

Procedure: AIRWAY MANAGEMENT

EMT

- Oxygen administration / Assist ventilations with bag valve mask
- Call for ALS intercept enroute to the closest Emergency Department
- Consider CPAP for a spontaneously breathing patient, if appropriately credentialed by medical director (see CPAP procedure).

EMT STOP

INTERMEDIATE

AEMT

- Needle thoracostomy bilaterally if traumatic cardiac arrest OR if tension pneumothorax is present (see Key Points).
- Evaluate the patient for characteristics of a difficult airway using LEMON. If characteristics of a difficult airway are present, consider using an elastic gum bougie during intubation attempt or placing a supraglottic airway.
- Endotracheal intubation (with cervical spine precautions prn) **OR** place FDA approved supraglottic airway device. ET: maximum 2 attempts and must be monitored with continuous waveform capnography from time of intubation.
NOTE: If unable to intubate, place supraglottic airway or just ventilate patient
- Consider topical anesthetic spray or jelly prior to intubation/supraglottic airway placement.

INTERMEDIATE and AEMT STOP

CRITICAL CARE

- ***If unable to secure airway or adequately ventilate, perform needle or percutaneous cricothyrotomy with FDA approved device, if credentialed.***
- Place naso- or orogastric tube to decompress the stomach contents after the airway is secured.

CC STOP

PARAMEDIC

- If credentialed by medical director, consider MFI protocol.
- Surgical airway, if approved and credentialed by medical director

PARAMEDIC STOP

PHYSICIAN OPTIONS

- Additional intubation attempts by more experienced or higher level provider

Key Points/Considerations

- Signs of a tension pneumothorax requiring needle thoracostomy include unilateral loss of breath sounds, hypotension, hypoxia, evidence of penetrating or blunt chest trauma on the affected side, distended jugular veins, and tracheal deviation away from the affected side (late sign).
- Confirm endotracheal tube placement with auscultation and continuous waveform capnography.
- Maintain continuous waveform capnography until the patient is placed onto the ED stretcher.

- LEMON is a mnemonic that can be used to help assess for potential difficulty in intubation.
 - L: Look for facial / airway features that will affect management (e.g. facial hair, deformities, etc).
 - E: Evaluate the 3 – 3 – 2 rule. The patient should be able to open the mouth three fingerbreadths. The distance between the chin and the hyoid bone should be three fingerbreadths and the distance between the hyoid bone and the larynx should be 2 fingerbreadths.
 - M: Mallampati score assesses visualization by asking the patient to open her mouth (see diagram). A score of 3 or 4 indicates likely difficulty with intubation.
 - O: Obstruction, including stridor or foreign bodies
 - N: Neck mobility - The less the mobility, the greater the difficulty.

Procedure: CONTINUOUS POSITIVE AIRWAY PRESSURE

EMT

- Oxygen administration / Assist ventilations with bag valve mask.
- Initiate CPAP for a spontaneously breathing patient, if appropriately credentialed by medical director
- Indications for use: (must have all three)
 - Age > 10 years old
 - Signs of severe respiratory distress defined as at least two of the following:
 - Respiratory Rate > 24 / min
 - SaO₂ < 92%
 - Significantly decreased air movement
 - Pulmonary edema or frothy sputum, rales or severe wheezing all fields
 - Significantly increased work of breathing (e.g. retractions, tripod position, skin mottling, pallor or cyanosis)
 - Awake patient who can cooperate with CPAP
- Contraindications for use: (any one)
 - Altered mental status (GCS < 14)
 - Systolic BP < 90
 - Respiratory arrest or agonal respirations
 - Blunt or penetrating chest trauma/suspected pneumothorax
 - Subcutaneous emphysema
 - Facial trauma inhibiting mask seal
 - High risk vomiting or aspiration
 - Tracheostomy
 - Stridor or suspected airway obstruction
- If indications are present and contraindications are absent:
 - Position patient in semifowlers position and apply a proper fitting CPAP mask at 5 cm H₂O pressure. .

