	STAFFORD COUNTY FIRE AND RESCUE DEPARTMENT **INTERIM MEDICAL DIRECTIVE**
	NUMBER: 2022-001 — **DATE:** January 10, 2022
	ISSUED BY: Robert E. Fines, MD, FACEP Operational Medical Director — Robert E Fines
	SUBJECT: Termination of Resuscitative Efforts (TOR)
	SUPPLEMENT MEDICAL PROTOCOLS/PROCEDURES: Administrative-Section I, 3.3 Code Grey

PURPOSE:
This policy outlines the Termination of Resuscitative Efforts (TOR) for Stafford County EMS Clinicians.

POLICY
Under select circumstances, it is reasonable and appropriate for EMS Clinicians engaged in the resuscitation of a patient to stop, assess progress, and then terminate further efforts if the patient has not responded. For patients who meet the criteria below and fail to respond to resuscitative efforts, termination of efforts is permitted with Online Medical Control (OLMC).

DEFINITION:
For cases considered for TOR, a reasonable trial of resuscitative efforts has been delivered for a minimum of 20 minutes from initiation of advanced life support (ALS) care (application of ECG monitor and identification of initial rhythm). A trial of resuscitative efforts includes:

- CPR.
- Defibrillation (if applicable).
- Successful ventilation via advanced airway (King LTS-D Airway or Endotracheal Tube).
- Successful vascular access (IO or IV).
- Appropriate pharmacological intervention.
- Verify the absence of cardiac activity by auscultation and/or ultrasound; and record the EKG rhythm in leads II and III.

PROCEDURE:
For patients who have met the criteria for TOR, a formal Code Gray request should be made to OLMC via the HEAR Channel or HEAR Phone, and communicated in the following order:

- Agency/Unit
- Code Gray Request
- Age and Gender
- Witnessed or Unwitnessed Cardiac Arrest
- Total downtime (without CPR)
- Any pre-arrival CPR/efforts
- Duration of EMS resuscitative efforts
- Summary of EMS Treatment: Presenting EKG, CPR, Medications, Advance Airway, Absence cardiac activity by auscultation and observation in leads II and III.
- Current EKG rhythm, and Capnography
- Pupillary Response

- Pertinent medical history.
- Resuscitation efforts have been explained to family members and are aware of the request for TOR.

Resuscitative efforts may not be terminated in the following circumstances:

- Cardiac arrest from hypothermia, or drowning/cold water immersion
- Cardiac arrest from electrical injury, including those struck by lightning
- ROSC (transient or permanent) at any point during the resuscitation
- Patients in law enforcement, or correctional custody, to include patients/inmates at the Rappahannock Regional Jail, Stafford Detention/Diversion Center or in any law enforcement vehicle, intake or holding facility.

NOTES:

- Record time of death declared by OLMC/Doctor # in the ePCR.
- Advise law enforcement of TOR and document their name and badge number in the ePCR.
- Ensure all interventions are left in place
- If in public view a clean sheet can be used to cover the patient if permitted by on-scene law enforcement.
- If family counseling and support resources are unavailable, counseling and related assistance may be offered

STAFFORD COUNTY FIRE AND RESCUE DEPARTMENT
INTERIM MEDICAL DIRECTIVE

NUMBER: 2022-002	**DATE:** January 31, 2022
ISSUED BY: Robert E. Fines, MD, FACEP Operational Medical Director	
SUBJECT: Use of Orogastric Tubes	
SUPPLEMENT MEDICAL PROTOCOLS/PROCEDURES: Clinical Procedures-Section IV Airway-Management	

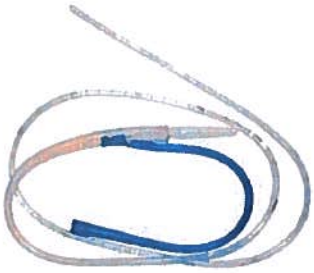
PURPOSE:
This policy outlines the use and placement of orogastric tubes (OG) for Stafford County EMS Clinicians.

POLICY
OG tubes may be placed after an advanced airway has been secured. Clinicians trained in their use according to manufacturer's guidelines, the following procedure, and as approved by the Operational Medical Director are authorized to place an OG tube. OG tube placement is permitted by EMT, AEMT, EMT-I, and EMT-P clinicians.

DEFINITION:
Prehospital resuscitation efforts using mouth-to-mouth or bag-valve-mask ventilation may cause gastric distention. Gastric distention compromises oxygenation and ventilation and increases the risk of aspiration, decreases venous return, and increases intra-abdominal pressure which all hinder adequate resuscitation. Gastric distention can be easily reduced with the use of an OG tube.

