Yolo County Health and Human Services

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EMS Administrator

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DATE: June 20, 2017

TO: Yolo County Providers and Agencies

FROM: Yolo County EMS Agency

SUBJECT: July 1, 2017 EMS Protocol & Policy Revisions

MEMORANDUM

Effective on July 1, 2017 the listed Protocols and Policies go in affect for all Yolo County Providers. The protocol application and website will be updated.

It is the responsibility of each agency to ensure that their personnel receive this information.

Just a reminder, policies and protocols are updated two (2) times a year, January 1st and July 1st.

Please review the additions and changes thoroughly. If you have any questions, please contact Kristin Weivoda at (530) 666-8671 or kristin.weivoda@yolocounty.org

Highlights

A Message from Dr. Rose:

We are committed to incorporating the most up-to-date and evidence-based emergency medical practices available. We make every effort to adopt best practices when they are available. Medical practice is constantly changing as better evidence emerges. Many times, an EMS practice may seem intuitively good and true but turns out not to be true when subjected to scientific scrutiny. Pediatric prehospital endotracheal intubation is an area that has come under increasing scientific scrutiny. After a detailed literature search, review of YEMSA data, review of other LEMSA practices, review of California EMSA guideline, and detailed discussion with experts in pediatric emergency medicine at UC Davis and around the state, I have decided that prehospital pediatric endotracheal intubation be removed from the YEMSA paramedic scope of practice effective July 1, 2017. Again, thank you for your great service to our community, and I look forward to our continued relationship in building the best LEMSA in California.

Best of Practice Reminder:

When it comes to the care of a Stroke patient, please be diligent about collecting the witness name for the last known well time as well as a contact phone number. Hospitals continue to have patients show up without family members or witnesses and the inability to contact them has delayed TPA. In addition, if you are able to do so, please, bring all medications with the patient. The hospitals do not

always have the ability to look in the patient records to see if the patient is on anticoagulants, which would be a contraindication to administration of TPA.

Trial Scope of Practice:

We submitted an application to run an ALS Trial on TXA for our traumatic hemorrhage patients.

Protocol Updates

Basic Life Support:

1001.1 Basic Life Support Airway Management

NEW: Added to address basic airway management in the adult and pediatric patient.

Adult Medical:

2012.4 Nasogastric (NG) & Orogastric (OG)

UPDATED: Separated the protocol into pediatric and adult.

3002.3 Advanced Airway

UPDATED: Language added to define what is considered an adult in Yolo County, 12 years or older

3006.3 Endotracheal Tube Inducer Bougie

UPDATED: Added a contraindication, patients less than twelve (12) years of age.

3007.3 King Airway

UPDATED: Added a contraindication, patients less than twelve (12) years of age..

Adult Cardiac Arrest:

4004.2 Termination of Resuscitation (TOR)

UPDATED: Change and deletion of language to make the protocol easier to follow. No change in scope of practice.

Trauma:

7005.5 External Hemorrhage Control

NEW: Protocol changed from “Extremity Bleeding Control” to External Hemorrhage Control to address the broader aspect of bleeding control, along with a new additional scope item (hemostatic dressing).

Pediatrics:

8001.4 General Pediatric Protocol

UPDATED: Removal of intubation

8003.4 Pediatric Airway Obstruction

UPDATED: Removal of intubation

8006.3 Pediatric Asystole & Pulseless Electrical Activity (PEA)

UPDATED: Removal of intubation

8009.4 Pediatric Ingestion, Overdoses & Poisoning

UPDATED: Removal of intubation

8010.1 Pediatric Nasogastric (NG) & Orogastric (OG) Tube
NEW: Separated the protocol into pediatric adult.

8013.4 Pediatric Reference Sheet
UPDATED: Removal of intubation

8015.4 Pediatric Respiratory Distress - Wheezing
UPDATED: Removal of intubation

8016.4 Pediatric Respiratory Failure
UPDATED: Removal of intubation

8021.5 Pediatric Ventricular Fibrillation (VF) & Pulseless Ventricular Tachycardia (VT)
UPDATED: Removal of intubation

Policy Revisions

829.1 Pediatric Airway
DELETED: Removed from Yolo County ALS Optional Scope of Practice

Service Provider:

614.2 Paramedic Infrequent Skills Form
UPDATED: Removal of Pediatric Intubation

615.3 Paramedic Intubation Verification Form
UPDATED: Removal of Pediatric Intubation

637.9 Fireline ALS Inventory List
UPDATED: Change in inventory

Skill Sheets;

909.2 Pediatric Endotracheal Intubation
DELETED:

909.3 Pediatric NG & OG Tubes
UPDATED: Replaced the numbering system and removed pediatric intubation.

BASIC LIFE SUPPORT (BLS) AIRWAY MANAGEMENT

Adult	Pediatric
BLS Procedure	
• Open and position airway • For foreign body airway – go to Airway Obstruction Protocol • Airway adjuncts: OPA/NPA as needed to control airway • Oropharyngeal suctioning, as needed • Oxygen via selected device based on patient condition, titrate to ≥ 94% SpO_2 o Nasal Cannula: 2 - 6 LPM o Non-rebreather mask: 10 - 15 LPM o Bag-valve-mask ventilations: 8 - 10 breaths/min	• Open and position airway • For foreign body airway – go to Airway Obstruction Protocol • Airway adjuncts: OPA/NPA as needed to control airway • Oropharyngeal suctioning, as needed • Oxygen via selected device based on patient condition, titrate to ≥ 94% SpO_2 o Nasal Cannula: 2 - 6 LPM o Non-rebreather mask: 10 - 15 LPM o Bag-valve-mask ventilations: 12 - 20 breaths/min
Approved BLS Optional Scope Providers	
King Airway	
INDICATIONS	**CONTRAINDICATIONS**
• 12 years or older • Taller than 4 feet • Unconscious • No gag reflex • Has no contraindications **And** • Airway/ventilation cannot be adequately managed with BVM	• Is not approved airway device for patients ≤ 4 feet Or • Under the age of 12

NASOGASTRIC (NG) & OROGASTRIC (OG) TUBES

PURPOSE

To define the indication and use of NG and OG tubes in critical patients when under cardiac or respiratory arrest.

AUTHORITY

Health & Safety Code, Division 2.5, Chapter 4, Article 1, § 1797.220
Health & Safety Code, Division 2.5, Chapter 5, § 1798
California Code of Regulations, Title 22, Division 9

POLICY

Paramedics may place NG or OG tubes in ventilated adult patients under cardiac or respiratory arrest.

INDICATIONS

Gastric distention during cardiac or respiratory arrest increases aspiration risk, decreases cardiac blood flow, and decreases respiratory expansion. Decompression of ventilated air or gastric contents from a ventilated adult patient under cardiac or respiratory arrest utilizing a Salem Sump™ NG or OG tube decreases these risks.

CONTRAINDICATIONS

I. Suspected basilar skull fracture
II. Suspected mid-facial fractures
III. Known or suspected actively bleeding esophageal varices

PROCEDURE

I. Select appropriately sized Salem Sump™ gastric tube (eight French [8 Fr], twelve French [12 Fr], fourteen French [14 Fr], sixteen French [16 Fr], eighteen French [18 Fr]).
II. Measure the insertion length of gastric tube from the midway between the xiphoid process and umbilicus, to the earlobe and over to the tip of the nose.
III. King Airway LTS-D™ placements, use size eighteen French (18 Fr) gastric tubes.
IV. Mark the measured length of gastric tube with a piece of tape.
V. Lubricate tube with water soluble lubricant if inserting nasally or through King Airway.
VI. Nasal insertion: direct gastric tube along the floor of nostril to the posterior nasopharynx, then feed the gastric tube through the oropharynx down the esophagus and into the stomach, stopping when taped mark nears nostril.
VII. Oral insertion: direct gastric tube along tongue to posterior oropharynx, then feed the gastric tube down the esophagus and into the stomach, stopping when taped mark nears the lips.
VIII. Confirm correct gastric placement of gastric tube by:

A. Injecting ten to twenty milliliters (10 to 20 mL) of air while auscultating over the stomach for a “swoosh” or “burping/bubbling” indicating the gastric tube tip lies within the stomach.
B. Confirm absence of similar sounds in the lungs by auscultating in the mid-axillary line bilaterally while repeating the injection of small mL volumes of air.
C. Aspirating gastric contents

IX. Tape the tube in place on the nose or around the mouth. Alternatively, some commercial types of endotracheal tube holders can be used to secure gastric tubes if passed orally.
X. Attach the gastric tube to low pressure suction twenty – one hundred and twenty millimeters (20 – 120 mm) and observe for gastric decompression.

PRECAUTIONS

I. Endotracheal intubation does not protect against tracheal placement of the gastric tube. Fogging or lack of gastric contents may indicate tracheal placement.
II. If vomiting occurs, proceed with placement and suction around the gastric tube.
III. Abandon gastric tube placement if unsuccessful after three (3) attempts.
IV. Difficulty in placement may be eased by directing the chin posteriorly and performing a manual jaw thrust while inserting the gastric tube.

