

PREHOSPITAL TREATMENT PROTOCOLS



Effective December 1, 2021

Maine Emergency Medical Services 152 State House Station Augusta, Maine 04333

AUTHORIZATION FOR PROTOCOLS

These protocols are issued by the Medical Direction and Practices Board (MDPB) and govern the practice of EMS licensees by the authority of 32 MRSA § 86.2-A. All health care providers in Maine involved in the EMS system and the regional EMS programs were invited to participate in the review and adoption of these protocols through their MEMS Regional Councils.

The Regional Medical Directors agree that when treatments are adopted in their regions, they will be consistent with these protocols.

The protocols will be continually reviewed. New or revised protocols will be listed on the Maine EMS website (maine.gov/ems). The MDPB may entertain substitutions as needed for drug shortages.

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The Maine EMS Prehospital Treatment Protocols are dedicated to Maine's EMS providers, both past and present, as well as the numerous physicians, PAs, NPs, nurses and other medical personnel who have provided their time and guidance over the years to make the development of these protocols possible. This document reflects the planned review, which occurs every two years, by the Medical Direction and Practices Board. We attempt to combine the best available evidence from the current literature and medical consensus together to produce protocols that will enhance prehospital care in the State of Maine.

Many individuals have spearheaded the effort for this work to become a reality. Although there are too many to mention individually, it is important to realize the common commitment shared to empower a continuously improving system where those citizens who need emergency medical assistance receive the best care possible.

For those of you reading this document, please keep in mind the great commitment and sacrifice that Maine EMS providers make daily in the course of providing superlative prehospital care. Their work is physically, emotionally and mentally stressful, yet 24 hours a day, 365 days a year, these individuals provide care with the skill and compassion that promises the best prehospital care for all of the citizens of Maine. What you do matters and we thank you.

The 2021 Maine EMS protocols are dedicated to Maine EMS clinicians' tireless response to the Coronavirus Pandemic. The MDPB offers it's most sincere gratitude for your dedication, service and sacrifice maintaining the health and safety of Maine citizens.



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LEGEND				
Е	Denotes the scope of care for the Emergency Medical Technician (EMT)			
A	Denotes the scope of care for the Advanced Emergency Medical Technician			
Р	Denotes the scope of care for the Paramedic			
	Denotes a PEARL - i.e. key points/info specific to patients within the protocol			
	Contact On-Line Medical Control			
H	Denotes a potentially complex patient. Please call an OLMC consult to collaborate your efforts			
	Denotes a pediatric specific therapy or medication dose			
<u>Blue Underline</u> - Text formatted as a hyperlink				

These protocols are a "living document" maintained electronically by Maine EMS and may be edited or updated as required at any time. A detailed review and editing of these protocols will occur on a biennial time frame and an updated version will be released every other year.

All licensed providers who practice within the Maine EMS system are required to be familiar with the contents of this document pertinent to their level of training. For the latest corrections/updates to these protocols, please visit the Maine EMS website at: <u>http://www.maine.gov/ems</u>.

There are protocols within this document that are the result of the collaboration between the Northern New England States (Maine, New Hampshire and Vermont) to provide uniform, evidence-based care to our patients. These protocols are identified by a joint statement at the bottom of the protocol.

These protocols were developed for the following reasons:

- 1. To provide the EMS provider with a quick field reference, and
- 2. To develop written standards of care which are consistent throughout the State of Maine

Users of these protocols are assumed to have knowledge of more detailed and basic patient management principles found in EMS textbooks and literature appropriate to the EMS provider's level of training and licensure.

EMS providers are encouraged to contact OLMC in any situation in which advice is needed, not only in situations as directed by these written protocols.

To use these protocols as they are intended, it is necessary to know the philosophy, treatment principles, and definitions which guided the physicians and other EMS providers who drafted these protocols:

- **Treatment should very RARELY delay transport!** This is especially true for trauma patients, patients with chest pain and patients with suspected stroke. IVs should be started en route except in those situations where treatment at the scene is in the patient's best interest, such as shock, prolonged extrication, or a cardiac patient when full ACLS care is available. Delays in transport should be discussed with OLMC.
- **Inability to establish voice contact with OLMC:** There are rare situations where the patient is unstable and delay in treatment threatens the patient's life or limb. If, after good faith attempts, the EMS provider cannot contact OLMC, then the EMS provider is authorized to use any appropriate treatment protocols as if they were standing orders. In such cases, treatments must still be consistent with the EMS provider's training and licensure. Continue attempts to contact OLMC and document these attempts on the patient run record.
- **Transports and transfers:** During transports and transfers, ambulance crews will follow these MEMS protocols, including use of only those medications and procedures for which they are trained and authorized by protocol.
- **Hospital destination choice**: If a patient needs care which the ambulance crew, in consultation with OLMC, believes cannot be provided at the most accessible hospital, the patient will be transported to the nearest facility capable of providing that care upon the patient's arrival. If, with OLMC consultation, a patient is believed to be too unstable to survive such a diversion, then the patient will be transported to the most accessible hospital with an emergency department. Diversion is also non-binding, and if a patient insists or if the crew deems that bypass is not in the patient's best interest, then going to a hospital "on diversion" is appropriate. If OLMC contact is not possible, the ambulance crew is authorized to make this determination. OLMC cannot legally refuse these patients.

- **Regional destination**: Each region has the authority to develop protocols which designate the appropriate destination for patients transported from the scene. Any such protocol should be patient-centric and created exclusively to offer patients emergent care only available at selected regional sites. Examples of such protocols include the Maine EMS Trauma Triage Protocols.
- Paramedics and AEMTs are expected to perform all duties in their listed scope of
 practice as well as those of the prior scopes of practice in the appropriate logical order.
 Treatments/medications should be given in the order specified. However, the MDPB
 recognizes that often treatments are delivered simultaneously and more than one
 protocol may be used. OLMC or ALS Providers may request treatments/medications out
 of sequence for medical reasons.
- **MEMS patient/run record** will be legible and thoroughly completed for each call or for each patient when more than one patient is involved in a call. This document is our legacy of patient care and holds valuable information for hospital providers. This information is essential to patient care and safety. Services must provide a patient care document before leaving the hospital. In MOST circumstances, this document will be a completed copy of the patient run report, although, in rare circumstances, when it is not possible to complete the electronic patient care record before leaving the hospital, services may provide the hospital with a Maine EMS-approved, one page, patient care summary. THIS DOCUMENT DOES NOT REPLACE THE COMPLETED RUN REPORT. These documents may become part of the patient's hospital record and, in an effort to ensure excellent patient care, all information on this written summary must reflect the information in the electronic run report. Services must still complete the electronic patient care summary must reflect the information and make the report available to the hospital as soon as possible.
- **Quality Assurance:** All EMS providers and services must be in compliance with the Regional and State Quality Improvement Program to the satisfaction of the Regional Medical Director.
- Assuming and Reassessing care already provided: EMS providers who will be assuming the responsibility for patient care will also be responsible for assessing the care provided before their arrival, and for all subsequent care after they arrive up to and including their level of training and licensure. If an EMS provider has not been trained in a particular treatment listed at their level, or if that treatment is not within the EMS provider's scope of practice, the provider may not perform the treatment.
- If there is a Paramedic on scene that is willing to:
 - a. Accompany the AEMT on the call, and
 - b. Accept responsibility for the AEMT's actions

Then the Paramedic may direct the AEMT to administer medications that are within the AEMT's scope of practice. This may be accomplished without contacting OLMC as long as the medication administration would not require OLMC for the Paramedic. If the Paramedic is unwilling to accept the above responsibilities, then the AEMT must contact OLMC before administering any medications.