An OG tube is a dual-lumen tube that is passed through the mouth, down through the oropharynx and esophagus into the stomach. The tube has cm markings allowing clinicians to easily determine tube depth during placement. The large lumen allows for easy suction of gastric contents and decompression while the smaller vent lumen allows for atmospheric air to equalize the vacuum pressure in the stomach preventing the tube from adhering to and damaging the stomach lining.

INDICATIONS:
Patients orotracheally intubated or a King LTS-D Airway is in place.



CONTRAINDICATIONS:
Known or suspected caustic ingestion and esophageal disease.

OG TUBE SELECTION:
Three different-sized OG tubes will be used depending on the patient's size.

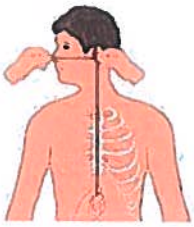
Patients with a King LTS-D Airway

King LTS-D Airway	3	4	5
Tube Color	Yellow	Red	Purple
Patient Size	4 to 5ft	5 to 6ft	>6ft
OG Tube Size	18fr	18fr	18fr

Patients orotracheally intubated (ETT)

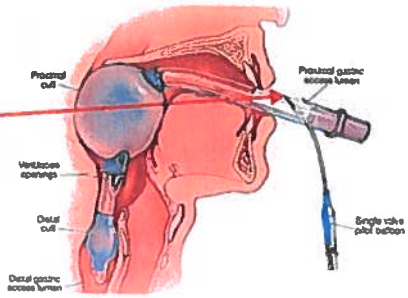
ETT Tube	<4.5mm	5-6.5mm	>6.5mm
Patient Size	<15kg (33lbs)	15 to 35kg (33-75lbs)	>4ft/>75lbs
OG Tube Size	10fr	16fr	18fr

OG TUBE DEPTH MEASUREMENT:



1. Hold end of OG tube (the end with the eyelet) over the patient's xiphoid process.
2. Extend the OG tube up the chest to the patient's earlobe.
3. Hold OG tube at the patient's earlobe and extend it over the cheek to the patient's lips.
4. Note the OG tube's cm markings at the lips. Mark tube with a marker, or with a piece of tape.

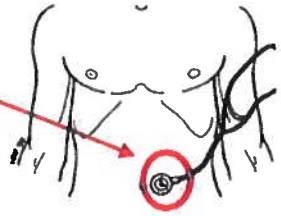
PROCEDURE: King LTS-D Airway



1. Identify the appropriate size OG tube and the correct depth.
2. Lubricate the OG tube tip with a water-soluble gel.
3. Insert the OG tube into the proximal gastric access lumen.
4. Advance OG tube to the pre-determined depth.
5. Secure OG tube to King Airway with tape.
6. Attached OG tube to suction and suction until no return of stomach contents.
7. Turn off suction, leave the OG tube in place.
8. If the OG tube is disconnected from the suction tubing, connect the clear tube to the blue air vent lumen using the plastic male adapter.

PROCEDURE: Endotracheal Tube (ETT)

1. Identify the appropriate size OG tube and the correct depth.
2. Curl OG tube tip with a slight curvature.
3. Lubricate the OG tube tip with a water-soluble gel.
4. Insert OG tube behind the ETT, toward the roof of the mouth, and down the midline of the oropharynx.
5. Advance to the pre-determined depth.
6. If resistance is met, stop advancement and adjust direction slightly before reattempting.
7. Confirm placement by:
    a. Aspirate gastric contents with a Toomey syringe, and,
    b. With the Toomey syringe, inject 30ml air into the OG tube while auscultating over the stomach area listening for a "swoosh" sound.
        i. Pediatrics: 10ml of air
8. Secure OG tube to ETT with tape.
9. Attached OG tube to suction and suction until no return of stomach contents.
10. Turn off suction, leave the OG tube in place.
11. If the OG tube is disconnected from the suction tubing, connect the clear tube to the blue air vent lumen using the plastic male adapter.



NOTES & PRECAUTIONS:

1. Do not apply continuous suction. After stomach contents have been removed, turn off suction.
2. There is no need to inject air to confirm the OG tube placement when using the King LTS-D Airway. The King LTS-D has a lumen channel with direct access into the esophagus.
3. Document use in electronic Patient Care Report (ePCR).

RESTOCKING

OT Tubes and the Toomey Syringe can be ordering on FacilityDude and will be added to the Bound Tree Ordering System once it is operational. It is not available as a one-for-one exchange as local medical facilities.