CROSS REFERENCES

King Airway

ADVANCED AIRWAY

PURPOSE

The purpose of this policy is to outline the clinically indicated and required steps for advanced airway management and to highlight the steps of basic airway management. The approved advanced airway management procedure for patients twelve (12) years of age or older consists of endotracheal intubation or insertion of a supraglottic airway device.

AUTHORITY

Health & Safety Code, Division 2.5, Chapter 4, Article 1, § 1797.220
Health & Safety Code, Division 2.5, Chapter 5, § 1798
California Code of Regulations, Title 22, Division 9

POLICY

I. The Yolo County Emergency Medical Services Agency (YEMSA) approved advanced airway management procedures for patients twelve (12) years of age or older consists of the following:
   A. Endotracheal Intubation
   B. Insertion of a King Airway

II. Advanced Life Support (ALS) Paramedic personnel are authorized to perform any of the advanced airway skills listed in this policy.

III. Basic Life Support (BLS) personnel are authorized to perform the skill of insertion of a King Airway **only** if their provider has been authorized by YEMSA as an approved EMT Optional Scope Provider and they have successfully completed an approved training program. BLS personnel may not perform endotracheal intubations.

IV. Chest compressions should not be interrupted for airway management in the cardiac arrest patient.

V. BLS and ALS personnel must confirm correct advanced airway placement with physical assessment (auscultation, observation of chest rise, visualization of the tube passing through the cords, etc.) in addition to one (1) or more of the following methods:
   A. Waveform Capnography (Preferred Method)
   B. Capnometry
   C. Colorimetric End-tidal Carbon Dioxide ($EtCO_2$) detector device

VI. ALS personnel must re-confirm correct advanced airway placement utilizing the methods listed above on any patient where the airway has been established by a BLS Service Provider. ALS personnel assume responsibility for the advanced airway once they have arrived on scene and assumed patient care.

VII. An ALS Service Provider who establishes an advanced airway shall accompany the patient to the hospital if the patient is transported. This does not apply to multiple patient incidents or when patient care is appropriately transferred to another ALS Service Provider (e.g. Air Ambulance, Air Rescue). In these cases, the receiving ALS Service Provider must re-confirm correct advanced airway placement immediately upon transfer of patient care.

VIII. Advanced airway placement must be re-confirmed by the Emergency Medical Technician (EMT) or Paramedic utilizing the methods listed above, any time there is concern about the patency of the airway or any time there is a movement of the patient, including but not limited to:
   A. Movement of the patient onto the ambulance gurney
   B. Movement of the patient into or out of the ambulance
   C. Movement of the patient from the ambulance gurney to the hospital gurney

IX. If the advanced airway is determined to be no longer patent during a re-confirmation assessment, appropriate measures must be taken immediately to re-establish the patency of the airway. This may include removal of the advanced airway and the utilization of BLS airway measures until the advanced airway can be appropriately re-established. The Paramedic shall confirm that the advanced airway remains patent when the patient is transferred from the ambulance gurney to the hospital gurney and any concerns must be reported immediately to the receiving Emergency Department (ED) Physician (MD).

INDICATIONS

I. Non-traumatic cardiac and/or respiratory arrest.
II. Traumatic cardiac and/or respiratory arrest.
III. Severe ventilatory compromise where the airway cannot be adequately maintained by BLS techniques.

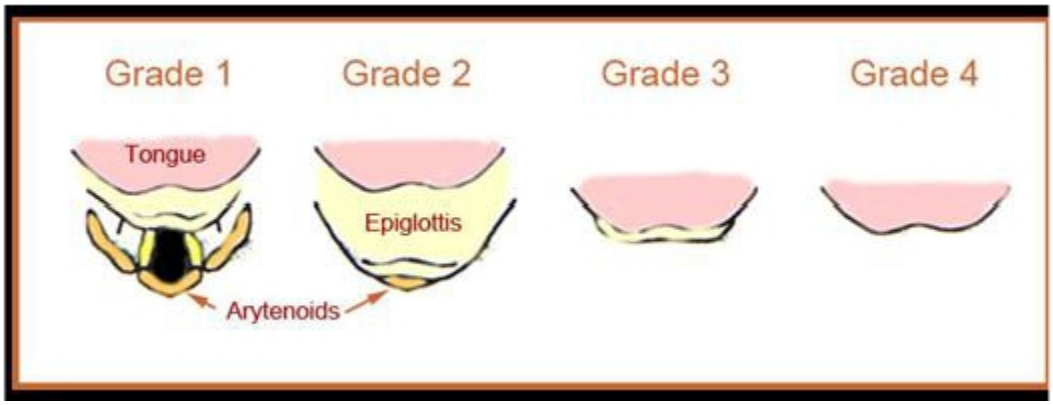
DEFINITIONS

An Intubation Attempt: is defined as the introduction of an endotracheal tube past the patient's teeth.

PROCEDURE

I. Endotracheal Intubation (ALS – Paramedic personnel only):
   A. Make no more than **two (2) total attempts per patient** at placing the endotracheal tube. Each attempt should not last longer than fifteen (15) seconds. If unsuccessful after one (1) attempt at endotracheal intubation, the endotracheal tube introducer (Bougie) with direct visualization must be utilized.
   B. If patient has Cormack-Lehane grade of three or four (3 or 4 - epiglottis is not or is barely visible) consider primary use of a supraglottic airway. Paramedics may choose to use the endotracheal tube introducer or the King Airway.

Cormack-Lehane Scale



II. Supraglottic Airway Device (King Airway) – This device is **required in patients twelve (12) years of age or older cardiac arrest** if unable to adequately ventilate using the BVM as it can be inserted during chest compressions. It may be used in other cases at the Paramedic's discretion and it **must be used** after two (2) unsuccessful attempts at endotracheal intubation.
   A. The King Airway comes in three (3) sizes (with variable bladder volumes):
      1. Size 3 – Patient between four (4) and five (5) feet tall (fifty-five milliliters [55 mL] air)
      2. Size 4 – Patient between five (5) and six (6) feet tall (seventy [70] mL air)
      3. Size 5 – Patient over six (6) feet tall (eighty [80] mL air)

   B. The King Airway devices are not to be used in patients less than (<) four (4) feet tall or less than twelve (12) years of age.
   C. Each attempt should take no longer than fifteen (15) seconds.
   D. Tube introducers (Bougies) may NOT be used with King Airway.

III. Confirm Advanced Airway Placement:
   A. Auscultate both lung fields for breath sounds, confirm chest rise with ventilation. Listen over left upper quadrant of the abdomen for air in the stomach.
   B. Attach an approved $EtCO_2$ detector (colorimetric device), capnometry or waveform capnography unit which must remain in place until arrival at the hospital. **Waveform Capnography is required once available.**
   C. All devices used to confirm advanced airway placement must be documented on the Patient Care Report (PCR) (ETT, $EtCO_2$ – colorimetric or capnography)
   D. If there is any doubt as to the proper placement of the ETT, leave the tube in place, then visualize the pharynx and vocal cords with the laryngoscope and use capnography. If still in doubt, suction the patient, deflate the cuff and remove the endotracheal tube, and resume BLS airway maneuvers.

DOCUMENTATION

I. All devices used to confirm tube placement must be documented on the PCR:
   A. Method of confirmation (wave form capnography/capnometry – REQUIRED).

B. Description of waveform (e.g. - box, shark fin, straight line, bumpy line, etc.).
C. Capnometry number in millimeters of mercury (mmHg) (e.g. 15 mmHg).
D. Visualization, auscultation, chest rise (in addition to waveform capnography).
E. Depth of insertion, size of tube or supraglottic airway and method of securing tube.

CROSS REFERENCES

Emergency Medical Technician (EMT) Scope of Practice
Emergency Medical Technician (EMT) Optional Scope
Paramedic Scope of Practice
King Airway
Endotracheal Tube Introducer - Bougie
Cardiac Arrest Resuscitation
Airway Obstruction
Respiratory Failure
End-tidal Carbon Dioxide ($EtCO_2$) Monitoring
Pediatric Advanced Airway Management

ENDOTRACHEAL TUBE INDUCER - BOUGIE

PURPOSE

To define the indication and use of the endotracheal tube introducer - Bougie.

AUTHORITY

Health & Safety Code, Division 2.5, Chapter 4, Article 1, § 1797.220
Health & Safety Code, Division 2.5, Chapter 5, § 1798
California Code of Regulations, Title 22, Division 9

INDICATIONS

I. Patients meet clinical indications for oral intubations.
II. One (1) failed attempt at oral intubation.
III. Predicted difficult airway.

CONTRAINDICATIONS

I. Two (2) failed airway attempts.
II. Inducer larger than Endotracheal Tube (ETT) internal diameter.
III. Patients under the age of twelve (12).