- **Carbon monoxide monitors**: Carbon monoxide monitors may be used for informational purposes only. Treatment and transport decisions may not be made solely on the basis of CO readings from these monitors as they may report falsely low levels.
- **Medical Control permission:** If a treatment is listed as requiring Medical Control permission at one level and is listed again without requiring OLMC permission at a higher level, the higher-level EMT need not seek OLMC permission.
- **Deviation from protocols:** These protocols represent a consensus of the MDPB. In unusual situations, OLMC may deviate from these protocols if done in the patient's best interest. The deviation in care ordered must be within the scope of practice, training and skill of the EMS provider. The reasons for deviating from these protocols must be documented in the patient's chart. Under such circumstances, if the ALS provider agrees, the ALS provider will verify and will comply with OLMC orders, will fully document the deviation on the patient run record, and will not consider the care rendered to be an emergency medical treatment to be routinely repeated.
- Arrival of officially dispatched EMS personnel: Once EMS personnel have arrived on the scene, they may interact with other medical personnel on the scene who are not part of the organized EMS system responses in the following manner:
 - <u>Maine EMS licensees not affiliated with one of the responding services may</u> <u>only provide care within their scope of practice with the approval of the</u> <u>ambulance crew-member in charge of the call.</u>
 - **The patient's own physician**, physician assistant, or nurse practitioner may direct care as long as they remain with the patient (in their absence, direction of care is subject only to these protocols and OLMC). You may assist this person within the scope of your practice and these protocols. Only a physician, physician assistant, or independent nurse practitioner authorized to offer OLMC by their hospital may give orders outside of the MEMS protocols. Questions in this regard should be resolved by OLMC. You may show this person **Black 1**, the "Non-EMS System Medical Interveners" protocol to assist with your explanation.
 - Other unsolicited medical interveners must be Maine licensed physicians, nurses, nurse practitioners or physician assistants whose assistance you request. The **Black 1** "Non-EMS System Medical Interveners" protocol describes this, and should be shown to such interveners.
 - Other healthcare providers in the home: Other healthcare providers in the home attending the patient (i.e. R.N., L.P.N., C.N.A., Nurse Midwife, etc.) are a valuable source of information and assistance. Any aid or treatment they wish to give must be authorized by OLMC. Any dispute over treatment or transport should be resolved by OLMC.

- Home healthcare devices and appliances: Patients may have devices and appliances (drains, ports, LVAD, insulin pumps, etc.) with which they are routinely discharged home. Patients (or their licensed care providers or previously instructed family members), are expected to maintain them on their own. These devices have some risks associated with them, but are generally considered safe in the home environment. As such, EMS providers are not restricted in the care or transfer of these patients based solely on the presence of these devices or appliances. If an issue arises where there is unfamiliarity with or any questions concerning these devices (which cannot be immediately resolved by the patient or caregivers), refer to OLMC.
- **Graduates with a current certification from a Maine EMS-approved wilderness EMT course** may apply the principles of care taught in that course with the approval of the service Medical Director and when patient arrival at a definitive care setting will be more than 2 hours.
- **Repeated Treatment:** Unless otherwise indicated, any treatment included in these protocols may be repeated after reassessment and with OLMC permission.
- **Oxygen supplementation** will be by nasal cannula or non-rebreather mask as appropriate.
- **Patient Sign-Offs**: There exist three origins for patient sign-offs:
- a. A patient refuses transport and the provider agrees transport is not warranted
- b. The patient refuses transport but the provider does not feel this is safe
- c. The patient requests transport but the provider refuses (this final example is called an EMS System-initiated sign-off)

Patient-initiated sign-offs should only be considered in patients with decision-making capacity and resources available to care for themselves and when non-transport is considered safe. These sign-offs do not require discussion with On-Line Medical Control. Situations in which the patient requests sign-off but the EMS provider deems it inappropriate, please refer to OLMC. **EMS System-initiated patient sign-offs (i.e.:** when the patient requests transfer but the EMS provider refuses) are tremendously risky interactions and are not permissible. These sign-offs must be approved by OLMC and the service is expected to review all of these events through the service's quality assurance mechanism. Patient medical records must be completed for all of these interactions.

• The MDPB believes that vital signs are essential pieces of information to be acquired on all patients. In addition, the MDPB believes that vital signs should be trended on all patients. In most cases, vital sign trending should occur every 5-10 minutes, based on the patient's clinical status and other operational considerations.

- Maine EMS Special Circumstance Protocols: Maine EMS protocols are intended to address the vast majority of medical emergencies encountered by an EMS provider. While intended to be comprehensive, certain patients exist with rare medical conditions that require highly specialized emergent care. In such situations, Maine EMS has created the "Special Circumstance Protocols". These are prearranged medical protocols specialized to individual patients, suggested by the patient's medical provider and ratified by the MDPB. Patients will present with a "Maine EMS Special Circumstance Protocol Form" that outlines the patient's individual protocol and is signed by the patient's physician, the patient or their guardian, the local EMS service chief, the Regional Medical Director, and the State of Maine EMS Medical Director. These Special Circumstance Protocols should be made known to local EMS services and providers. In cases of question or uncertainty regarding the nature of the protocol, please refer to OLMC.
- **During transport**, patients should be secured to the stretcher utilizing both lateral and shoulder straps. For Pediatric patient guidance, refer to Pediatric Transport Protocol, Pink 9, 10.
- Vagus Nerve Stimulators (VNS) are implanted devices that are used to treat refractory partial seizures by stimulating the vagus nerve. They are not currently approved to treat generalized seizures. The exact mechanism is unclear but the devices provide continuous on-off cycles of vagal stimulation to prevent seizures. Patients with a VNS typically have a magnet that they can use to trigger an additional 30 second stimulation period when they feel a seizure coming on or when they are having a seizure. Caregivers are typically trained to assist with the magnet. In the event no one is available who is trained to use the magnet, the EMS provider at any level may assist the patient if the patient can confirm that the device is a VNS and after the EMS provider consults with OLMC.
- In the critically ill patient, vascular access may be difficult to obtain. The decision on which technique to use first, IV versus IO, is based on the assessment and judgment of the provider. Ultimately, an IV is the superior form of vascular access but the IO is appropriate for the initial resuscitation of the critically ill patient if, in the provider's judgment, attempts to obtain IV access would lead to an unreasonable delay in initiating fluid resuscitation.
- **Option to Cancel ALS policy**: If the patient meets the protocol-specific cancellation criteria, the EMT and AEMT, in consultation with OLMC, may determine that it is appropriate to cancel the ALS response based on transport time, patient co-morbidities, and any other applicable factors.
- All equipment referenced in these protocols must be "Maine EMS-Approved." In addition, it is expected that all providers will be appropriately trained before using any piece of equipment, device, or technique.