EMT STOP

INTERMEDIATE (if credentialed by Service Medical Director)

AEMT (if credentialed by Service Medical Director)

CRITICAL CARE (if credentialed by Service Medical Director)

PARAMEDIC

- May increase by 5 cm H₂O every 5 minutes if no improvement, as long as the patient tolerates the increased pressure. (max 15 cm H₂O). May decrease by 5 cm H₂O every 5 minutes if patient unable to tolerate the pressure.

INTERMEDIATE/AEMT/CC/PARAMEDIC STOP

PHYSICIAN OPTIONS

- Increase CPAP pressure.

Key Points/Considerations

- Patients who have not had CPAP/BiPAP before often require coaching to breathe and relax with the machine.
- Sidestream capnography may not produce an accurate waveform secondary to high airflow rates.

Respiratory: ASTHMA / COPD

EMT

- Initiate oxygen therapy / BVM assist as necessary.
- Monitor pulse oximetry (if available).
- Follow BLS albuterol protocol if credentialed.
- Consider CPAP if indicated and appropriately credentialed by medical director (SEE PROCEDURE: CONTINUOUS POSITIVE AIRWAY PRESSURE)
- Transport and intercept with ALS enroute to the Emergency Department.

EMT STOP

INTERMEDIATE

- Advanced airway procedure as indicated
- Initiate IV access if severe respiratory distress or wheezing continues after first nebulized albuterol.

INTERMEDIATE STOP

AEMT

- Albuterol 2.5 mg in 3 mL (unit dose) via nebulizer. May repeat to a total of three (3) doses

AEMT STOP

CRITICAL CARE

PARAMEDIC

- Albuterol 2.5 mg in 3 mL (unit dose) + Atrovent 0.5 mg in 2.5 mL (unit dose) mixed together, via nebulizer May repeat to a total of three doses if needed.
- Consider 12 Lead EKG.
- Methylprednisolone 125 mg IV OR Prednisone 50 mg PO
- Magnesium sulfate 2 gram IV over 20 minutes for severe dyspnea

CC and PARAMEDIC STOP

PHYSICIAN OPTIONS

- Additional albuterol unit dose via nebulizer
- Epinephrine 1:1000 0.3 – 0.5 mg IM
- Epinephrine 1:10,000 mix 1mg in 250 mL normal saline bag. Run wide open until breathing improves then stop.
- Epinephrine 1:1000 0.5 mg Mix with 3mL normal saline nebulized.
- Terbutaline 0.25 mg SQ

Key Points/Considerations

- Remember “all that wheezes is not asthma!” Consider allergic reaction, airway obstruction, pulmonary edema, COPD exacerbation.
- A “shark fin” tracing on sidestream capnography is highly suggestive of Asthma/COPD.
- Epinephrine should only be used if patient’s tidal volume is so small that nebulized medications can’t work.
- If any provider has administered any medications they must consult medical control prior to allowing a patient to RMA or before transporting the patient BLS.
- Use epinephrine and terbutaline with caution in patients over the age of 55, those with a history of hypertension, and those with a prior cardiac history.

Respiratory: ACUTE PULMONARY EDEMA

EMT

- ABC and vital signs
- Airway management and appropriate oxygen therapy
- Sit patient upright, if possible.
- Consider CPAP if appropriately credentialed by medical director. (see CPAP procedure.)

EMT STOP

INTERMEDIATE

AEMT

- Vascular access with saline lock

INTERMEDIATE and AEMT STOP

CRITICAL CARE

PARAMEDIC

- CPAP, if equipped, early in care
- 12 Lead EKG (follow STEMI protocol if ECG shows an ST-elevation MI in addition to treatments below)
- Based on the patient's systolic blood pressure:
 - Hold NTG SL for a systolic BP below 100 mmHg.
 - NTG 0.4 mg SL 1 tablet every 5 minutes for a systolic BP of 100 – 160 mmHg
 - NTG 0.4 mg SL 2 tablets every 5 minutes for a systolic BP of 160 – 200 mmHg
 - NTG 0.4 mg SL 3 tablets every 5 minutes for a systolic BP over 200 mmHg
- Albuterol 2.5 mg in 3 mL (unit dose) + Atrovent 0.5 mg in 2.5 mL (unit dose) mixed together, via nebulizer, only if wheezes are present
- If unable to administer medication orally, Nitroglycerin Paste 1 – 2 inches transdermally