PROCEDURE

I. Prepare, position and oxygenate the patient with one hundred percent (100%) Oxygen (O_2);
II. Select proper ETT without stylet, test cuff and prepare suction;
III. Lubricate the distal end and cuff of the ETT and the distal ½ of the Endotracheal Tube Introducer (Bougie);
IV. Using laryngoscopic techniques visualize the vocal cords, maintain direct visualization during the procedure;
V. Introduce the Bougie with curved tip anteriorly and visualize the tip passing the vocal cords or above the arytenoids if the cords cannot be visualized;
VI. Once inserted, gently advance the Bougie until you meet resistance or hold up;
    A. *Note: if you do not meet resistance you have probable esophageal intubation and insertion should be removed.

VII. While maintaining a firm grasp on the proximal Bougie, introduce the ETT over the Bougie passing the tube to its appropriate depth;
VIII. If you are unable to advance the ETT into the trachea and the Bougie and ETT are adequately lubricated, withdraw the ETT slightly and rotate the ETT ninety degrees (90^o) degrees counter clockwise to turn the bevel of the ETT posteriorly.
IX. Once the ETT is correctly placed, hold the ETT securely and remove the Bougie;
X. Confirm tracheal placement according to Advanced Airway Protocol.

CROSS REFERENCES

Paramedic Scope of Practice
Advanced Airway
Cardiac Arrest Resuscitation
Respiratory Arrest
King Airway

KING AIRWAY

PURPOSE

To define the indications and use of the King Airway LT-D™ and LTS-D™ in the prehospital setting by Paramedic, or approved Emergency Medical Technician (EMT) Optional Scope personnel.

AUTHORITY

Health & Safety Code, Division 2.5, Chapter 4, Article 1, § 1797.220
Health & Safety Code, Division 2.5, Chapter 5, § 1798
California Code of Regulations, Title 22, Division 9, Chapter 4, Article 7, § 100169

POLICY

I. Paramedic or EMT Optional Scope personnel may use the King Airway as an option for advanced airway management.

INDICATIONS

I. Patients who require assisted ventilation and meet criteria for an advanced airway:
   A. Cardiac arrest.
   B. Respiratory arrest or severe compromise AND unable to adequately ventilate with Bag-Valve-Mask (BVM).
   C. May be used as a primary airway or it must be used after two (2) unsuccessful attempts at endotracheal intubation (**Paramedic Personnel ONLY**).

CONTRAINDICATIONS

I. The following contraindications shall be observed:
   A. Conscious patients with a gag reflex.
   B. Patients under four (4) feet tall.
   C. Patients less than twelve (12) years of age.
   D. Known cases of esophageal diseases, suspected ingestion of caustic substances or extensive airway burns.
   E. Laryngectomy with stoma.

PROCEDURE

I. Placement:
   A. Select appropriate sized King Airway:
      1. Size 3 – Patient between four (4) and five (5) feet tall (fifty-five milliliters [55 mL] air)
      2. Size 4 – Patient between five (5) and six (6) feet tall (seventy [70] mL air)
      3. Size 5 – Patient over six (6) feet tall (eighty [80] mL air)

B. Check King Airway cuffs to ensure patency. Deflate tube cuffs. Leave syringe attached. Lubricate the tip of the tube with water soluble lubricant.
C. Oxygenate with one hundred percent (100%) Oxygen (O_2).
D. If Paramedic is placing King LTS-D™: a lubricated eighteen (18) French (Fr) Nasogastric tube (NG) in the gastric lumen of the King Airway beneath the BVM connector, advancing it to ¼" past the distal opening.
E. Position the head. The ideal position is the "sniffing position". A neutral position can also be used if trauma is suspected.
F. Hold the King Airway at the connector with the dominant hand.
G. With non-dominant hand, hold mouth open and apply chin lift.
H. Using a lateral approach, introduce tip into mouth.
I. Advance the tip behind the base of the tongue while rotating tube back to midline so that the blue orientation line faces the chin of the patient.
J. Without exerting excessive force, advance tube until base of connector is aligned with teeth or gums. If Paramedic is present and performing placement of the LTS-D™, advance the NG tube at this time.
K. Inflate cuffs based on size according to section I A above.
L. Attach bag-valve to King Airway. While gently bagging the patient to assess ventilation, withdraw the airway until ventilation is easy and free flowing.
M. Attach bag valve device and verify placement by **ALL** of the following:
    1. Rise and fall of the chest
    2. Bilateral breath sounds
    3. Absent epigastric sounds
    4. Carbon Dioxide (CO_2) measurement (colorimetric capnography).
        a. Capnometry or waveform capnography unit that must remain in place until arrival at the hospital.
        b. **Waveform Capnography is required.**

N. If there is any question about the proper placement of the King Airway, deflate the cuffs and remove the device, ventilate the patient with a BVM for thirty (30) seconds and repeat.
O. Secure the tube with tape or commercial tube holder. Note depth marking on tube.
P. Continue to monitor the patient for propter tube placement throughout prehospital treatment and transport.

II. Troubleshooting:
A. If placement is unsuccessful, remove tube, ventilate via BVM and repeat the sequence of steps.
B. If unsuccessful on second attempt, Basic Life Support (BLS) airway management should be resumed.
C. Most unsuccessful placements relate to failure to keep tube in midline during placement.

III. Additional Information:
A. Cuffs can be lacerated by broken teeth or dentures. Remove dentures before placing tube.
B. Do not force tube, as airway trauma can occur.

IV. Documentation:
   A. Document time of placement and results of tube placement checks performed throughout the resuscitation and transport.

CROSS REFERENCES

Emergency Medical Technician (EMT) Scope of Practice
Emergency Medical Technician (EMT) Optional Scope
Paramedic Scope of Practice
Cardiac Arrest Resuscitation
Airway Obstruction
Respiratory Failure
Asystole & Pulseless Electrical Activity (PEA)
Ventricular Fibrillation (VF) & Pulseless Ventricular Tachycardia (VT)
Ingestions, Overdoses & Poisoning
Altered Level of Consciousness (ALOC)/Syncope
Trauma Patient Care

TERMINATION OF RESUSCITATION (TOR)

PURPOSE

The purpose of this policy is to assist Emergency Medical Services (EMS) providers with identification of patient criteria to determine futility of prehospital resuscitation in cases of cardiac arrest. (Note: This policy does not apply to mass casualty situations)

AUTHORITY

Health & Safety Code, Division 2.5, Chapter 4, Article 1, § 1797.220
California Code of Regulations, Title 22, Division 9

DEFINITIONS

Signs of Life (SOL): reactive pupils, response to pain, and spontaneous movement

Do Not Attempt Resuscitation (DNAR): measures for withholding resuscitation.

PROCEDURE

I. In most out of hospital cardiac arrest scenarios, Advanced Life Support (ALS) Providers are capable of performing resuscitation that is equivalent to in-hospital resuscitation. The evidence overwhelmingly supports Basic Life Support (BLS) interventions such as Cardiopulmonary Resuscitation (CPR) and defibrillation. Successful on-scene resuscitation predicts overall survival, while unsuccessful resuscitation on scene predicts non-survival. In most cases, there is no additional benefit to transporting patients to an Emergency Department (ED) if Return of Spontaneous Circulation (ROSC) is not achieved prior to transport.

II. In the absence of factors requiring rapid transport, (e.g. unsafe scene, family dynamics, uncertain patient condition, other special circumstances), EMS personnel shall remain on scene and attempt resuscitation of cardiac arrest patients. It is imperative that EMS personnel understand the criteria for terminating resuscitative efforts. There are many factors that must be considered before termination of resuscitative efforts. Clinical judgment and respect for patients and their families is essential.

III. *Base Hospital consultation should be obtained if EMS personnel have any patient care or scene safety concerns*.

POLICY

I. Medical Cardiac Arrest (Adult patients greater than or equal to [≥] eighteen [18] years of age)

A Termination of Resuscitation (TOR) if one (1) of the following conditions is met after twenty (20) minutes minimum of ALS resuscitation:

1. Pulseless *and* apneic *and* no SOL (non-reactive pupils, no response to pain, no spontaneous movement).
2. Asystole or wide complex Pulseless Electrical Activity (PEA) with heart rate (HR) less than (<) forty (40) bearts per minute (BPM)
3. Patient remains pulseless *and* apneic *and* without signs of life (SOL) with ventricular fibrillation, ventricular tachycardia, wide complex PEA < forty (40) BPM

II. Traumatic Cardiac Arrest (Adult patients ≥ eighteen [18] years of age)

A Withholding resuscitation (do not attempt resuscitation, DNAR) in the following conditions:

1. Mechanism and Rhythm:
   a. Blunt traumatic arrest with Asystole or wide complex PEA < 40 BPM, and no SOL.
   b. Penetrating traumatic arrest with asystole and no SOL

B TOR if *any* of the following conditions are met after twenty (20) minutes minimum of ALS resuscitation:

1. Pulseless *and* apneic *and* no SOL (non-reactive pupils, no response to pain, no spontaneous movement).
2. Asystole or wide complex PEA < forty (40) BPM
3. Transport time to the nearest ED or trauma center exceeds fifteen (15) minutes.

CONSIDERATIONS

I. When End-Tidal Carbon Dioxide ($EtCO_2$) is utilized, and after twenty (20) minutes of ALS resuscitation efforts, consider termination when $EtCO_2$ < ten millimeters of mercury (10 mmHg) with high-quality chest compressions and appropriate ventilations.