TASER PROBES

The use of a TASER does not automatically necessitate an EMS response or involvement. In assessing such patients, be cognizant of the potential for underlying metabolic dysfunction. TASER probes may be removed from the subject by the deploying officer. Probes that are embedded in a sensitive area (i.e. face, neck, breast, and genital area) may need to be removed by medical personnel. In these cases, the subject should be transported to the hospital for examination and removal of the probes by medical personnel at the hospital. Other adverse affects, (i.e. respiratory difficulty, seizures, etc.) should be treated as appropriate by the applicable protocol(s).

CRIME SCENES

DO NOT enter an active shooter scene or a scene in which an unsecured weapon is involved, until the scene is secured by law enforcement, unless trained and authorized to do so (such as in the context of a tactical response team or rescue task force). If encountering a possible crime scene and not previously dispatched, contact law enforcement.

Once a crime scene is deemed safe by law enforcement, initiate patient contact and medical care if necessary.

- Do not sacrifice patient care to preserve evidence.
- Have all EMS providers use the same path of entry and exit, if feasible.
- Do not touch or move anything at a crime scene unless it is necessary to do so for patient care (notify law enforcement prior to moving so if possible).
- Do not walk through fluids.
- Observe and document original location of items moved by crew whenever possible.
- Do not sacrifice patient care to preserve clothing, but when possible and removing patient clothing is required, leave it as intact as possible. Avoid cutting through holes made by weapons, if possible.
- If you remove any items from the scene, such as impaled objects or medication bottles,
- document your actions and advise a law enforcement official (prior to removal, if feasible)
- Consider requesting a law enforcement officer to accompany the patient in the ambulance
- to the hospital.
- Document statements made by the patient or bystanders on the EMS patient care report.Report significant information to a law enforcement official prior to leaving the scene, if feasible.
- Comments made by a patient or bystanders should be denoted in quotation marks.
- Inform staff at the receiving hospital that this is a "crime scene" patient.
- If the patient is obviously dead consistent with Do Not Resuscitate Guidelines (Grey 1), notify law enforcement of decision not to initiate resuscitation/patient care.
- At motor vehicle incidents, preserve the scene by not driving over debris, not moving debris and parking away from tire marks, if feasible
- Prior to leaving a crime scene, if feasible, check the bottom of your shoes for contamination (fluids, objects, etc.). Notify law enforcement for removal of any evidence and possible photographing of your shoes.

ACLS is Advanced Cardiac Life Support.

Advanced Airway means the skill of endotracheal intubation and use of other airway modalities such as Blind Insertion Airway Devices (BIAD) performed only by those who have completed practical training in each of these skills.

AEMT (Advanced EMT) means the ability to provide Advanced EMT level of care (previously called Intermediate EMT).

AHA is the American Heart Association

ALS (Advanced Life Support) means the ability to provide advanced level of medical care, which in the prehospital realm means *Paramedic*. The ALS skills may include the following: IV access, advanced airway, cardiac monitoring, and/or oral or parenteral medications.

ALS (Advanced Life Support), If Available means that the patient shall receive the highest appropriate ALS intervention as soon as possible. The decision in this realm as to which interventions may be appropriate rests with the Paramedic. If any skills other than basic life support are deemed necessary or initially implemented, an ALS response should be sought, with simultaneous dispatch if possible. The use of a medical priority dispatching program, approved by the State Medical Director, is encouraged. When this cannot happen, the crew in attendance should bring ALS care and the patient together in the fastest of three ways: (1) ALS back-up at the scene; (2) ALS back-up met en route; or (3) ALS by hospital staff in the emergency department if prehospital rendezvous is not possible.

The BLS providers on the scene may modify the ALS response as appropriate.

AMS refers to Altered Mental Status and AMSS refers to Altered Mental Status Scale/Score.

BIADs refers to Blind Insertion Airway Devices and include periglottic (is: LMA) and trans glottic (ie: King) devices.

BP in these protocols refers to the systolic blood pressure.

BSA refers to Body Surface Area and, in burn patients, can be estimated by using the Rule of 9s or patient's hand size.

BVM refers to Bag-Valve-Mask ventilation

CHF refers to Congestive Heart Failure, a condition in which patients may present with dyspnea, hypoxia, wheezing, and rales.

CNS refers to Central Nervous System and includes the brain and spinal cord

Continuous Nebulization is administration of 3 unit doses of albuterol or albuterol-ipratropium without interruption; that is, put all 3 unit doses into the nebulizer at the same time (if volume allows) and administer until complete OR administer 1 unit dose x 3 without waiting between administrations.



CPAP refers to Continuous Positive Airway Pressure

CVA refers to Cerebral Vascular Accident (stroke)

DNR refers to Do Not Resuscitate

DNI refers to Do Not Intubate

Emergency Department means a hospital that provides an organized Emergency Service or Department that is available twenty-four (24) hours a day, seven (7) days a week and has the capability to provide On-Line Medical Control, to evaluate, treat, stabilize, and refer to an appropriate outside resource for all persons who present themselves for treatment.

Emergency Medical Responder

The MDPB recognizes the Emergency Medical Responder (EMR) scope of practice to include the following:

- a. Airway management, including manual maneuvers, suctioning, application of supplemental O₂, and use of the following airway adjuncts pocket mask, OPA/NPA, BVM
- b. Acquisition of manual vital signs
- c. Application of medications for force protection only (such as the Mark 1 kit)
- d. Performance of manual CPR and use of AED
- e. Assistance in childbirth
- f. Manual stabilization of the cervical spine or extremity injuries
- g. Hemorrhage control, including use of a tourniquet
- h. Emergency patient moves (such as drags, carries, etc.)
- i. Provision of naloxone for suspected overdose
- j. Dispensation of Naloxone as described in Yellow 4

The 2018 National Scope of Practice Updates include the following procedures to the EMR scope of practice: *hemorrhage control: wound packing, placement of cervical collars, extremity splinting,* and *eye irrigation.* Maine EMS EMR's who have been trained to perform these skills, through their primary training or Maine EMS approved continuing medical education may perform these skills in addition to the skills listed above.