CC and PARAMEDIC STOP

PHYSICIAN OPTIONS

- Furosemide (Lasix) 40 mg IV over 2 – 3 minutes, if peripheral edema is present

Key Points/Considerations

- All patients with rales do not have pulmonary edema — consider the possibility of pneumonia or chronic obstructive pulmonary disease (COPD) exacerbation.
- May administer first dose of Nitroglycerin while preparing to establish vascular access.
- At least 50% of patients who present with acute pulmonary edema are not fluid overloaded and may even be dehydrated. The issue in those patients is abnormal distribution of fluid resulting in pooling in the lungs. Treatment goal in these patients is to restore proper fluid balance before using diuretics to prevent harm.

Medical: ALLERGIC REACTION / ANAPHYLAXIS

EMT

- Initiate oxygen therapy / BVM assist as necessary.
- Monitor pulse oximetry (if available).
- Follow BLS epi pen protocol if credentialed.
- Transport and intercept with ALS enroute to the Emergency Department.

EMT STOP

INTERMEDIATE

- Advanced airway procedure as needed
- Initiate IV access if severe respiratory distress.
- Administer Normal Saline 500 mL bolus as needed for hypotension. Reassess and repeat as needed.

INTERMEDIATE STOP

AEMT

- If wheezing present, administer Albuterol 2.5 mg in 3 mL unit dose nebulized. May repeat two additional times as needed.
- If severe respiratory distress, signs of shock or facial/throat edema, administer Epinephrine 0.3 mg (0.3 mL of 1:1000) IM.

AEMT STOP

CCT

PARAMEDIC

- Diphenhydramine 50 mg IV or IM (Hold if patient self-administered oral or may add to dose to equal 50 mg.)
- Methylprednisolone 125 mg IV or Prednisone 50 mg PO

CCT/PARAMEDIC STOP

PHYSICIAN OPTIONS

- Epinephrine (1:1000) 0.3 – 0.5 mg IM May repeat Q5 min prn
- Epinephrine infusion 1:10,000 Mix 1 mg in 250 mL normal saline bag. Run wide open until breathing improves then stop.
- Dopamine 10 mcg/kg/min Titrate to SBP > 100 mmHg with max 20 mcg/kg/min.
- If available: Cimetidine 300 mg IV or IM; Famotidine 20 mg IV; or Ranitidine 50 mg IV or IM
- Methylprednisolone 125mg IM

Key Points/Considerations

- Use Epinephrine with caution in patients over the age of 55, those with a history of hypertension, and those with a prior cardiac history.

Medical: SEIZURES

EMT

- ABC and vital signs
- Airway management and appropriate oxygen therapy
- **Check blood glucose level**, if credentialed. If abnormal, refer to Diabetic Emergencies protocol.

EMT STOP

INTERMEDIATE

AEMT

- Vascular access and, if possible, bloods drawn

INTERMEDIATE and AEMT STOP

CRITICAL CARE

PARAMEDIC

- If female patient pregnant and over 20 weeks gestation **OR** up to 6 weeks post partum **AND** no history of seizures, administer Magnesium Sulfate 4 gm in 100 mL NS over 5 minutes IV/IO. May follow with Benzodiazepine as below for refractory seizure activity
- Administer Benzodiazepine if actively seizing or in pregnant female nonresponsive to magnesium administration. May repeat dose once in 5 minutes without delaying transport if seizures persist:
 - Midazolam (Versed) 2.5 mg IV/IO or 5 mg IM/IN **OR**
 - Diazepam (Valium) 5 mg IV/IM/IO **OR**
 - Lorazepam (Ativan) 2 mg IV/IM/IO

CC and PARAMEDIC STOP

PHYSICIAN OPTIONS

- Additional Benzodiazepine doses
- Magnesium Sulfate 4 gm in 100 mL NS over 5 minutes IV/IO for maternity patient with unknown seizure history or length of gestation

Key Points/Considerations

- Protect the patient and EMS crew from injury during the seizure.
- Standing orders are for tonic/clonic seizures (grand mal seizures) only.
- All levels must contact medical control before administration of Benzodiazepine if Diastat (Diazepam) was administered PTA.