II. If resuscitative efforts are terminated, personnel shall confirm and document the patient's cardiac rhythm in two (2) separate electrocardiographic leads and provide printed rhythm strips of at least fifteen (15) seconds duration.

III. Consider the needs of survivors when contemplating termination of resuscitation. In some cases, transport from the scene may be the better option.

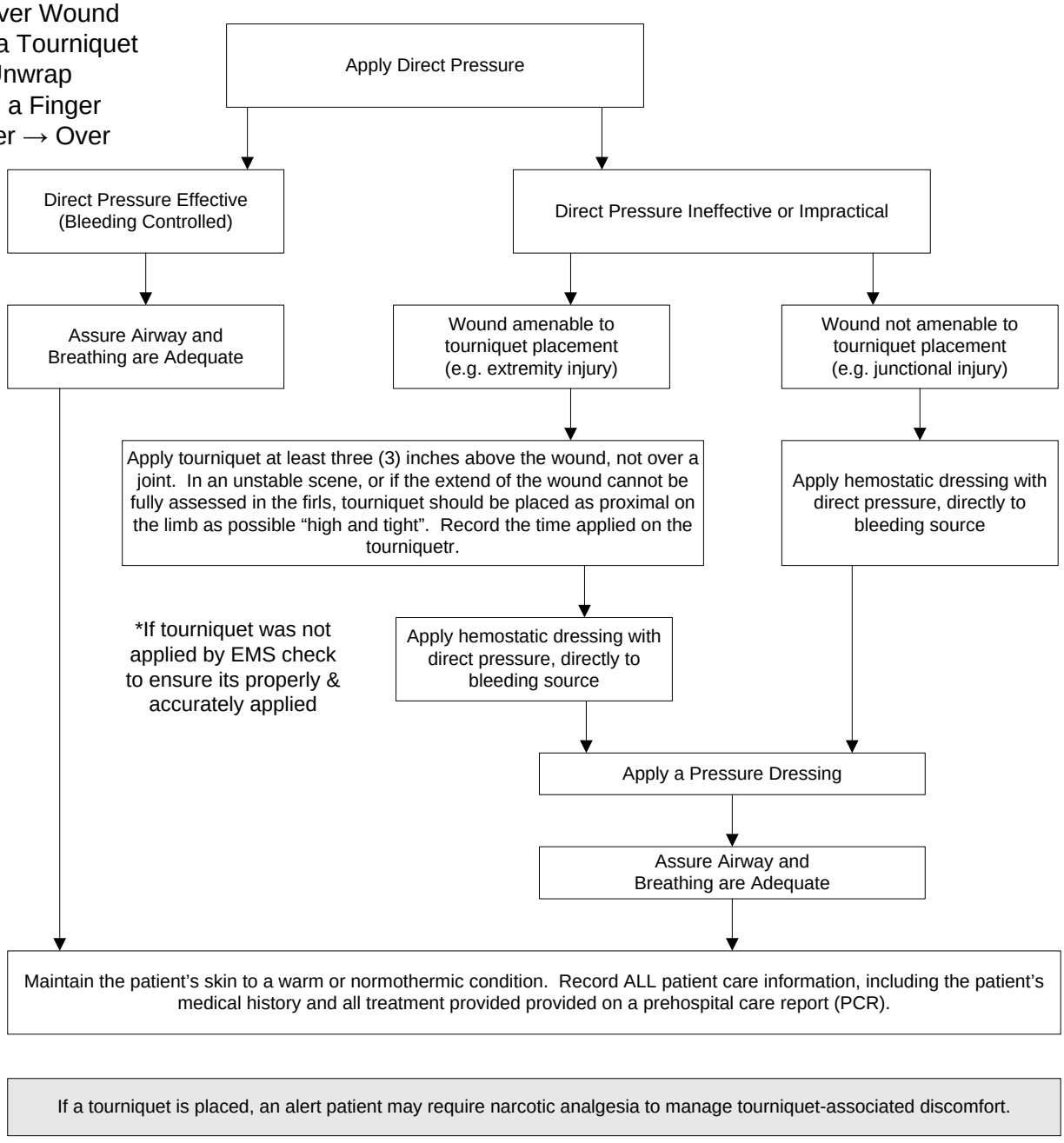
IV. Scene management and safety of the crew and the public/bystanders may prevent withholding/termination of resuscitation. In general, do not terminate resuscitation in public places/establishments.

V. EMS personnel shall not transport expired patients by ambulance except in the extremely rare occurrence that a patient expires during transport. In these situations, EMS personnel shall continue resuscitative efforts and proceed with transport to the closest receiving facility.

EXTERNAL HEMORRHAGE CONTROL

5 U's

Uncover Wound
Utilize a Tourniquet
Unwrap
Use a Finger
Under → Over



If a tourniquet is placed, an alert patient may require narcotic analgesia to manage tourniquet-associated discomfort.

GENERAL PEDIATRIC PROTOCOLS

PURPOSE

To establish general guidelines for the treatment of pediatric patients encountered by Emergency Medical Service (EMS) personnel who present with a medical complaint and/or a traumatic injury.

AUTHORITY

Health & Safety Code, Division 2.5; Chapter 6, Article 2.5, §§ 1798.160 et seq.
California Code of Regulations, Title 22, Division 9

DEFINITIONS

Neonate is defined as an infant during the first twenty-eight (28) days of life.

Pediatric Patients are defined in the Yolo County Emergency Medical Services Agency (YEMSA) region as all patients greater than (>) twenty-eight (28) days old up to less than twelve (12) years of age.

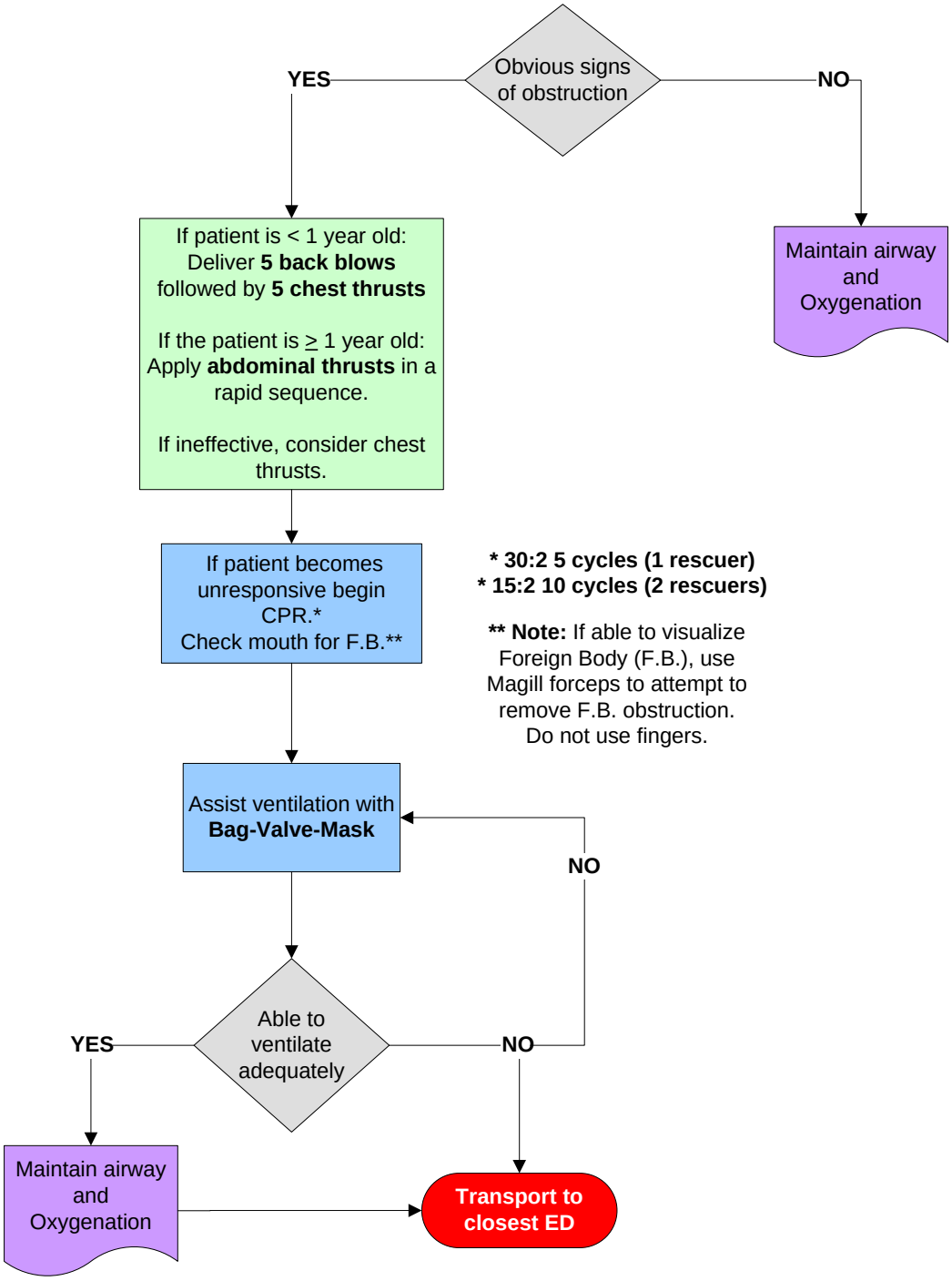
PRINCIPLES/PROCEDURES

I. **Base Hospital Contact:** EMS personnel shall make Base Hospital contact prior to releasing children less than or equal to (≤) three (3) years of age at scene.
II. **End-tidal Carbon Dioxide ($EtCO_2$) detection** – Nasal end-tidal is recommended to be used on pediatric patients.
III. **Vascular Access/Intraosseous (IO):** If unable to achieve peripheral venous access rapidly (within ninety [90] seconds), and there is an urgent need to administer fluids and/or medications, and the child has an Altered Level of Consciousness (ALOC), IO access may be established.
IV. **Medication Doses** – A length based pediatric resuscitation tape shall be used in determining sizes of equipment and medication dosages in the out-of-hospital setting.