EMS Provider means any person or service licensed by Maine EMS to provide emergency medical services.

End-tidal CO₂ **(ETCO**₂**)** is a measurement of carbon dioxide in exhaled air used to assess ventilation, also referred to as capnography. The capnography monitoring must be *continuous* and with a device that displays a waveform.

ETT refers to Endo-Tracheal Tube

Fluid Bolus indicates maximum fluid administration achievable without pumps or other special equipment in the field setting. Specifically, running a large bore IV wide open until the desired clinical condition or blood pressure, based on the patient's underlying condition, is achieved. A true IO bolus, at the appropriate dose with a syringe/3-way stop-cock assembly or pressure bag, is acceptable. Pediatric boluses are 20 mL/kg, and may be repeated one time if patient remains hypotensive, unless a specific alteration is noted in the protocols. Unless a specific volume of fluid is specified in the specific protocol, if the patient requires more than 40 mL/kg of IV fluid, contact OLMC to further guide fluid administration.

GI refers to Gastro-Intestinal tract

GU refers to Genito-Urinary tract

Hypoglycemia is a blood glucose less than 60 mg/dL.

IM refers to Intra-Muscular route of medication admnistration

IN refers to Intra-Nasal route of medication administration

IO in these protocols, means intraosseous access. IO may be used by the Advanced EMT or Paramedic. The IO route should be considered in any patient if an IV is not established within two attempts or 90 seconds and that patient has one of the following:

- a. Altered mental status (GCS less than or equal to 8)
- b. Respiratory failure (SpO₂ less than or equal to 90% after appropriate oxygen therapy, respiratory rate less than 10 or greater than 40 breaths per minute) with alteration of mental status
- c. Profound hypovolemia or hemodynamic instability with alteration of mental status or other evidence of shock – recall, the use of an IO for volume resuscitation requires the use of a pressure bag/3-way stop-cock to achieve optimal flow rates
- d. Cardiac arrest (medical or traumatic)

Additionally, the provider may choose to utilize the IO route first in critical patients for whom IV access may be difficult.

After discussion with OLMC, may consider IO placement for the following conditions:

- a. Profound hypovolemia (Systolic BP less than 90 mmHg) without alterations in mental status or other evidence of shock
- b. Burn patients with bilateral upper extremity burns

*IO is CONTRAINDICATED in the following conditions

- a. Fracture of the tibia or femur in lower extremity placement or fracture of the humerus in upper extremity placement
- b. Infection at insertion site
- c. IO within the prior 24 hours in the same bone
- d. Knee or shoulder replacement (identified by midline vertical scar over the patella or anterior proximal humerus)
- e. Tumor near site
- f. Inability to locate landmarks
- g. Excessive tissue at insertion site
- h. IO access is not intended for prophylactic use

Approved Sites (one per bone): Per manufacturer recommendations. Consider humeral head placement preferentially due to proximity to central circulation, particularly in OHCA patients.

IO, continued

Paramedic: If infusion of medications or fluids causes significant pain, consider the following:

- 1. Adult: Consider lidocaine 2% (preservative free) 40 mg slow push followed by 10 mL Normal Saline flush. If pain continues, contact OLMC for OPTION of additional 20 mg bolus
- 2. Pediatric: Consider lidocaine 2% (preservative free) 0.5 mg/kg (MAX 40 mg) slow push followed by 10 mL Normal Saline flush. If pain continues, contact OLMC for OPTION of additional 0.25 mg/kg (MAX 20 mg) slow push

IV means any balanced electrolyte solutions may be used, such as Lactated Ringers, Normal Saline and 5% Dextrose in Water. IV solutions, as defined in this document, DO NOT include other additives (such as potassium) or medications. Normal Saline is the fluid of choice for patients with history of renal failure, not Lactated Ringers. Recommended catheter size for rapid fluid resuscitation in adults is 14-18 gauge. If rapid fluid resuscitation is not required, smaller catheter sizes and heparin/saline locks may be used. Heparin used for this procedure is not considered a medication.

IV Push means a method of medication delivery in which a small volume of medication is administered, all at once, over a short amount of time (usually 1-2 minutes) into a vein.

LVAD refers to Left Ventricular Assist Device

LVO refers to Large Vessel Occlusion, a type of stroke that may be amenable to fibrinolytic/endovascular therapy

LOC refers to Level of Consciousness

mCPR refers to mechanical CPR

MDPB means Maine EMS Medical Direction and Practices Board, which consists of the six Regional Medical Directors, a physician representing the Maine Chapter of the American College of Emergency Physicians, an At-Large physician representative, a Clinical Pharmacist or Toxicologist, the State Assistant EMS Medical Director and the State EMS Medical Director.

Neonate is an infant less than or equal to 28 days old.

NR means a non-rebreather oxygen mask.

O₂ means oxygen therapy as appropriate for patient.

OCME refers to Office of the Chief Medical Examiner

ODT refers to Orally Disintegrating Tablet, the formulation of oral ondansetron that may be administered by allowing the tablet to melt on the patient's tongue

OG refers to Oral-Gastric tube and should be considered in all intubated patients

OHCA refers to Out-of-Hospital Cardiac Arrest

On-Line Medical Control (OLMC) refers to the on-line physician/physician assistant/nurse practitioner who is licensed by the State of Maine and authorized by a hospital to direct emergency medical services personnel consistent with the protocols developed by the MDPB.

Other Appropriate Destination means a facility that has been approved by the Board of EMS to receive, via ambulance, patients who are in need of emergency care.

Paramedic Back-up means use of an Advanced Life Support resource when a presenting patient needs more than Basic Life Support. In the prehospital setting, this indicates a *Paramedic* response. An ALS back-up agreement should be written between EMS provider services routinely offering and accepting ALS back-up support. This would establish medical/operational/ liability expectations of both services. These protocols cannot mandate any service to routinely offer or receive back-up. However, any decision in this regard, particularly to refuse to offer or accept ALS back-up, should be grounded in reasonable medical, operational, or financial considerations and should be reviewed by the individual service's legal counsel.

PCP refers to Primary Care Provider

Pediatric Patient in these protocols, means pre-pubertal (without pubic, axillary, or facial hair).

PO refers to the oral route of medication administration

POLST: Provider Orders for Life-sustaining Treatment.

PPE refers to Personnel Protective equipment and includes gloves, gowns, masks, respirators, eye protection.

PPV is Positive Pressure Ventilation, such as (in order of preference): two-person bag-valve-mask technique with oxygen, one-person bag-valve-mask technique with oxygen, mouth-to-mask ventilation with oxygen, and mouth-to-mask ventilation without oxygen.