	STAFFORD COUNTY FIRE AND RESCUE DEPARTMENT **INTERIM MEDICAL DIRECTIVE**	
	NUMBER: 2022-003	**DATE:** March 8, 2022
	ISSUED BY: Robert E. Fines, MD, FACEP Operational Medical Director	Robert E Fines
	SUBJECT: Atrial Fibrillation/Atrial Flutter	
	SUPPLEMENT MEDICAL PROTOCOLS/PROCEDURES: Medical Protocols-Section II, Adult Tachycardia with a Pulse Algorithm	

PURPOSE:
To provide supplement direction to the Rappahannock Emergency Medical Service (REMS) Patient Care Protocol- Adult Tachycardia with a Pulse Algorithm. This directive outlines the treatment of Atrial Fibrillation and Atrial Flutter for Stafford County EMS Clinicians.

DEFINITION:
Atrial Fibrillation (A-Fib) is a narrow complex tachycardia that is irregularly irregular. A-Fib may cause syncope, orthostatic hypotension, or hypotension due to loss of atrial kick. Rate related signs and symptoms usually occur at rates greater than 150 beats per minute (bpm).

Chronic A-Fib is the most common dysrhythmia seen in patients over 65 years old. In these patients, A-Fib is generally well tolerated, and the ventricular rate is controlled. Chronic A-Fib with rapid ventricular rate may be due to medication non-compliance or other underlying illnesses including fever, infection, ischemia, PE, etc.

New onset A-Fib with rapid ventricular response are the most clinically relevant.

Atrial Flutter (AF) is similar to A-Fib; the atria beat regularly, but faster than usual and more often than the ventricles, there may be four atrial beats to every one ventricular beat. Atrial flutter is less common, but has similar symptoms (feeling faint, tiredness, palpitations, shortness of breath or dizziness). About a third of people with atrial flutter also have atrial fibrillation.

A-Fib and AF are treated the same in the prehospital setting. The prehospital care goals are to identify the tachycardic rhythm, classify as stable or unstable, and treat accordingly.

ASSESSMENT: <u>BLS</u>
- Perform patient assessment. Obtain vital signs and blood glucose.
- Ensure oxygenation, and monitor NIBP, HR, RR, SpO_2, and $ETCO_2$.
- Place patient on cardiac monitor, attached . Obtain a 12 lead EKG and transmit to the receiving facility.

<u>ALS</u>
- Establish vascular access
- Identify the tachycardic rhythm: A-Fib or AF with ventricular rate greater than 150 bpm
- Classify as stable or unstable:
  Stable: Conscious/alert, SBP >90mm Hg, MAP >65mm Hg
  Unstable: Altered mental status, hypotension, shock, ischemic chest pain/discomfort, dizzy, skin is pale, cool or diaphoretic, dyspnea, tachypnea

TREATMENT:

Stable: Diltiazem (Cardizem) 0.25 mg/kg IV/IO (max of 20 mg) over 2 minutes. If patient is >70 years of age, reduce the bolus by ½. If rate does not slow within 15 minutes, administer Diltiazem 0.25 mg/kg IV/IO (max of 20 mg).

If Diltiazem is not available:

Metoprolol (Lopressor) 5 mg slow IV/IO push, repeat every 5 minutes to a max. dose of 15 mg to achieve a desired heart rate of less than 120.

Unstable: If patient is conscious, administer Versed 2mg IV/IO/IN/IM slow, do not delay cardioversion if patient is extremely unstable.

Deliver Synchronized Cardioversion 100 J, if refractory, increase energy to 150 J, 200 J as needed.

NOTES:

- Monitor and document NIBP, HR, RR, SpO_2, and $ETCO_2$ after each medication administration and synchronized cardioversion.
- Patients requiring synchronization should have the Physio Control therapy cables, and limb leads attached to the patient.
- Ensure the SYNC Button is activated for each synchronized cardioversion.
- Diltiazem, Metoprolol and Synchronized Cardioversion are considered Standing Orders for EMT-I and EMT-P clinicians.

	STAFFORD COUNTY FIRE AND RESCUE DEPARTMENT **INTERIM MEDICAL DIRECTIVE**
	NUMBER: 2022-004 — **DATE:** March 8, 2022
	ISSUED BY: Robert E. Fines, MD, FACEP Operational Medical Director — Robert E Fines
	SUBJECT: Continuous Pulmonary Airway Pressure (CPAP)
	SUPPLEMENT MEDICAL PROTOCOLS/PROCEDURES: Medical Protocols-Section II, Medical-Respiratory Distress/Asthma/COPD/Coup/Reactive Airway

PURPOSE:
To provide supplement direction to the Rappahannock Emergency Medical Service (REMS) Medical-Respiratory Distress/Asthma/COPD/Coup/Reactive Airway Patient Care Protocol. This directive outlines the use of Continuous Pulmonary Airway Pressure (CPAP) for Stafford County EMS Clinicians.

