervical spine precautions, elevating the head relative to the neck is not possible, but as previously noted the foot of the stretcher should be tilted downward to improve pulmonary function.
Cricoid pressure, considered an essential aspect of rapid sequence tracheal intubation when it was first conceived, has come under increasing scrutiny within anesthesia and emergency medicine. Theoretically, the application of firm pressure to the cricoid cartilage compresses the esophagus while keeping the trachea patent, but in practice this is not always the case. Computed tomography and magnetic resonance imaging scanning have shown that cricoid pressure causes lateral displacement of the esophagus in more than 90% of patients and laryngeal/tracheal compression in 80%. Numerous ventilation studies have found that cricoid pressure hinders bag-valve-mask device ventilation, increases peak inspiratory pressure, and reduces tidal volumes. For the same reasons that the airway obstruction induced by cricoid pressure may preclude effective manual ventilation, it may limit the effectiveness of apneic oxygenation as well.
Recommendation: Patients should be positioned to maximize upper airway patency before and during the apneic period, using ear-to–sternal notch positioning. Nasal airways may be needed to create a patent upper airway. Once the apneic period begins, the posterior pharyngeal structures should be kept from collapsing backwards by using a jaw thrust. Cricoid pressure may negatively affect apneic oxygenation, but studies examining this question in the setting of modern emergency airway management do not exist to our knowledge.
[xx] Weingart and Levitan, p 170
[xxi] In general, the 3rd attempt at laryngoscopy is not appropriate for a student or inexperienced provider.
[xxii] Evaluate for possible intubation of right mainstem.
[xxiii] Over-ventilation (hyperventilation) has been documented frequently in the prehospital setting.
[xxiv] Paralyzed patients lose their ability to generate heat.
[xxv] From a Cochrane Analysis published January 8, 2016: Moderate quality evidence from eight studies involving 759 participants demonstrated that a semi-recumbent (30º to 60º) position reduced clinically suspected VAP by 25.7% when compared to a 0° to 10° supine position. Based on this result, we would expect that out of 1000 critically ill adult patients who are nursed in the semi-recumbent position (30º to 60º) for more than 48 hours, 145 patients would experience clinically suspected VAP compared to 402 patients nursed in the 0° to 10° supine position. No adequate evidence is available to draw any definitive conclusion on other outcomes and the comparison of alternative semi-recumbent positions.

[xxvi] Ketamine can cause mild increase in HR and BP as well
[xxvii] The BVM Effect: An Overview of Studies Assessing Airway Management in Out-of-Hospital Cardiac Arrest by Fowler, et. al, JEMS 9/28/15
[xxviii] Succinylcholine is rapidly metabolized by plasma esterase and distributed to extracellular water. Children have a larger reservoir of extracellular water relative to adults. The recommended dose of succinylcholine, therefore, is higher in children. Walls, et. al, p281
[xxix] Darren Braude & Michael Richards (2007) Rapid Sequence Airway (RSA)—A Novel Approach To Prehospital Airway Management, Prehospital Emergency Care, 11:2, 250-252
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[xxxvi] Scott Weingart
[xxxvii] Ron Walls Manual of Emergency Airway Management 5th Edition
[xxxviii] Weingart and Levitan
[xxxix] Weingart and Levitan
[xl] Weingart emcrit.org blog - http://emcrit.org/wee/bougie-prepass-and-criccon/ posted July 4, 2012, and subsequently updated to Cricon^2 (see blog post update)
[xli] Table adapted from Capnography as a Clinical Tool by David Wampler, EMSWorld August 2011