RTCs refers to Regional Trauma Centers in Maine: Central Maine Medical Center (CMMC), Northern Light Eastern Maine Medical Center (EMMC), and Maine Medical Center (MMC)

TIA refers to Transient Ischemic Attack which presents with stroke-like symptoms

TKO refers to an IV rate of "To Keep Open" and may vary according to IV tubing (usually 10-25 ml/hour)

TOR refers to Termination of Resuscitation

TPA refers to Tissue Plasminogen Activator, a fibrinolytic medication used to treat non-hemorrhagic stroke

Transfer of Care When transferring care of a patient, an on-duty EMS provider must ensure the receiving caregiver is licensed at an equal or higher level unless the patient's condition and reasonably anticipated complications can be effectively managed by a lower-level provider's scope of practice. However, a patient who receives interventions at a higher level on scene shall only have care transferred to the same or higher-level provider.

VAD refers to Ventricular Assist Device

Maine EMS Statement on "Rescue" or "Alternate" Airway Devices

Maine EMS recognizes 2 major classes of Blind Insertion Airway Devices (BIADs). The first class is periglottic devices, such as the LMA® and the second class is transglottic or potentially transglottic devices, such as the King LT®. Any FDA-approved devices from these classes are approved for use.

A c-spine collar should be considered to help protect placement of all endotracheal intubations, periglottic and transglottic airway devices.

There are periglottic devices on the market that can be used to facilitate endotracheal intubation. If these devices are placed without an attempt at endotracheal intubation, they may be treated as any other periglottic device. If they are used to assist in placing an endotracheal tube, that tube must be treated and confirmed as any other endotracheal intubation.

It is recommended to have *NO MORE THAN* one device per class (periglottic or transglottic).

Pre-Intubation Checklist

1. Airway adjuncts ready

- ___ Suction
- Oropharyngeal airway/ 2 nasopharyngeal airways
- ___ Nasal cannula for apneic oxygenation

2. Intubation equipment ready

- __ Laryngoscope assembled and functional
- __ ET tube ready with lubricant, bougie and syringe (Bougies should be used on all intubation attempts using size 6.0 ETT and above)
- __ Tube-securing device ready
- __ Continuous end-tidal CO₂ monitor ready
- __ OG Tube

3. Back-up equipment ready

- __ Blind Insertion Airway Device (i.e. LMA ®, iLMA®, or King®) available
- __ Consider surgical airway device

4. Team ready

- __ Airway manager
- ___BVM operator
- __ Assistant

5. Plan discussed

6. Patient ready

- __ Pre-oxygenation/de-nitrogenation
- _____Vascular access
- —Patient positioning (unless contraindicated)
 - <u>—</u>Ear-to-sternal-notch
 - ____ 30 degree head-of-bed elevation
- ___ Evaluate airway difficulty
- __ Prep for surgical airway as needed

7. Post-intubation medications ready

- __ Pain control:
 - __ fentanyl
- __ Sedation (*requires OLMC*):
 - __ midazolam **OR** __ ketamine

8. Automatic ventilator settings (if available)

- __ Volume: 6-8 mL/kg
- _ Rate: 16 (10 in asthma/COPD)

Airway Algorithm



- An intubation attempt is defined as passing a bougie or the endotracheal tube past the teeth or the endotracheal tube inserted into the nasal passage.
- Continuous capnography is **mandatory** for all patients with a BIAD or Endotracheal Tube; if prolonged use of BVM, consider use of capnography.
- The goal of airway management is adequate oxygenation, ventilation, and airway protection. If an effective airway is being maintained by BVM with an OPA and/or NPA(s), it is acceptable to continue with basic airway measures rather than BIAD or intubation.
- Consider addition of high-flow nasal cannula in addition to BVM/face-mask prior to intubation attempt if not meeting oxygenation goals. Keep in place during intubation attempt.
- The gastric tube may be connected to low suction (less than 80 mmHg).

Patients are more effectively ventilated PEARLS for Endotracheal Intubation

with face-mask ventilation when: * Position the airway for best view of the cords – 1) A two-person ventilation technique is raise head to the sniffing position (i.e. earlobe in-line with sternal notch) used 2) ETCO₂ is used to guide ventilation * Preparation: (four cornerstones) 3) Avoiding hypo- and hyperoxia 1) ET tube 4) Avoiding hypo- and hyperventilation 2) Laryngoscope with backup blade 5) Minimizing peak airway pressure 3) Suction 6) When tolerated, both oral and nasal 4) Bougie on every attempt for ETT size 6 or greater * Always have a back-up plan should the airways are placed **Face mask ventilation can be achieved primary strategy fail* *When advanced airways are placed, secure the with a transport vent if so trained (Adult only)** tube with either a commercial tube holder or tape, rather than held manually*

Blue 3

Confirmation and Monitoring of Advanced Airways



* For cardiac arrest patients, consider placement of the ETT as well as lack of pulmonary circulation in the interpretation of ETCO₂ findings.

^{**} Nasotracheally-intubated patients should be assumed to have incorrect ETT placement if findings of breath sounds or ETCO₂ results are uncertain or equivocal

Failed Intubation Algorithm



Post-Intubation/BIAD Pain Control

All patients with an ETT or BIAD inserted who are **not** currently in cardiac arrest are at risk for pain, anxiety and self-extubation. Therefore, appropriate pain control and anxiolysis are required for all intubated patients. Signs of inadequate pain control/sedation include eye opening, coughing or gagging, sweating, tearing, new or worsening hypertension and/or tachycardia, tachypnea, or attempts to self-extubate.

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1. Minimize stimulation

ADVANCED EMT

2. Place IV for anticipated medication administration

PARAMEDIC

- 3. Pain control
 - a. Adult & Pediatric: Fentanyl 0.5 1 mcg/kg IV/IO every 15 minutes to a MAX cumulative dose of 5 mcg/kg



- 4. Anxiolysis Contact OLMC for ONE of the following options:
 - a. Midazolam
 - i. Adult: 0.5 2.5 mg IV/IO every 5 minutes, may repeat x 3 to a MAX cumulative dose of 5 mg OR 1-5 mg IM every 5 minutes, may repeat x 3 to a MAX cumulative dose of 10 mg
 - ii. Pediatric:
 - 1. 6 months 12 years: 0.05 mg/kg IV/IO every 5 minutes to a MAX cumulative dose of 5 mg
 - 2. **6 months 12 years:** 0.1 mg/kg **IM** (MAX single dose 5 mg) every 5 minutes to a maximum cumulative dose of 10 mg

-OR-

b. <u>Ketamine</u> (Adult ONLY)

- i. 0.2 mg/kg **IV/IO**, max single dose of 25 mg. Mix in 100 cc bag of saline and infuse over 10 minutes via a pump. May repeat x 1 in 5 minutes
- 2
- ii. 0.4 mg/kg IM, max single dose 50 mg. May repeat x 1 in 10 minutes

It is important to **avoid** hypotension in the critically ill patient, especially post cardiac arrest and head injury. Since anxiolytics (midazolam and ketamine) can cause significant hypotension, it is recommended to treat pain first and anxiolysis (if needed) second. Anxiolysis should be treated with **either** midazolam **OR** ketamine, not a combination of the two as this could cause profound hypotension.