DEFINITION:
CPAP is a noninvasive positive pressure ventilation device for patients with for Asthma, Chronic Obstructive Pulmonary Disease (COPD) and Congestive Heart Failure (CHF). CPAP has drastically reduced the length of hospitalization stays and those who would have required intubation.

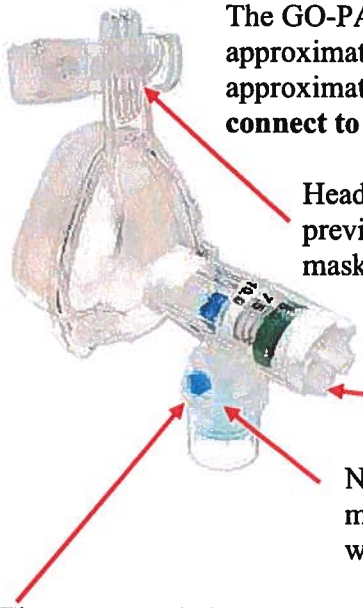
The department is switching to the Pulmodye GO-PAP CPAP Device. The GO-PAP is a disposable CPAP device, uses 10LPM of oxygen and delivers approximately 30% FiO2, at 5, 7.5 or 10cm of PEEP. Its use is further explained under **GO-PAP INFORMATION** below.

INDICATIONS
- Adult Use Only
- CPAP should be applied for moderate to severe respiratory distress due to Asthma. COPD or CHF.
  - Asthma: Refractory to inhaled beta-agonists (MDI/NEB), shortness of breath with wheezing or decreased air entry, accessory muscle use and/or tripod positioning, cyanosis, mottled skin, nasal flaring, and retractions.
  - CHF: Rales/rhonchi, hypoxia, tachypnea, peripheral edema, jugular venous distention (JVD), ascites, orthopnea and/or frothy sputum.
  - COPD: Smoking history, pursed lip breathing, cyanosis/red face, dyspnea on exertion, chronic barrel chest.
- Moderate to severe respiratory distress.
  - Increased work of breathing: retractions, rate greater than 30, unable to speak in full sentences.
  - Abnormal lung sounds: bilateral rales (at least half-full), diffuse wheezes, diminished breath sounds.
  - Respiratory insufficiency: O2 saturation less than 94% on 10 lpm, less than 90% on room air.

CONTRAINDICATIONS
- Inability to protect airway: decreased LOC, vomit/secretions, decreased cough/gag, unable to hold head up.
- Inadequate respiratory drive: cardiac/respiratory arrest, respiratory rate less than 10.
- Pneumothorax.
- SBP < 90 mmHg or MAP < 70 mm Hg

- Gastric distension.
- Inability to fit or tolerate mask.
- Respiratory distress related to allergic reaction

GO-PAP INFORMATION



The GO-PAP is supplied by a standard oxygen bared outlet at 10LPM and delivers approximately 90LPM at 30% FiO2. With a full D size oxygen cylinder, you have approximately 40 minutes of run time with this device. **The GO-PAP does not connect to the 50 psi DISS Fitting on the portable oxygen cylinder.**

Headgear: The Go-PAP uses the same head gear as the O2-Max CPAP previously used and includes the Omni Clip which allows you to adjust the mask in, out, up and down to fit the patient.

Adjustable PEEP Valve: 5, 7.5, or 10cm H2O PEEP, is independent of the oxygen flow, do not have to adjust the oxygen to maintain PEEP levels.