2015 DRAFT WREMAC Protocol Updates

- Pre-eclampsia is defined as BP greater than 140/90 in a pregnant patient or one who has recently given birth. Signs and symptoms include severe headache, confusion and/or hyper-reflexia.
- Eclampsia is signs/symptoms of pre-eclampsia with seizure activity.

ADULT PAIN / NAUSEA / SEDATION

EMT

- ABC and vital signs
- Airway management and appropriate oxygen therapy
- Apply ice, elevation and immobilization of injured limb or area.

EMT STOP

INTERMEDIATE

AEMT

- SaO₂ monitor
- Vascular access prn if analgesia is anticipated.
- If nauseous, Normal Saline 500 mL bolus IV if no contraindications for fluid administration.

INTERMEDIATE and AEMT STOP

CRITICAL CARE

PARAMEDIC

- Consider monitoring sidestream capnography (if available) for procedural sedation.
- Consider 12 lead ECG if profound nausea or vomiting.
- Analgesia:
 - Morphine 0.1 mg/kg IV, IO, IM up to 5mg. **May be repeated in 5 min with total not to exceed 10 mg. (SEE KEY POINTS BELOW) OR**
 - Fentanyl 50 mcg slow IV, IO, IM, or IN. **May be repeated in 5 min with total not to exceed 100 mcg. OR**
 - Ketorolac 30 mg IV, IO or IM once (do not use if history of bleeding disorder or renal disease, current pregnancy or age over 65)
- Nausea:
 - Ondansetron (Zofran) 4 mg IV, IO, IM, or PO . May repeat once in 10 minutes if needed.
- Sedation (**for a painful procedures only – not for chemical restraint**):
 - **Midazolam (Versed) 2.5 mg IV/IO or 5 mg IM/IN.** May repeat once as needed. **OR**
 - Diazepam 5 mg IV, IO, IM. May repeat once as needed. **OR**
 - Lorazepam 2 mg IV, IO, IM. May repeat once as needed.
- Diphenhydramine (Benadryl) 25 mg IV or IM once prn for itching or for motion sickness

CC and PARAMEDIC STOP

PHYSICIAN OPTIONS

- Additional Morphine IV, IO or IM, or **Fentanyl IV, IO, IM, or IN**
- Additional Ondansetron (Zofran) IV, IO or IM
- Additional Midazolam, Diazepam, or Lorazepam IV, IO, IM, or IN

Key Points/Considerations

- Contraindications to standing order pain management: altered mental status, hypoventilation, SBP<100
- Fentanyl should be used if there is any concern for potential hemodynamic instability.

Procedure: PEDIATRIC AIRWAY MANAGEMENT

EMT

INTERMEDIATE

- Assist ventilations with bag valve mask with oxygen if available (room air is acceptable to start).
- Consider CPAP for a spontaneously breathing patient > 10 years old, if appropriately credentialed by medical director (see CPAP procedure).
- Call for ALS intercept enroute to the closest Emergency Department.

EMT and INTERMEDIATE STOP

AEMT

- Consider advanced airway if CC/Paramedic care delayed.
- Needle Decompression if signs and symptoms consistent with Tension Pneumothorax

AEMT STOP

CRITICAL CARE

- Endotracheal intubation (cervical spine precautions prn) and monitor with continuous waveform capnography (max 2 attempts total), OR FDA approved supraglottic airway device
- Consider topical anesthetic spray or jelly prior to intubation/supraglottic airway placement.
- **If unable to intubate, place a supraglottic airway, or just ventilate the patient or perform needle cricothyrotomy.**

CC STOP

PARAMEDIC

- If patient is older than 15 years old OR has obvious signs of puberty, may perform Medicated Facilitated Intubation procedure, if credentialed by service medical director (see Medication Facilitated Intubation protocol).