Respiratory Distress with Bronchospasm #1 (COPD, Emphysema, Chronic Bronchitis, Asthma)

CAUTION: RESPIRATORY DISTRESS MAY BE DUE TO MULTIPLE OTHER CAUSES FOR WHICH OTHER TREATMENTS MAY BE INDICATED, INCLUDING THE FOLLOWING:

Pulmonary Edema, see **Blue 11** Anaphylaxis, see **Gold 1** Chest Trauma, see **Green 10**

EMT/ADVANCED EMT

- 1. O₂ as appropriate
- 2. If needed, assist ventilations with positive pressure ventilation using 100% O_2
- 3. Request ALS (see **Purple 1**)
- Ipratropium bromide 0.5 mg / albuterol sulfate 2.5 mg nebulizer if greater than one (1) year of age with continued respiratory distress. Every 5 minutes, may repeat x 2 as needed for ongoing symptoms.
- 5. Consider CPAP* in patients > 18 y/o if no improvement after three nebulizers.
 - *CPAP at the EMT level only if available, and so trained

Recall that CPAP should *never* take the place of bronchodilators and should be used only **after**, or in concert with, inhaled bronchodilators in patients with acute bronchospasm. If CPAP is going to be used in the asthmatic, nebulizers *must* be administered *simultaneously**.

6. If CPAP is initiated, do the following:

- a. Ensure ALS has been requested (see **Purple 1**). ALS providers bring additional therapies to support the management of patients requiring CPAP.
- b. Contact OLMC for the following treatment options:
 - i. Ipratropium bromide 0.5 mg / albuterol sulfate 2.5 mg nebulizer every five minutes while the patient remains on CPAP

ii. For severe disease refractory to CPAP ONLY: Epinephrine **1. Adult** – EPINEPHrine 0.3 mg **IM** of 1mg/1mL every 20 minutes

2. Pediatric - EPINEPHrine dose which is as follows: < 25 kg, 0.15 mg IM [0.15mL of 1mg/mL], > 25 kg, 0.3 mg IM [0.3 mL of 1mg/mL] in anterolateral thigh every 20 minutes

ADVANCED EMT

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- 7. Cardiac monitor
- 8. Manage airway as needed, refer to **Blue 3**

PARAMEDIC

- 9. Adult/Pediatric
- a. Albuterol 2.5 mg by nebulization. May repeat 1 time; **or**
 - b. Ipratropium bromide 0.5 mg / albuterol sulfate 2.5 mg nebulizer if greater than one (1) year of age and in continued respiratory distress. May repeat every five minutes x 2. (continued)

Respiratory Distress with Bronchospasm #2 (COPD, Emphysema, Chronic Bronchitis, Asthma)

10. Dexamethasone

Adult: 10 mg **IV/IM/IO** x 1 **OR**,

If patient can tolerate oral medications, is not in overt respiratpory distress, and is not requiring an airway management technique that obscures access to the mouth (i.e. O2 mask or CPAP) consider 10 mg PO x1

Pediatric: 0.6 mg/kg (single MAX dose of 10 mg) **IV/IM/IO** x 1 OR, If patient can tolerate oral medications, is not in overt respiratpory

distress, and is not requiring an airway management technique that obscures access to the mouth (i.e. O2 mask or CPAP) consider 0.6 mg/kg (single MAX dose of 10 mg) PO x1

- 11. Consider the following OPTIONS:
 - a. Repeated or continuous albuterol by nebulization or inhaler.
 - b. For patients in status asthmaticus
 - i. Epinephrine
 - 1. Adult: EPINEPHrine 0.3 mg IM of 1mg/1mL every 20 minutes
 - 2. Pediatric: EPINEPHrine dose which is as follows: Less than 25 kg, 0.15 mg IM [0.15mL of 1mg/mL], Greater than 25 kg, 0.3 mg IM [0.3 mL of 1mg/mL] in anterolateral thigh every 20 minutes
 - ii. Magnesium Sulfate
 - **1. Adult:** Magnesium Sulfate 2 grams **IV/IO** over 10 minutes, consider placing this medication on a pump.
 - 2. **Pediatric:** Magnesium Sulfate 50 mg/kg **IV/IO** with a MAX dose of 2 grams over 10 minutes; consider placing this medication on a pump.

B

*Asthmatic patients:

Airway management of asthmatic patients is primarily pharmacological, not mechanical. Therefore, the focus should be on taking those actions that enable the provider to provide inhaled bronchodilators and, in patients with severe bronchospasm, obtain rapid IV or IO access, administer IV dexamethasone, IV magnesium, and consider **IM** EPINEPHrine. Due to the pathophysiology of asthma, positive pressure ventilation (facemask, BIAD, or endotracheal intubation) rarely, if ever, is an effective treatment without pharmacological intervention. Therefore, unless the patient is apneic, provide supplemental oxygen via non-rebreather and focus on providing pharmacological interventions. CPAP, with the lowest PEEP setting possible, is a last resort and a bridge to intubation. Specifically, if CPAP is going to be used in the asthmatic, continuous nebs *must* be administered *simultaneously* and the provider must be prepared to proceed with advanced airway management.





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Respiratory Distress with Bronchospasm #3 (COPD, Emphysema, Chronic Bronchitis, Asthma)

Pediatric Considerations:



Wheezing in the child less than 2 years old is very commonly due to bronchiolitis. Bronchiolitis is a self-limited viral illness of the bronchioles, marked by edema but not smooth muscle contraction. Bronchiolitis is the most common cause of wheezing in children under the age of 2. The treatment goals are to maintain oxygenation and hydration and to monitor for apnea and respiratory distress. Because the etiology is different than asthma, the treatment options are also very different. Patients suffering from bronchiolitis **do not always benefit from inhaled albuterol, though a trial is appropriate. They also do not benefit from steroids**. Instead, provide oxygen to ensure O₂ sats greater than or equal to 90% and nasal suctioning with bulb syringe. In patients who fail these measures, consider alternate diagnosis, including stridor/croup and refer to Pink 2. Monitor for apnea or respiratory distress and, if encountered, manage the patient's airway as indicated per **Blue 3**.

Prehospital providers should consider patient age, diagnosis, transport time, provider experience, and effectiveness of ongoing bag-mask ventilation in considering whether to continue with bag-mask ventilation versus proceeding to further airway management procedures. Bag-mask ventilation has been shown to be equivalent to endotracheal ventilation in pediatric patients in most situations with short transport times. If suspected opiate overdose, refer to the Poisoning/Overdose protocol, **Yellow 1**.