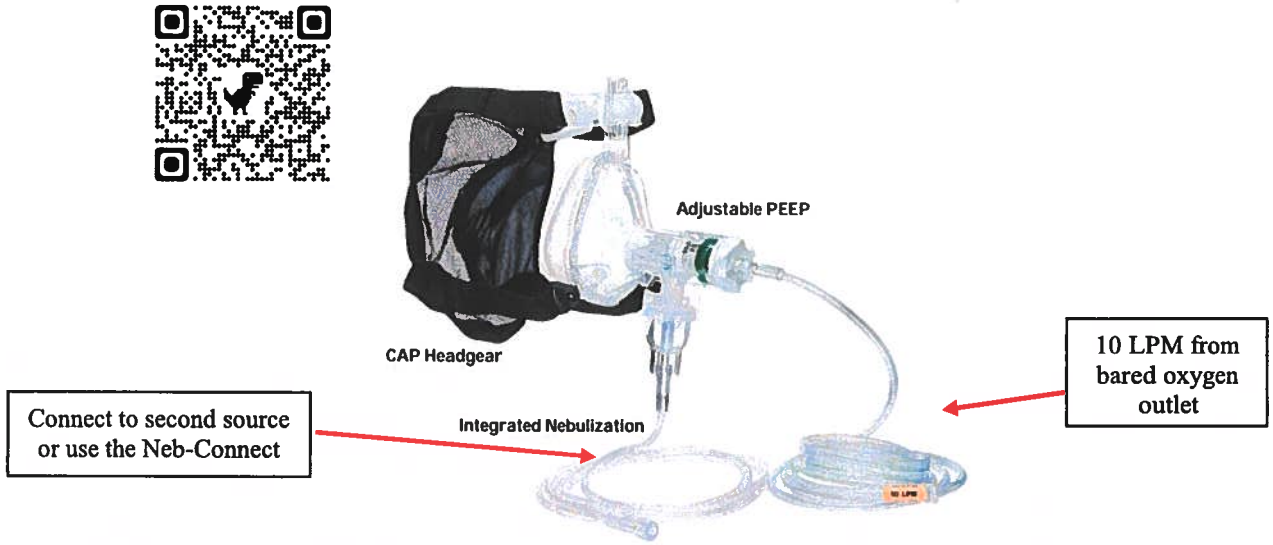
Nebulization Inlet: GO-PAP offers an integrated nebulization inlet while maintaining a consistent flow to the patient. You can use the CPAP with or without a nebulizer.

The accompanied nebulizer has a port you can inject medications without detaching the nebulizer from the CPAP. All common nebulizers can be attached to this CPAP.

Neb-Connect: The Neb-Connect is an attachment that connects to the 50 psi DISS Fitting on the portable oxygen cylinder, and allows you to connect the nebulizer tubing to an oxygen source since the CPAP is already connected to the bared oxygen outlet. You simply open the white valve to flow oxygen to the nebulizer.

Neb-Connect™

For more information go to https://www.pulmodyne.com/product/go-pap or select QR Code.



PROCEDURE

- Connect and monitor end-tidal CO2 cannula (sidestream capnography).
- Connect CPAP to bared oxygen source and select 10 LPM oxygen flow.
- Fit patient with CPAP mask, coaching techniques can assist in alleviating fear associated with placing a mask on a patient's face who is in respiratory distress. Allowing patient to hold mask in place prior to engaging headgear straps may assist.
- Titrate PEEP to 7.5 or 10.0 cm H2O if needed, until signs of clinical improvement are observed.
- Evidence of clinical improvement includes:
    - Improved heart rate, respiratory rate, oxygen saturation and capnography.
    - Decreased work of breathing.
    - Patient reports improvement in dyspnea and/or you observe increase in verbal communication.

Closely monitor CPAP administration and immediately discontinue if the patient's status worsens to include:

- Can no longer protect their airway.
- Fails to maintain an adequate respiratory drive.
- Develops hypotension SBP < 90mm Hg.
- Unable to tolerate the CPAP despite reasonable efforts.

If no improvement, switch to BVM respiratory assistance.

Any interruptions in CPAP should be brief. If, for example, nitroglycerin therapy is indicated at least two providers should be present to efficiently coordinate mask removal, medication administration, and mask replacement. Consider applying Nitropaste during CPAP Use.

NOTES:

- CPAP application is a Standing Order for EMT, AEMT, EMT-I and EMT-P clinicians.
- Clinicians should administer CPAP immediately and not wait until the patient has been transferred to the transport unit.
- Critical patients can become dependent on CPAP and clinicians shall not withdraw CPAP without alternative therapies to sustained their condition.
- Notify ED early for appropriate transition to hospital staff.
- GO-PAP CPAP will be added to the oxygen or airway bag as we standardize the EMS Bags.
- GO-PAP CPAP will be added to FacilityDude and the Bound Tree EMS Online Ordering System.

	STAFFORD COUNTY FIRE AND RESCUE DEPARTMENT **INTERIM MEDICAL DIRECTIVE**	
	NUMBER: 2022-005	**DATE:** March 8, 2022
	ISSUED BY: Robert E. Fines, MD, FACEP Operational Medical Director	Robert E Fines
	SUBJECT: Determination of Dead on Arrival (DOA)	
	SUPPLEMENT MEDICAL PROTOCOLS/PROCEDURES: Administrative Protocols-3.4 Death (DOA) Management, 3.4.2 Management	

PURPOSE:
This policy outlines the determination of patients that meet the Dead-on-Arrival (DOA) criteria for Stafford County EMS Clinicians.

POLICY:
Under select circumstances, it is reasonable and appropriate for EMS Clinicians to determine when resuscitative efforts can be withheld. For patients who meet the criteria below, resuscitative efforts can be withheld and the patient pronounced DOA.