PARAMEDIC STOP

PHYSICIAN OPTIONS

- Additional intubation attempts by more experienced or higher level provider
- Needle thoracostomy if tension pneumothorax is present (EMT-Intermediate)

Key Points/Considerations

2015 DRAFT WREMAC Protocol Updates

- Signs of a tension pneumothorax requiring needle thoracostomy include unilateral loss of breath sounds, hypotension, hypoxia, penetrating or evidence of blunt chest trauma on the affected side, distended jugular veins, and tracheal deviation away from the affected side (late sign).
- Confirm endotracheal tube placement with auscultation and continuous waveform capnography.
- Maintain continuous waveform capnography until the patient is placed onto the ED stretcher.

Pediatric: ACUTE ASTHMA

EMT

INTERMEDIATE

- ABC, vital signs, and pulse oximetry if available
- Airway management and oxygen therapy
- Determine if patient has been given their own asthma medications.
- Follow BLS Nebulized Albuterol protocol.
- Consider CPAP for a spontaneously breathing patient > 10 years old, if appropriately credentialed by medical director (see CPAP procedure).

EMT and INTERMEDIATE

AEMT

- Albuterol 2.5 mg in 3 mL (unit dose) via nebulizer. Repeat to a total of three (3) doses.

AEMT STOP

CRITICAL CARE

PARAMEDIC

- Albuterol 2.5 mg in 3 mL (unit dose) mixed with Ipratropium 0.5 mg in 2.5 mL (unit dose), via nebulizer. Repeat to a total of three doses.

CC and PARAMEDIC STOP

MEDICAL CONTROL TREATMENT OPTIONS

- Albuterol 2.5 mg in 3 mL (unit dose), repeated prn if patient does not improve after 3 doses of Albuterol/Ipratropium mix
- Epinephrine (1:1,000) 0.01 mg/kg IM (max 0.3 mg)
- Epinephrine (1:1,000) 1 mg mixed with 2–3 mL Normal Saline, via nebulizer (for stridor associated with croup)
- Prednisone (if available) 2 mg/kg PO (maximum 60 mg) or methylprednisolone 2 mg/kg IV or IM (maximum 125 mg)
- Terbutaline 0.01 mg/kg SQ (maximum 0.25 mg)
- Magnesium sulfate 25 mg/kg over 10–20 minutes IV (maximum 2 grams)
- Normal Saline 2–3mL nebulized

Key Points/Considerations

- Wheezing, diminished breath sounds, or prolonged expiration when accompanied with respiratory distress are indications for medication administration.

2015 DRAFT WREMAC Protocol Updates

- Absence of breath sounds can be indicative of status asthmaticus. Be prepared for imminent respiratory arrest.
- If stridor, excessive drooling, or barking cough present, suspect epiglottitis or croup. If epiglottitis suspected, do not intubate.
- Allow child to maintain position of comfort and remain with parent if possible.

Pediatric: DIABETIC EMERGENCIES

EMT

- ABC and vital signs
- Airway management and appropriate oxygen therapy
- Check blood glucose level, if credentialed.
- If blood glucose is known or suspected to be low (less than 60 mg/dl), and patient is able to self-administer and swallow on command, give oral glucose one unit dose (19-24 grams).
- Call for ALS intercept if unable to swallow on command, or mental status remains altered following administration of oral glucose.

EMT STOP

INTERMEDIATE

- If blood glucose below 60 mg/dl (40 mg/dl for neonates) and the patient is symptomatic, administer D₁₀W, 5 mL/kg (maximum 250 mL) IV. If the patient is not symptomatic, administer oral glucose.
- If patient does not respond to initial treatment, recheck blood glucose and re-bolus with same dose of dextrose if blood glucose <60 mg/dl.