PEDIATRIC AIRWAY OBSTRUCTION

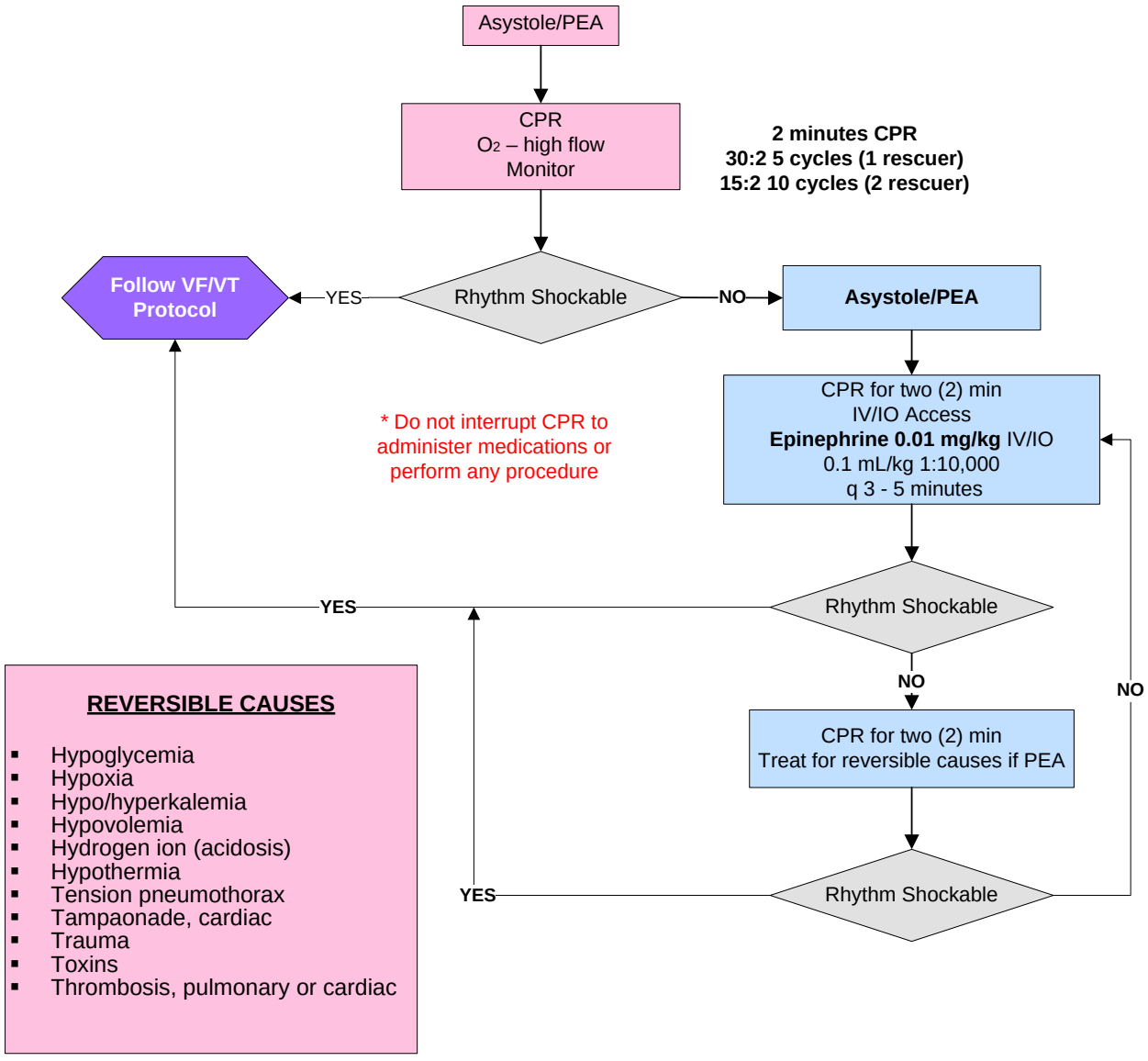
If obstruction is due to epiglottitis:

I. Do not attempt to visualize the throat or insert anything into the mouth
II. Minimize outside stimuli. Keep patient calm. Position of comfort.



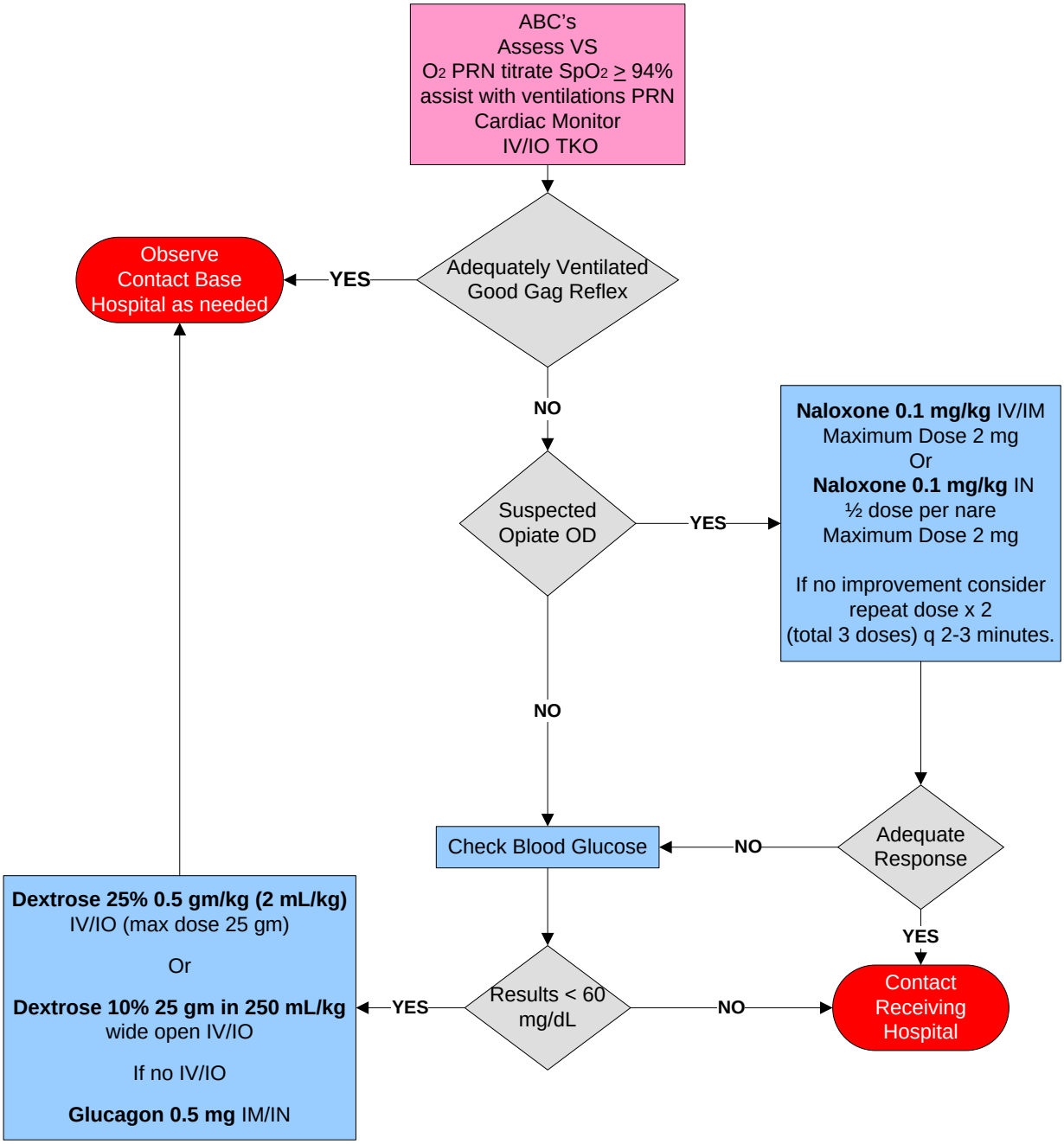
PEDIATRIC ASYSTOLE & PULSELESS ELECTRICAL ACTIVITY (PEA)

Provide appropriate Basic Life Support (BLS) airway management. Initially use fifteen liters per minute (15 LPM) via Non-Rebreather mask (NRB) (passive oxygenation), followed by an Oropharyngeal Airway (OPA) and Bag-Valve-Mask (BVM).