DEFINITIONS:
Dependent Lividity: Settling of blood in gravity-dependent portions of the body (back/buttocks) causing a purplish red discoloration of the skin. It starts twenty minutes to three hours after death, with maximum lividity occurring in 6 to 12 hours.

Rigor Mortis: Stiffening of muscles in the body. It begins approximately three to four hours after death and is first observed in the muscles of the face and jaw.

INDICATIONS:
Indications for withholding resuscitation efforts include:

- Confirmation of a valid Virginia Durable Do Not Resuscitate (VDDNR), other authorized DNR orders following the Office of EMS regulations, and the REMS DNR Protocol, or;

- Conditions incompatible with life:
  - Decomposition
  - Decapitation
  - Incineration

- Signs of non-recent death
  - Dependent Lividity
  - Rigor Mortis

If resuscitative efforts have begun before the arrival of EMS Clinicians and the patient meets the criteria for withholding resuscitation, efforts can be discontinued.

CONTRAINDICATIONS:
Resuscitative efforts shall not be withheld in the following circumstances:

- Cardiac arrest with hypothermia or cold-water immersion.
- Cardiac arrest with electrical injury (electrocution), including those struck by lightning.
- Patients in third-trimester pregnancy

PROCEDURE:

Clinicians shall confirm the patient is unresponsive, apneic, pulseless.

Assessment shall include:

- Pupils do not respond to light.
- Absence of apical heart activity by auscultation or ultrasound (if available)
- ECG confirms no electrical activity (Asystole) in Leads II & III (if ALS is available).

EXCLUSION: Patients with a VDDNR, other authorized VAOEMS DNR; and those that are decomposed, decapitated or incinerated.

DOCUMENTATION:

The following shall be documented in the patient's ePCR:

- Patient assessment findings - unresponsive, apneic, pulseless, dependent lividity, rigor mortis, and any other significant clinical findings.
- Pupillary function
- Apical heart sounds
- Heart rhythm in Leads II & III (if ALS)
- Time of pronouncement of death
- Name of law enforcement officer body transferred to

NOTE:

- Patients with an implantable pacemaker may continue to generate organized ECG complexes after death and until the pacemaker is deactivated.
- After death, the body's temperature remains unchanged for up to three hours; relying on the body's temperature to determine time of death is unreliable.
- Consult with law enforcement before moving or covering the body. Using hospital linens can potentially contaminate crime scenes however protecting the body from public view needs to be considered.
- Offer counseling and related assistance as needed.

	STAFFORD COUNTY FIRE AND RESCUE DEPARTMENT **INTERIM MEDICAL DIRECTIVE**
	NUMBER: 2022-006 — **DATE:** September 2, 2022
	ISSUED BY: Robert E. Fines, MD, FACEP Operational Medical Director
	SUBJECT: Smoke Inhalation
	SUPPLEMENT MEDICAL PROTOCOLS/PROCEDURES: Section VII, SCFRD Interim Medical Directives

PURPOSE:
To provide supplement direction to the Rappahannock Emergency Medical Service (REMS) Patient Care Protocol- Injury Burns. This directive outlines additional treatment for smoke inhalation, including carbon monoxide (CO) and/or cyanide poisoning patients for Stafford County EMS Clinicians.

DEFINITION: CO is an odorless, colorless gas that can cause sudden illness and death. CO is found in combustion fumes, such as those produced by cars and trucks, small gasoline engines, stoves, lanterns, burning charcoal and wood, gas ranges and heating systems. CO from these sources can build up in enclosed or semi-enclosed spaces.

Criteria: Patients who have been exposed to a smoke-filled environment, exposed to high level of carbon monoxide and/or may have cyanide poisoning	
B	Remove patient to safe environment. Monitor patient's SpO2, ETCO2 and SpCO level. Administer high concentration O2 via NRB mask. Obtain blood glucose level
A	Establish IV access – fluid resuscitation shall be administered to maintain a systolic BP as per REMS Medical Protocol. Administer Albuterol 2.5 mg and Atrovent 0.5 mg via nebulizer if dyspnea or wheezing occurs (all ages). Adults Only: Consider CPAP in moderate to severe cases.
I	Severe symptoms, administer 5g Hydroxocobalamin Cyanokit, repeat once (if needed). (Pediatric dose 70mg/kg, max dose 5g). Refer to Medication Reference 18.5 Hydroxobalamin (Cyanokit) Infusion for further direction Initiate advanced airway management as dictated by patient presentation. Obtain a 12 Lead ECG: Patients with ECG ischemic changes, unconsciousness, respiratory or cardiac arrest with ROSC may benefit from Hyperbaric Oxygen (HBO) therapy. Also refer to the Injury-Burns Protocol for patients with thermal inhalation injuries. On-line Medical Control can be consulted for destination determination.