INTERMEDIATE STOP

AEMT

CRITICAL CARE

PARAMEDIC

- If blood glucose below 60 mg/dl (40 mg/dl for neonates) and patient is symptomatic, administer D₂₅ 2 mL/kg (maximum 100 mL). If patient is asymptomatic, administer oral glucose.
- If patient does not respond to initial treatment, recheck blood glucose and re-bolus with same dose of dextrose if blood glucose less than 60 mg/dl.
- Glucagon 0.5mg IM or **IN** (if patient < 20 kg) if unable to establish IV
- Glucagon 1 mg IM or **IN** (if patient ≥ 20 kg) if unable to establish IV
- If blood glucose above 400 mg/dl and signs of dehydration are present, administer normal saline 20mL/kg bolus (10 mL/kg for infants)

AEMT, CC and PARAMEDIC STOP

MEDICAL CONTROL TREATMENT OPTIONS

- For Hyperglycemia: Normal saline 20 mL/kg. May get order for repeat dosing

Key Points/Considerations

2015 DRAFT WREMAC Protocol Updates

- Review the Refusal of Evaluation/Stabilization/Transport policy if patient and/or guardian refuse transport after treatment.
- To dilute D50 to a concentration of D25, mix equal volumes of D50 and normal saline.
- Attempt blood draw prior to medication administration to ensure receiving facility has an accurate baseline.
- If a patient on an insulin pump develops symptomatic hypoglycemia, ask the patient or family to turn off or disconnect the insulin pump until blood glucose stabilizes.

Pediatric: SEIZURES

EMT

INTERMEDIATE

AEMT

- ABC and vital signs
- Airway management and appropriate oxygen therapy
- Check blood glucose level, if credentialed. If level is abnormal refer to Pediatric Diabetic protocol.

EMT, INTERMEDIATE, and AEMT STOP

CRITICAL CARE

PARAMEDIC

- Midazolam (Versed) 0.1 mg/kg (max 2.5 mg) IV/IO, or 0.2 mg/kg (max 5 mg) IM/IN **OR**
- Diazepam (Valium) 0.1 mg/kg (max 5 mg) IV, IO, IM, PR (remove needle first) **OR**
- Lorazepam (Ativan) 0.1 mg/kg (max 2 mg) IV, IO or IM

CC and PARAMEDIC STOP

MEDICAL CONTROL TREATMENT OPTIONS

- Additional
 - Midazolam (Versed) 0.1 mg/kg IV, IO, IM, or IN **OR**
 - Diazepam (Valium) 0.1 mg/kg IV, IO or IM **OR**
 - Lorazepam (Ativan) 0.1 mg/kg IV, IO or IM

Key Points/Considerations

- Protect the patient and EMS crew from injury during the seizure.
- Advanced EMS providers may assist the patient's family or caregivers with administration of rectal Valium (Diastat) if available.

Pediatric: PAIN / NAUSEA / SEDATION

EMT

INTERMEDIATE

AEMT

- ABC and vital signs
- Airway management and appropriate oxygen therapy
- Apply ice, elevation and immobilization of injured limb or area.

EMT, INTERMEDIATE and AEMT STOP

CCT

PARAMEDIC

- Nausea/Vomiting: Ondansetron (Zofran) 0.1 mg/kg (maximum 4 mg) IV or IM. May repeat once in 10 minutes for persistent nausea.
- Pain: Morphine 0.1 mg/kg IV or IM up to 5mg. May repeat once in 5 minutes prn.
- Sedation for painful procedures only (**not for restraint**):
 - Midazolam (Versed) 0.1 mg/kg (max 2.5 mg) IV/IO, or 0.2 mg/kg (max 5 mg) IM/IN **OR**
 - Diazepam (Valium) 0.1 mg/kg IV, IO or IM (max 5 mg) **OR**
 - Lorazepam (Ativan) 0.1 mg/kg IV, IO or IM (max 2 mg)
- Diphenhydramine 1 mg/kg (maximum 50 mg) IV or IM prn for itching

CCT AND PARAMEDIC STOP

MEDICAL CONTROL TREATMENT OPTIONS

- Morphine 0.1 – 0.1 mg/kg IV, IO or IM
- Fentanyl 0.5–1 mcg/kg IV, IO, IM, or IN

Key Points/Considerations

- Withhold opiate analgesia and benzodiazepine if patient is hypotensive.