PEDIATRIC INGESTION, OVERDOSES & POISONING

Poison Control Contact info for Base Physicians – 1 (800) 404-4646
Consult with Base Hospital if blood glucose reading is greater than (>) 60 mg/dL but hypoglycemia is suspected.



PEDIATRIC NASOGASTRIC (NG) & OROGASTRIC (OG) TUBES

PURPOSE

To define the indication and use of NG and OG tubes in critical patients when under cardiac or respiratory arrest.

AUTHORITY

Health & Safety Code, Division 2.5, Chapter 4, Article 1, § 1797.220
Health & Safety Code, Division 2.5, Chapter 5, § 1798
California Code of Regulations, Title 22, Division 9

POLICY

Paramedics may place NG or OG tubes in ventilated pediatric patients under cardiac or respiratory arrest.

INDICATIONS

Gastric distention during cardiac or respiratory arrest increases aspiration risk, decreases cardiac blood flow, and decreases respiratory expansion. Decompression of ventilated air or gastric contents from a ventilated pediatric patient under cardiac or respiratory arrest utilizing a Salem Sump™ NG or OG tube decreases these risks.

CONTRAINDICATIONS

I. Suspected basilar skull fracture
II. Suspected mid-facial fractures
III. Known or suspected actively bleeding esophageal varices

PROCEDURE

I. Select appropriately sized Salem Sump™ gastric tube (eight French [8 Fr], twelve French [12 Fr], fourteen French [14 Fr], sixteen French [16 Fr], eighteen French [18 Fr]).
II. Measure the insertion length of gastric tube from the midway between the xiphoid process and umbilicus, to the earlobe and over to the tip of the nose.
III. For pediatric patients, use Broselow® or equivalent length based tape to determine appropriate size gastric tube.
IV. Mark the measured length of gastric tube with a piece of tape.
V. Lubricate tube with water soluble lubricant if inserting nasally.
VI. Nasal insertion: direct gastric tube along the floor of nostril to the posterior nasopharynx, then feed the gastric tube through the oropharynx down the esophagus and into the stomach, stopping when taped mark nears nostril.

VII. Oral insertion: direct gastric tube along tongue to posterior oropharynx, then feed the gastric tube down the esophagus and into the stomach, stopping when taped mark nears the lips.

VIII. Confirm correct gastric placement of gastric tube by:
   A. Injecting ten to twenty milliliters (10 to 20 mL) of air while auscultating over the stomach for a “swoosh” or “burping/bubbling” indicating the gastric tube tip lies within the stomach.
   B. Confirm absence of similar sounds in the lungs by auscultating in the mid-axillary line bilaterally while repeating the injection of small mL volumes of air.
   C. Aspirating gastric contents

IX. Tape the tube in place on the nose or around the mouth. Alternatively, some commercial types of endotracheal tube holders can be used to secure gastric tubes if passed orally.

X. Attach the gastric tube to low pressure suction twenty – one hundred and twenty millimeters (20 – 120 mm) and observe for gastric decompression.

PRECAUTIONS

I. If vomiting occurs, proceed with placement and suction around the gastric tube.
II. Abandon gastric tube placement if unsuccessful after three (3) attempts.
III. Difficulty in placement may be eased by directing the chin posteriorly and performing a manual jaw thrust while inserting the gastric tube.

CROSS REFERENCES

PEDIATRIC REFERENCE SHEET

PEDIATRIC AVERAGE WEIGHTS & VITAL SIGNS – RECOMMENDED ET TUBE, LARYNGOSCOPE BLADE & SUCTION CATHETER SIZES						
AGE	**WEIGHT (kg)**	**PULSE**	**RESPIRATIONS**	**ET TUBE ***	**BLADE #**	**SUCTION CATHETER**
Preemie	< 1 - 2.5			N/A	N/A	5 or 6
Term NB	2.5 – 4	100 – 160	30 – 50	N/A	N/A	6 or 8
6 months	7	80 – 160	30 – 50	N/A	N/A	8
1 year	10	80 – 160	24 – 40	N/A	N/A	8
2 years	12	80 – 130	24 – 32	N/A	N/A	8 or 10
4 years	16	80 – 120	22 – 28	N/A	N/A	10
6 years	20	75 – 115	22 – 28	N/A	N/A	10
8 years	25	70 – 110	20 – 24	N/A	N/A	10 or 12
10 years	34	70 – 110	20 – 24	N/A	N/A	12
12 years	41	65 – 110	16 – 22	7.0	3	12

HYPOTENSION IS DEFINED AS:	
AGE	**SBP (mmHg)**
Term neonates (0 – 28 days of age)	**< 60**
Infants 1 month to 12 months	**< 70**
Children > 1 year to 10 years	**< 70+(2 x age in years)**
> 10 years	**< 90**

APGAR SCORING CHART				
	SIGN	**0**	**1**	**2**
A	Appearance (Color)	Blue, pale	Body pink, hands and feet blue	Completely pink
P	Pulse (Heart Rate)	Absent	Slow (below 100)	Over 100
G	Grimace (Muscle Tone)	Flaccid limp extremities	Some flexing of extremities	Active motion
A	Activity (Response to flick on sole)	No Response	Some motion, cry	Cough, sneeze, vigorous cry
R	Respiratory effort	Absent	Slow, irregular	Good, crying

PEDIATRIC NEUROLOGICAL ASSESSMENT		
Glasgow Coma Scale (GCS): Score 3 - 15		
Score	**< 2 years or Developmentally delayed**	**Over 2 years of age**
Eye Opening		
4	Spontaneous	Spontaneous
3	To Voice	To Voice
2	To Pain	To Pain
1	None	None
Best Verbal Response		
5	Coos, babbles	Orientated
4	Irritable cry	Confused
3	Cries to pain	Inappropriate words
2	Moans to pain	Incomprehensible sounds
1	None	None
Best Motor Response		
6	Spontaneous	Obeys commands
5	Withdraws to touch	Localizes pain
4	Withdraws to pain	Flexion withdrawal
3	Abnormal flexion	Abnormal flexion
2	Abnormal extension	Abnormal extension
1	None	None

PEDIATRIC RESPIRATORY DISTRESS - WHEEZING

Moderate – Severe Distress:
- Cyanosis
- Accessory muscle
- Inability to speak > 2 words
- Severe wheezing/ SOB

Mild Distress:
- Mild wheezing
- SOB
- Cough

ABC's
Position of comfort PRN
Determine degree of physiologic distress
Evaluate respiratory rate, and effort
O_2 titrate SpO_2 to ≥ 94%
Assist ventilations PRN
Assess VS
Cardiac Monitor
IV/IO NS TKO

Moderate to Severe Distress

Albuterol 5 mg (6 mL NS)
and
Ipratropium 500 mcg (2.5 mL)
via nebulizer or BVM

If no response to Albuterol and **Ipratropium**

Epinephrine 0.01 mg/kg IM
1:1,000 (0.1 mL/kg)
max = 0.3 mg

If decreased LOC or apnea, assist ventilation with BVM.