Medication Summary:

Albuterol 2.5 mg and Atrovent 0.5 mg via nebulizer

Hydroxocobalamin (Cyanokit): 5g Repeat once (if needed) (Pediatric dose 70mg/kg, max dose 5g). Refer to Medication Reference 18.5 Hydroxobalamin (Cyanokit) Infusion for further direction

Notes:

Patients exposed to exhaust from gasoline operated vehicles and appliances (portable generators) are at a high-risk for CO poisoning, especially enclosed spaces. Charcoal operate grills can also produce large level of CO in enclosed spaces.

CO poisoning can be difficult to detect. SpO2 readings may be unreliable. The LifePak monitor, using the Masimo Carboxyhemoglobin (SpCO) Cable/Sensor should be utilized for the assessment of SpCO levels.

SpCO %	Clinical Manifestations
0-4%	None – Normal
5-9%	Minor Headache
10-19%	Headache, Shortness of Breath
20-29%	Headache, Nausea, Dizziness, Fatigue
30-39%	Severe Headache, Vomiting, ALOC
40-49%	Confusion, Syncope, Tachycardia
50-59%	Seizures, Shock, Apnea, Coma
60% -up	Coma, Death

Treat symptomatic CO exposure patient regardless of measured SpCO level. Treatment is generally indicated with SPCO readings >15% regardless of symptoms. High-Flow Oxygen is indicated for all patients with signs/symptoms consistent with CO poisoning.

CO has a 250x greater affinity to hemoglobin than that of oxygen. The fetus of the pregnant patient is at increased risk due to affinity of fetal hemoglobin for CO. Treat pregnant patients with CO exposure regardless of level.

Consider CO poisoning in cases of multiple patients from the same environment with similar symptoms/complaints. Suppression/Hazmat resources should be requested to determine atmospheric conditions.

Patients who smoke may have consistent carboxyhemoglobin levels as high as 10%.

Cyanide poisoning may also be present in victims of smoke inhalation, exposure to cyanide based products/chemicals (jewelry cleaners) and can present with similar symptoms. Cyanide poisoning should be considered for smoke inhalation victims who present with exposure to smoke in an enclosed area, soot present around the face and oropharynx, and an altered mental status. Patients exposed to exhaust from gasoline operated vehicles and appliances (portable generators) are at a low-risk for cyanide positioning.

Patients that continue to cough, produce sputum with noted voice changes should be accessed for inhalation thermal injuries.

	STAFFORD COUNTY FIRE AND RESCUE DEPARTMENT **INTERIM MEDICAL DIRECTIVE**
	NUMBER: 2023-001 — **DATE:** January 1, 2023
	ISSUED BY: Robert E. Fines, MD, FACEP Operational Medical Director
	SUBJECT: Blood Administration Protocol
	SUPPLEMENT MEDICAL PROTOCOLS/PROCEDURES: Section II Medical Protocols: Hypotension/Shock Non-Trauma, Section III Trauma Protocols: Bleeding/Hemorrhage Control, and Section VI Medication Reference

PURPOSE
This protocol outlines how blood will be administered by Stafford County ALS Clinicians.

POLICY
Authorized Paramedic level ALS Clinicians may administer blood to patients who meet the criteria as outline in this Interim Medical Directive (IMD).

Clinicians shall refer to General Order 2023-001 *Blood Administration* for administrative and operational requirements; and to EMS Training Bulletin 2023-001 *Blood Administration* for specific equipment specifications and step-by-step instructions.

DEFINITION
Shock Index: Shock index (SI) is an indicator of the severity of hypovolemic shock and is calculated by dividing the heart rate (HR) by systolic blood pressure (SBP). A normal SI is 0.5 to 0.7 in healthy adults. Indications for blood administration require a SI of ≥ 1.0.

PATIENT CRTERIA
- Hemodynamically unstable trauma or medical patient with signs/symptoms (tachycardia, hypotension, decrease distal pulses, pallor, and altered mental status) consistent with hemorrhagic shock **and,**
- Patient's SI ≥ 1.0.

CLINICAL CONSIDERATIONS
Clinicians are encouraged to consult online medical control for patients that do not meet the specific patient criteria yet may warrant blood administration.

Conscious patients should be informed for the reason for blood administration, its benefits, risks and give their verbal consent (see Appendix A, Page 3). Blood may be administered using implied consent if the patient is incapable of providing consent.