Anxiolysis in CPAP

Adult patients with respiratory failure who are unable to oxygenate and ventilate often require CPAP. These patients may be combative and unable to tolerate CPAP either due to their hypoxia or anxiety.

EMT/Advanced EMT/Paramedic

1. Attempt coaching

PARAMEDIC

- 2. Consider ondansetron 4 mg IV/IO/IM if CPAP causing nausea and bloating
- 3. If unable to achieve sufficient anxiolysis to tolerate CPAP with coaching, contact **OLMC** for for **ONE** of the following anxiolytics:

a. Midazolam

- i. 0.5 2.5 mg **IV/IO** every 5 minutes, may repeat x 3 to a MAX cumulative dose of 5 mg
- ii. 1-5 mg **IM** every 5 minutes, may repeat x 3 to a MAX cumulative dose of 10 mg

-OR-

b. <u>Ketamine</u>

i. 0.2 mg/kg **IV/IO**, MAX single dose of 25 mg. Mix in 100 cc bag of saline and infuse over 10 minutes via a pump. May repeat x 1 in 5 minutes



ii. 0.4 mg/kg **IM**, MAX single dose 50 mg. Mix in 100 cc bag of saline and infuse over 10 minutes via a pump. May repeat x 1 in 10 minutes

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Pulmonary Edema (without shock)

Avoid nitroglycerin in any patient who has used a phosphodiesterase inhibitor within the past 48 hours. Examples are: sildenafil (Viagra, Revatio), vardenafil (Levitra, Staxyn), tadalafil (Cialis, Adcirca) which are used for erectile dysfunction and pulmonary hypertension. Contact OLMC for options in patients who have taken such medicines.

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If initial systolic BP is less than 100 mmHg, refer to "Cardiogenic Shock" protocol, **Red 20.**

EMT

- 1. O₂ as appropriate. Assist ventilations (PPV) if needed
- 2. Assess for shock
- 3. If BP greater than 100 mmHg, place in sitting position
- 4. Request ALS
- 5. If available, and so trained, consider trial of CPAP

ADVANCED EMT

- 6. Cardiac monitor and 12-lead ECG
- 7. IV en route
- 8. Manage airway as needed, refer to Blue 3
- 9. Contact OLMC for administration of nitroglycerin 0.4 mg tab or 1 spray **SL**. Repeat nitroglycerin at 2-minute intervals if systolic BP greater than 100 mmHg. After initiation of SL nitroglycerin, may place 1 inch of nitroglycerin ointment 2% to the chest wall if BP greater than 100 mmHg and remove nitroglycerin ointment 2% if BP less than 100 mmHg. If the patient has had nitroglycerin before and no IV is established, and systolic BP is greater than 100 mmHg, then it is OK to give nitroglycerin.
- 10. Consider use of CPAP

PARAMEDIC

11. Paramedic may perform all treatments above without medical control

12. Contact OLMC if above measures are not working

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Pulmonary Hypertension Complications

There are increasing numbers of patients being treated for pulmonary hypertension throughout the state of Maine. Pulmonary hypertension is a disease in which a patient's pulmonary arterial pressures are elevated and can be due to multiple factors, including heart disease, chronic lung disease, or thromboembolic disease. Additionally, in some cases of pulmonary hypertension, the etiology is uncertain. Patients manifest with multiple clinical symptoms, including dyspnea, chest pain and syncope. Pulmonary hypertension is NOT a disease that will be diagnosed in the prehospital setting. Increasingly, patients are being treated for the disease with medications that cause pulmonary vascular vasodilation, such as treprostinil (Remodulin).

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Transport Destination

Preferably, patients suffering from pulmonary hypertension who are treated by a specialist should be transported to the hospital managing their disease for ALL emergencies whenever feasible or operationally reasonable. If operational circumstances or the patient's needs dictate otherwise, please transport to the closest reasonable facility. Please consult OLMC for any questions.

ADVANCED EMT Medication Interruption

Treprostinil (Remodulin) and other medications used to treat pulmonary hypertension are provided by central access, typically through a pump. Patients are often treated with both IV and oral medications. Disruptions of the patient's IV medications can lead to increased symptoms. Most medication interruptions are NOT related to the pump, but rather the patient's central line and loss of access. In the case of interruptions of IV medication due to loss of central access:

1. Establish peripheral access

PARAMEDIC

- 2. Verify the patient's medication and dose
- 3. Re-initiate the patient's medication through the newly-established peripheral access
- 4. Consider the transport destination suggestions as listed above.

PEARLS FOR PULMONARY HYPERTENSION COMPLICATIONS

Most medications used to treat pulmonary hypertension have a high pH and if left running through a peripheral line too long (greater than 4 hours) may cause peripheral vein phlebitis and sclerosis. Please document the time the medication was initiated through the peripheral line and alert treating Emergency staff.

For any questions, please contact On-Line Medical Control.

Surgical Cricothyrotomy #1

The following protocol is an effort to maintain awareness of a procedure that occurs rarely in the Maine EMS system. Ultimately, this procedure should be practiced on a regular basis to maintain proficiency. PLEASE NOTE, this protocol describes a generally acceptable open cricothyrotomy and will differ from services that employ percutaneous kits. The inclusion of this protocol DOES NOT mandate that all providers use this exact procedural description. Providers should employ the procedure they are trained, practiced and most comfortable with. This protocol is one of multiple acceptable means to perform this procedure. Regardless of the procedure type, it is essential that Maine EMS paramedics are familiar with the available supplies and materials.

The primary indication for surgical cricothyrotomy is failure to maintain the airway (including oxygenation, ventilation, and protection) through other, less invasive means in a patient 8 years or older with palpable landmarks. In the Maine EMS experience, this has occurred predominantly in trauma cases with disruption of the face and normal airway anatomy and in choking patients. Even in some dramatic facial injuries, the airway may be adequately managed by sitting the patient up and leaning forward, as long as the other injury patterns allow.