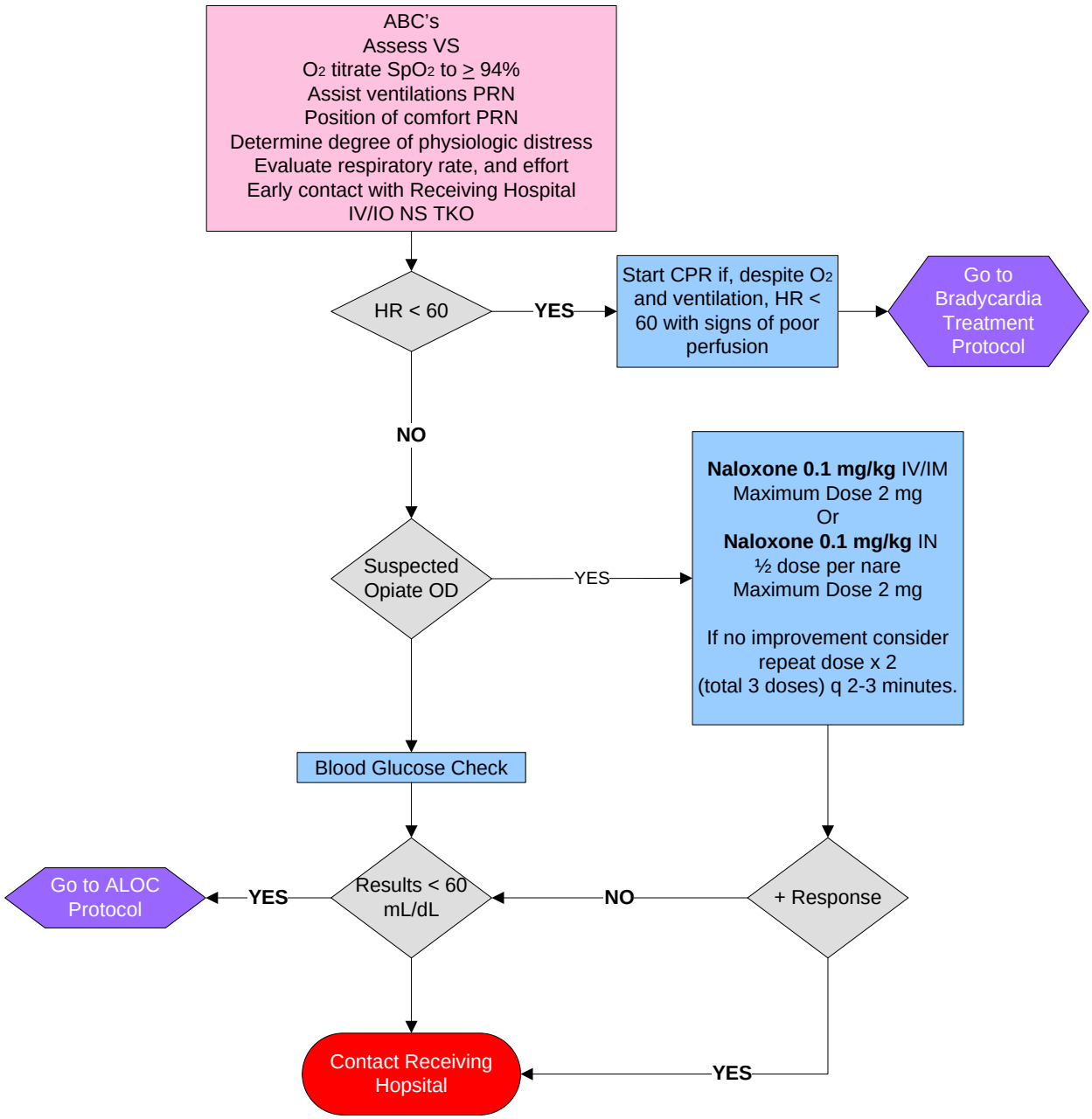
Mild Distress

Albuterol 5 mg (6 mL NS)
and
Ipratropium 500 mcg (2.5 mL)
via nebulizer or BVM

May repeat **Albuterol** x 1
No repeat of **Ipratropium**

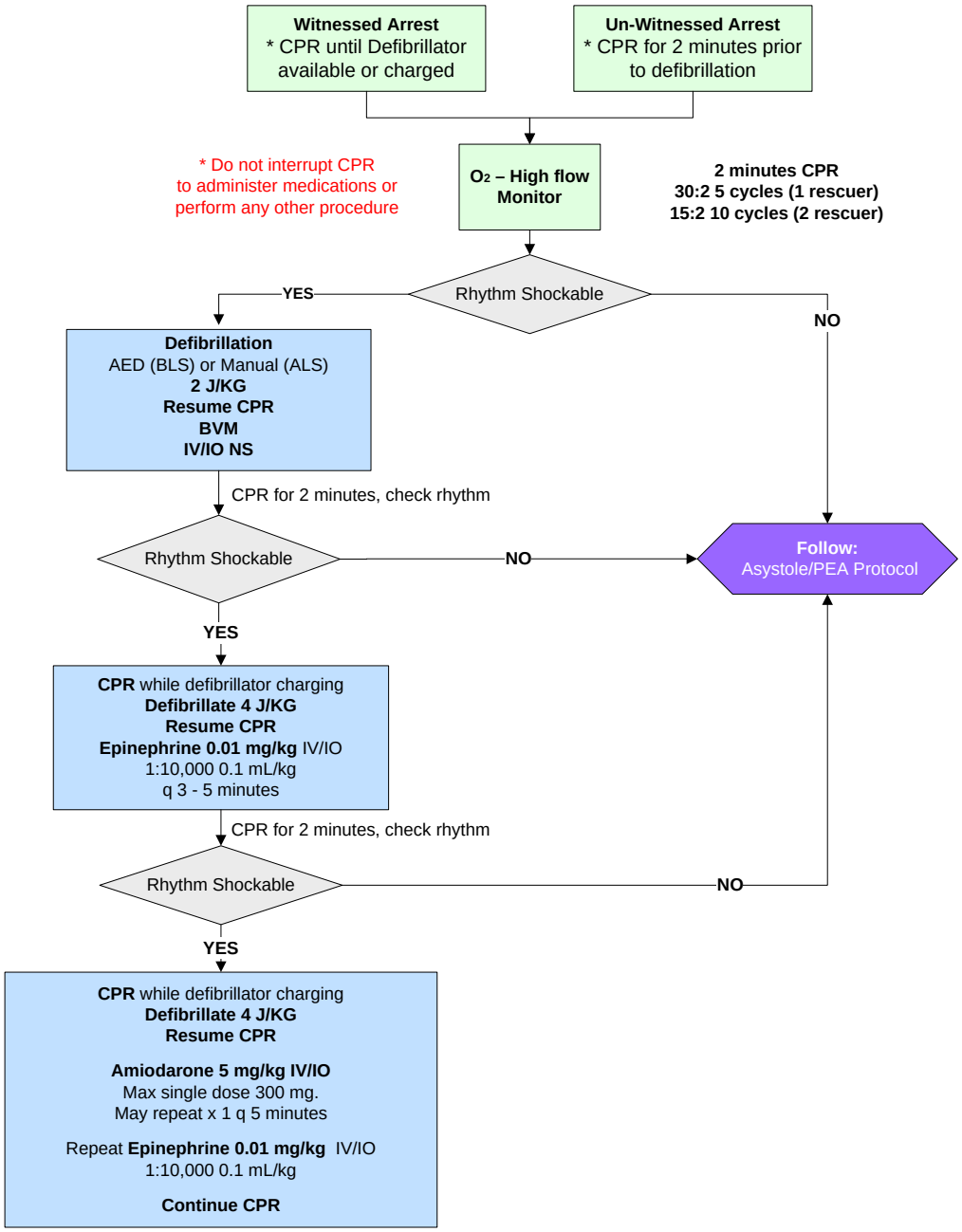
Contact Receiving Hospital

PEDIATRIC RESPIRATORY FAILURE



PEDIATRIC VENTRICULAR FIBRILLATION (VF) & PULSELESS VENTRICULAR TACHYCARDIA (VT)

Provide appropriate Basic Life Support (BLS) airway management. Initially use fifteen liters per minute (15 LPM) via Non-Rebreather mask (NRB) (passive oxygenation), followed by an Oropharyngeal Airway (OPA) and Bag-Valve-Mask (BVM).



Yolo County
Emergency Medical Services Agency

137 N. Cottonwood Street, Woodland, CA 95695
Phone (530) 666-8645 www.yemsa.org

614.2

PARAMEDIC INFREQUENT SKILLS VERIFICATION

Provider Agency:

Name: Calendar Year:

Certification or License #

Completion Date:

SKILLS VERIFICATION	DATE OF VERIFICATION	EVALUATOR INITIALS
1. Adult Endotracheal Intubation		
2. King Airway Device		
3. Adult Cardioversion/Defibrillation		
4. Needle Chest Decompression		
5. Transcutaneous Cardiac Pacing		
6. Intraosseous Infusion – Powered Device		
7. Continuous Positive Airway Pressure – CPAP		
8. Pediatric Cardioversion/Defibrillation		
9. Intraosseous Infusion (Manual Pediatric)		

I certify all information on this form, to the best of my knowledge, is true and correct.

Evaluator Signature *Date*

Printed Name & Title

*Forms and **all** required items may be mailed, emailed, or placed in the drop box at the address above.*
*The drop box is located across from the stairs and is labeled YEMSA drop box and is the **preferred method!***
If you would like to meet with someone to drop off your paperwork, please make an appointment by calling (530) 666-8665.

YEMSA USE ONLY			
Received:	Reviewed by:	Approved by:	Updated:

Yolo County
Emergency Medical Services Agency

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615.3

PARAMEDIC INTUBATION VERIFICATION FORM

Completion of this skills competency verification form is required for any Paramedic seeking re-accreditation in Yolo County. This form must be completed by the employing agency.

Paramedic Name: _____ License #: P _____ has successfully demonstrated proficiency in eight (8) intubations within the last two (2) years, (four [4] per year). These intubations can be any combination of live, sim man, or mannequin.