CONTRIDICATIONS
Cardiac Arrest
Injuries incompatible with life
Patient Refusal

PATIENT PREPARATION
EMS Clinicians shall:

- Perform a rapid assessment to determine criteria for blood administration and request EMSS.
- Document initial set of vital signs including temperature.
- Establish two large bore IVs and identify the largest IV for infusing blood
  Blood can be administered through an IO however the flow rate is comparably slower than through an IO.
- Attach IV Extension Tubing between the IV Catheter and Blood Y Administration Set. The IV Extension will allow connection for the Qinflow Compact Disposable Unit (CDU).
- Do not delay transport while waiting on the EMSS, unless preparing for air-medical transport.

INSPECTION

An authorized ALS Clinician shall:

- Check that the blood type is O-Positive Blood
- Check the expiration date to ensure the blood is in date
- Check the Hemo-Trac Blood Temperature Indicator is displaying **Green**.
  If the Hemo-Trac Blood Temperature Indicator is displaying **Blue** it shall not be used.
- Record or remove a Blood W Number or label.

SETUP

Option 1: Blood administration using Standard Blood Y Administration Set with Pressure Infuser Bag

Option 2: Blood administration using LifeFlow Infuser with LifeFlow Blood Y Administration Set. The LifeFlow Infuser with LifeFlow Blood Y Administration Set shall be used for all pediatric patients who require defined dose amounts, or when administering blood through an IO.

Refer to EMS Training Bulletin 2023-001 *Stafford County Fire and Rescue Department (SCFRD) Blood Program* for step-by-step instructions.

Blood shall never be infused without being warmed with the Qinflow Warrior Base Unit and infusing through a Qinflow CDU.

DOSAGE

Adult: 1 unit Type O-Positive Blood IV rapidly administer, reassess and document vital signs. If patient remains hemodynamically unstable as defined under patient criteria then rapidly administer a second unit of blood, reassess and document vital signs.

Pediatric:10cc/kg Type O-Positive Blood IV rapidly administer, reassess and document vital signs. If patient remains hemodynamically unstable as defined under patient criteria then rapidly administer a second 10cc/kg of blood, reassess and document vital signs.

ADMINISTRATION

Check filter and tubing for adequate blood flow and absence of clot formations. If clot formation is noted or rate slows, discontinue administration and exchange with a new blood Y administration set and QuinFlow CDU.

Verify the Qinflow system warms to the set-point temperature and check the LCD display to verify normal operation. Check the LCD display following any audible notification (short or steady beep.)

Medication should not be administered through the same IV line as whole blood.

ALLERGIC REACTION
Allergic reactions may be seen in up to 1% blood transfusions. Transfusion reactions can range from mild to life-threatening events. If a patient displays signs and symptoms suggesting an Allergic Reaction the blood infusion should be stopped and disconnected. Clinicians should follow established protocols for allergic reactions or consult online medical control.

COMPLETION
Flush blood Y administration set with a small amount of Normal Saline after blood administration.

PATIENT TRANSFER
The Qinflow Warrior Base Unit or CDU is not interchangeable with devices used by air-medical services or local medical facilities. The Qinflow Warrior Base Unit or CDU shall not be loaned to air-medical services or left at the medical facility.

Blood W Numbers shall be relayed to referring air-medical services and medical facilities during patient transfer.

DOCUMENTATION
ESO Electronic Health Record (EHR)

- Under FlowChart-Blood Tab: dose (ml), route, clinician's name, patient's response and any complications. Under Comments document *Low Titer O Positive Whole Blood (LTOWB)* with the Blood W Number.
- Under Vital Sign Tab: BP, HR, RR, Sp02, GCS and Temperature recorded every 5 minutes.
- Under Narrative Tab: Document if verbal consent was obtained

Appendix A
Conscious patients should be informed for the reason for blood administration, its benefits, risks and give their verbal consent

Reason: Blood administration is provided to replace or increase the amount of blood in your body when you have been bleeding. Based upon your vital signs, and other signs/symptoms it appears you have loss a large amount of blood and it is life-threatening.

Benefits: Blood administration may correct low levels of blood components in your body, and may sustain your life. In some cases, failure to receive blood transfusion(s) may result in death.

Risks-Hemolytic Reaction (ABO Incompatibility): This is highly unlikely given that this is Type O Positive Blood and the short transport time. Some may have a small reaction if titers of Rh antigen is higher than anticipated.

Risks-Allergic or Febrile Reaction: Allergic Reactions may be seen in up to 1% of transfusions. Transfusion reactions can range from mild to life-threatening events. Transfusion reactions can rarely be fatal. The incidence of such fatal reactions varies from (~1 in 600,0001 to ~1 in 2,300,000).

Risks-Transmission of diseases:
Hepatitis B (~1 in 1,000,000) Hepatitis C (~1 in 1,200,000) HIV/AIDS (~1 in 1,500,000)