Materials/Equipment for Surgical Cricothyrotomy

- 1. Cuffed tracheostomy tube or -6.0 7.0 ETT
- 2. Tracheal hook or bougie
- 3. Trousseau dilator (if available)
- 4. Syringe to inflate cuff





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Surgical Cricothyrotomy #2

Procedure:

- 1. Extend the neck when possible to ensure best access to the trachea. Swab/cleanse the area.
- 2. Immobilize the trachea with your non-dominant thumb and middle finger while palpating the cricothyroid membrane with your non-dominant index finger. NOTE: The cricothyroid membrane is immediately BELOW the thyroid cartilage.
- 3. Make a 3 5 cm **vertical** incision over the cricothyroid membrane through the skin and subcutaneous tissues. NOTE: Severe bleeding is possible with this procedure and may occur at this or the following steps. Be prepared to suction and provide direct pressure to control bleeding
- 4. Palpate the membrane through the incision to confirm anatomy.
- 5. Make a small (1 cm or less) incision **horizontally** through the cricothyroid membrane.
- 6. Insert the tracheal hook or bougie in the opening of the membrane and rotate toward the head while maintaining hold of the thyroid cartilage with your non-dominant hand.
- 7. If Trousseau dilator available, insert into the incision site and spread vertical then rotate 90 degrees until the dilator is parallel with the neck.
- 8. Insert the cuffed tracheostomy tube or ETT tube into the incision site. Advance until the flanges rest on the skin of the neck (when using tracheostomy tube).
- 9. Carefully remove the dilator (if used), tracheal hook and obturator of the tracheostomy tube.
- 10. Inflate the balloon of the tracheostomy tube/ETT.
- 11. Ventilate and confirm position by physical exam and ETCO2.
- 12. Secure the tube in place.
- 13. Dress incision site.











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Tracheostomy Care #1

Indication:

An adult or pediatric patient with an established tracheostomy with signs of respiratory distress or failure.



Procedure:

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- 1. Consult the patient's caregiver for assistance.
- 2. Assess the tracheostomy tube looking for easily reversible causes of distress, including detached oxygen source, plugging, etc.
- 3. Administer high-flow O2 over the tracheostomy via non-rebreather mask or blow by.
- 4. If patient's respiratory distress continues, assist ventilation using a bag-valve-mask to the tracheostomy tube.
- 5. Suction the tracheostomy tube if unable to ventilate with BVM, course upper airway sounds or if respiratory distress continues despite BVM ventilation
 - a. Use the patient's suctioning supplies or a tube that is no more than 1/2 the diameter of the tracheostomy tube.
 - b. Use no more than 80 mmHg suction pressure in **pediatric** patients and 150 mmHg in **adults**
 - c. If tracheostomy tube has a cannula, remove it prior to suctioning
 - d. Determine the proper suction catheter depth by measuring the obturator. If no obturator is available, insert the suction catheter 2-3 inches into the tracheostomy tube. DO NOT force the suction catheter into the tracheostomy tube.
 - e. Preoxygenate when possible for 30-60 seconds then insert the suction catheter to the desired depth. Apply suctioning while removing the catheter. Gently rotate the catheter while withdrawing. This should take 10 15 seconds.
- 6. Consider using 2 3 mL of saline or nebulized saline to help loosen thick secretions
- 7. If respiratory distress continues, consider likely cause and reference appropriate protocol

In the case of an adult or pediatric patient with established tracheostomy tube (greater than 1-2 weeks old), in respiratory distress or failure in which the above measures have not succeeded in improving respiratory status, consider replacing the tracheostomy tube. This protocol may also be appropriate for patients with dislodged tracheostomy tubes.

PEARLS FOR TRACHEOSTOMY CARE

There are many types of tracheostomy tubes on the market. One of the most common types is the Shiley. These tracheostomy tubes have an inner and outer cannula. **PLEASE NOTE:** only the inner cannula has a 15 mm adapter that will fit a BVM, the outer cannula will not. The inner cannula MUST be in place to ventilate the patient

ANY bleeding from the tracheostomy site should be evaluated emergently. Follow the Hemorrhage/Hemorrhagic Shock protocols, **Green 12 & 13**, AND, in the case of severe hemorrhage from the tracheostomy site, hyperinflate the tracheostomy cuff with 50 mLs, in an effort to tamponade the bleeding vessel. Inflate slowly, to prevent cuff rupture. Depending on the make and model of the tube, inflating the entire 50 mL may not be possible.

Tracheostomy Care #2

Indication for Tracheostomy Replacement:

An **adult** or **pediatric** patient with an established tracheostomy (greater than 2 weeks old) with signs of respiratory distress or failure that have not improved with measures listed on the previous page. Also, for patients dislodged tracheostomy. If tracheostomy tube is less than 2 weeks old, refer to **Blue 3** and attempt to secure airway from above.

Necessary Equipment:

- Replacement tracheostomy tube, if available (from the patient or care giver)
- If no replacement tracheostomy tube is available, an ETT of similar internal diameter (see below)
- If possible, water-based lubricant jelly

Procedure:

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- 1. Place the patient on high-flow O2 and monitor
- 2. Place patient in a semi-recumbent position with the neck slightly extended
- 3. Remove old stoma dressing and clean the site
- 4. Lubricate the new tracheostomy tube or replacement ETT
- 5. Deflate the old tracheostomy tube's balloon and remove during exhalation
- 6. Using the replacement tracheostomy tube's obturator, insert the replacement tube at a 90 degree angle to the cervical axis.
- 7. Next, gently advance the replacement tracheostomy tube in a fluid fashion, using the natural curvature of the tube until the flange is flush against the neck.
- 8. Remove the obturator if using a replacement tracheostomy tube and insert the hollow internal cannula.
- 9. If using an ETT as replacement, remove the old tracheostomy tube as described above, insert a bougie into the stoma directed downward. Slowly advance the lubricated ETT into the stoma. RECALL, when using an ETT as replacement, it need only be advanced a few centimeters into the stoma. Consider shortening the ETT by cutting the tube AFTER the takeoff for the balloon inflation.
- 10. Inflate the cuff of the replacement tracheostomy tube or ETT
- 11. Secure the device to the patient's neck.

Portex Cuffed D.I.C. Tracheostomy Tubes		Shiley Tracheostomy Tubes	
Portex Tube Size (mm) and Color	Internal Diameter (mm)/-ETT Equivalent	Shiley Tube Size	Internal Diameter (mm)/ ETT Equivalent
3.0	3.0/3.0-3.5	3.0 (NEO or PED)	3.0/3.0-3.5
3.5	3.5/3.5-4.0	3.5 (NEO or PED)	3.5/3.5-4.0
4.0	4.0/4.0-4.5	4.0 (NEO or PED)	4.0/4.0-4.5
5.0	5.0/5.0	4.5 (NEO or PED)	4.5/4.5-5.0
6.0 (orange)	6.0/6.0	5.0 (NEO or PED)	5.0/5.0
7.0 (green)	7.0/7.0	6	6.4/6.0-7.0
8.0 (white)	8.0/8.0	8	7.6/7.0-8.0
9.0 (blue)	9.0/9.0	10	8.9/9.0
10.0 (yellow)	10.0/10.0	10	

PEARLS FOR TRACHEOSTOMY CARE

Please Note - the internal diameter of an ETT is designated by the tube name - i.e. 6.0 tube has a 6.0 mm internal diameter. If the tracheostomy is less than 2 weeks old, the track is immature and there is risk of creating a false lumen if attempts to replace or change the tracheostomy are made.