Intubation Verifications:

#	Date of Intubation	Size	Type	Successful	Evaluator Initials
1		❑ Adult	❑ Live ❑ Sim Man ❑ Mannequin	❑ Yes ❑ No	
2		❑ Adult	❑ Live ❑ Sim Man ❑ Mannequin	❑ Yes ❑ No	
3		❑ Adult	❑ Live ❑ Sim Man ❑ Mannequin	❑ Yes ❑ No	
4		❑ Adult	❑ Live ❑ Sim Man ❑ Mannequin	❑ Yes ❑ No	
5		❑ Adult	❑ Live ❑ Sim Man ❑ Mannequin	❑ Yes ❑ No	
6		❑ Adult	❑ Live ❑ Sim Man ❑ Mannequin	❑ Yes ❑ No	
7		❑ Adult	❑ Live ❑ Sim Man ❑ Mannequin	❑ Yes ❑ No	
8		❑ Adult	❑ Live ❑ Sim Man ❑ Mannequin	❑ Yes ❑ No	

** Intubation verification may be audited by Yolo County Emergency Medical Services Agency (YEMSA) staff at any time.*

Employment Verification:

The above named Paramedic is employed with _____ and is in good standing.
(Provider Agency Name)

I certify all information on this form, to the best of my knowledge, is true and correct.

Provider Agency Representative

Printed Name & Title *Signature* *Date*

***All** items may be mailed, emailed, or placed in the drop box at the address above.*
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If you would like to meet with someone to drop off your paperwork, please make an appointment by calling (530) 666-8665.

YEMSA USE ONLY			
Received:	Reviewed by:	Approved by:	Updated:

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637.8

YEMSA FIRELINE ADVANCED LIFE SUPPORT (ALS) INVENTORY LIST

ALS supplies and equipment are required for all Fireline ALS personnel. This list represents mandatory required quantities. All items with expiration dates must be current. All drugs and equipment should be stored in accordance with the manufacturer's recommendations.

Fireline ALS Equipment Name	Minimum In-service Requirement
Adhesive tape 1", 2", or 3"	2 rolls
Alcohol swabs	6
Bag-Valve-Mask (BVM) - Self-inflating resuscitation device, with clear mask, capable of use with O_2 (adult)	1
Band-aids (various sizes)	
Biohazard bags (Red)	2
Blood pressure cuff - (sphygmomanometer)	1
Burn sheets (sterile) – commercially packaged or sterile burn sheet	2
Cervical collar (adjustable)	1
Coban	2
Cold packs	3
Dressing - multi-trauma (sterile)	4
Emergency Blanket thermal or equivalent (reflective foil)	2
Endotracheal tube introducer (ETTI) (e.g. Bougie)	1
Endotracheal tubes (ETT): 6.0, 7.5	1 each
End-tidal CO_2 detector (colorimetric)	1
ETT securing device	1
Eye protection (face shield, goggles, splash resistance)	1
Folding stretcher (evacu-aid or equivalent)	1 optional
Gloves Latex fee – Assortment of sizes (S, M, L, XL)	1 box each
Glucometer (with lancets & test strips [10 ea.])	1
Glucose paste or commercially bottled solution	1 tube
Israeli Bandage	1
IV catheters: 14 ga, 16 ga, 18 ga, 20 ga	2 each
IV tubing: macro drip (10/15 gtt)	2 each (Macro)
Kerlix Sterile Gauze Rolls	2
King LTS-D Airway Kit: Tube - Size 3, 4, 5, 60 mL syringe, Sterile lubricant	1
Laryngoscope blades: MacIntosh # 4	1 each
Laryngoscope blades: Miller # 4	1 each
Laryngoscope handle (pedi or adult)	1
Laryngoscope light bulb (extra)	1
Medication Adenosine 6 mg	5
Medication Albuterol Aerosolized Bronchodilator MDI with spacer	1
Medication Amiodarone 150 mg	3
Medication Aspirin 81 mg tablets (chewable)	1 bottle

Fireline ALS Equipment Name	Minimum In-service Requirement
Medication Atropine 1 mg (preload or ampule)	2
Medication Dextrose 10% (D10) 250 mL	2
Medication Diphenhydramine (DPH/Benadryl) 50 mg/mL	4
Medication Epinephrine (Epi) 1:10,000 (1 mg/10 mL)	2
Medication Epinephrine (Epi) 1:1,000 (1 mg/1 mL)	4
Medication Fentanyl	600 mcg
Medication Glucagon 1 mg/1 mL	1
Medication Midazolam (Versed) (ampule/vial)	20 mg
Medication Naloxone (Narcan)	2
Medication Nitroglycern Paste 2%	5 packets
Medication Nitroglycerin 0.4 mg/tab (or multi-dose spray)	1 bottle
Medication NS solution – 250 mL or 500 mL or 1,000 mL bag	1,000 mL
Mole Skin	
Nasopharyngeal airways: 18, 20, 22, 24, 26, 28	1 each
Needles: 18 ga, 25 ga	2 each
Oropharyngeal airways: 3, 4, 5, 6	1 each
Pen light	1
Pleural Decompression/Needle Thoracostomy kit (or equivalent) including: 4 each - Alcohol swabs 1 each - Angiocatheter – 12 ga x 3” and 14 ga x 3” 1 each - One-way valve 1 each - Rubber connecting tube 2 each - Sterile gauze pads 1 each - Syringe – 30 mL 1 each - Tape (roll) 2 each – Petroleum Dressings	1 set
Portable monitor/defibrillator with required features: Strip chart recorder 12-Lead cables Synchronized cardioversion $EtCO_2$ monitoring Pulse Oximetry monitoring Pacing Defibrillator capable of discharging below 25 joules (J) for pediatric use	Portable Monitor c defib capabilities or AED c pads
Portable Suction with regulator or portable suction – mechanical/hand powered	1
Pulse Oximeter Device	1
Pulse Oximeter probes (if needed)	1
QuikClot® Dressing (z-Fold)	4
Saline for irrigation (sterile)	1 bottle
Sharps Container	1
Splints – moldable, split, traction (tent-pole style)	2
Stethoscope	1
Syringes: 1 mL, 10 mL	2 each
Thermometer	1
Tourniquet (Combat/Commercial)	1
Tourniquet (IV start)	2

Fireline ALS Equipment Name	Minimum In-service Requirement
Transpore Tape	1
Trauma shears	1
Triage Tags	6
Triangular bandages 40"	2
Tweezers	1
Vaseline gauze	2
Venaguard/Tegaderm	4

SKILLS COMPETENCY VERIFICATION: PEDIATRIC NASOGASTRIC (NG) & OROGASTRIC (OG) TUBES

NAME: _____ DATE: _____

ALS AGENCY: _____ EVALUATOR: _____

OBJECTIVE

The candidate will demonstrate the ability to correctly decompress ventilated air or gastric contents (gastric distension) from a pediatric patient under cardiac or respiratory arrest.

EQUIPMENT

Pediatric Bag-Valve-Mask (BVM), airway adjuncts, Salem Sump™ NG/OG tubes, stethoscope, tape, suction device, syringe, lubricant appropriate for manikin, and appropriate Personal Protective Equipment (PPE).

PERFORMANCE CRITERIA AND CONDITIONS

The candidate will be presented with a pediatric intubation manikin on which ventilation is being performed with a BVM and an Oropharyngeal Airway (OPA). An Emergency Medical Technician (EMT) trained rescuer is available to assist with ventilating the patient. The candidate will correctly place the NG/OG tube and decompress the gastric distension in the patient.

EVENT	DOES	DOES NOT
1. States the appropriate tube type and size of tube to use for the patient. • Appropriately sized Salem Sump™ gastric tube. • Use Broselow or equivalent length based tape to determine appropriate size of gastric tube.		
2. States indications: • Gastric Distension.		
3. States contraindications: • Suspected basilar skull fracture. • Suspected mid-facial fractures. • Known or suspected actively bleeding esophageal varices		
4. States or demonstrates the use of appropriate PPE.		
5. Checks/prepares airway device. • Measures the insertion length of the gastric tube: o From the midway between the xiphoid process and umbilicus, o To the earlobe and over to the tip of the nose • Marks the measured length of gastric tube with a piece of tape		
6. Lubricates distal tip of the device (may be verbalized).		

EVENT	DOES	DOES NOT
7. Positions the head properly.		
8. Insertion: • **Nasal:** o Directs gastric tube along the floor of the nostril to the posterior nasopharynx. o Then feeds it through the oropharynx down the esophagus and into the stomach. o Stops when the taped mark nears the nostril. • **Oral:** o Directs gastric tube along tongue to posterior oropharynx. o Then feeds it down the esophagus and into the stomach. o Stops when the taped mark nears the lips. • Difficulty placement may be eased by directing the chin posteriorly and performing a manual jaw thrust during insertion.		
9. If vomiting occurs, proceed with placement and suction around the gastric tube.		
10. Confirms tube placement by: • Injecting ten to twenty milliliters (10 to 20 mL) of air while auscultating over the stomach. • Listening for a “swoosh” or “burping/bubbling”. • Confirms absence of similar sounds in the lungs by auscultating in the mid-axillary line bilaterally while repeating the injection of small ml volumes of air. • Aspirates gastric contents.		
11. Properly secures the gastric tube using tape.		
12. Attaches the gastric tube to a low pressure suction device (twenty – one hundred twenty [20 – 120] mm) and observes for gastric decompression		
13. Abandon gastric tube placement if unsuccessful after three (3) attempts.		