



Advanced Practice Paramedic Guidelines

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AP-1: AGITATED CHAOTIC EVENT

Patients may need sedation for extreme cases of agitation. These patients frequently require restraint by the police department. Deaths following an excited state are well documented.

Causes of agitation may be related (but not limited) to:

- Drug use
- Psychiatric issues/psychosis
- Hypoglycemia
- Head Injury
- Neuroleptic Malignant Syndrome

Concerning Symptoms Include:

Paranoia	Incoherent speech
Bizarre behavior	Unexpected physical strength
Aggressive behavior	Seemingly impervious to pain
Nakedness	Hyperthermia
Diaphoresis	Inability to focus

Patient Care:

- The patient will likely be restrained by the police.
- It is imperative that the patient *immediately* be placed on their back or side. **The prone position is unacceptable.**

Legend

AP Advanced Medic AP

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Advanced Paramedic Guidelines



Immediately place patient on continuous pulse oximetry and cardiac monitoring.

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Place on high flow oxygen (as best as possible) regardless of oximetry, even with lack of respiratory symptoms.

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If possible, **obtain blood glucose**. If low- treat in accordance with existing protocols. For patients that continue to be combative/agitated with a normal glucose (or if you are unable to obtain glucose due to patient combativeness).



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Administer **MIDAZOLAM (VERSED) 2.5 mg – 5 mg intranasal via mucosal atomizing device**. May repeat once in 10 minutes for continued symptoms to a max dose of 10 mg.

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If patient does not respond to Midazolam, **Administer KETAMINE 2.0 mg/kg IV OR 4.0 mg/kg IM (max dose 400mg)**.




**Contact Medical Control
(Further Consideration, ER Activation/Preparation)**


KEY POINTS/CONSIDERATIONS


- Sudden cessation of struggling, complaints of trouble breathing, shallow or labored breathing should be considered a pre-arrest event and the patient needs to be aggressively reevaluated.

AP-1: AGITATED CHAOTIC EVENT (continued)

Legend		
AP	Advanced Medic	AP

A P		Assume the patient is hyperthermic and remove excess clothing. Administer 1 Liter of NORMAL SALINE BOLUS , If an IV can be established safely.	A P

A P		Manage dysrhythmias according to existing protocols. If a widened QRS or peaked T waves are noted (document on 12 lead if possible), consider hyperkalemia may be present and Administer ALBUTEROL 2.5 mg 0.083% solution via nebulizer and repeat immediately if time allows.	A P

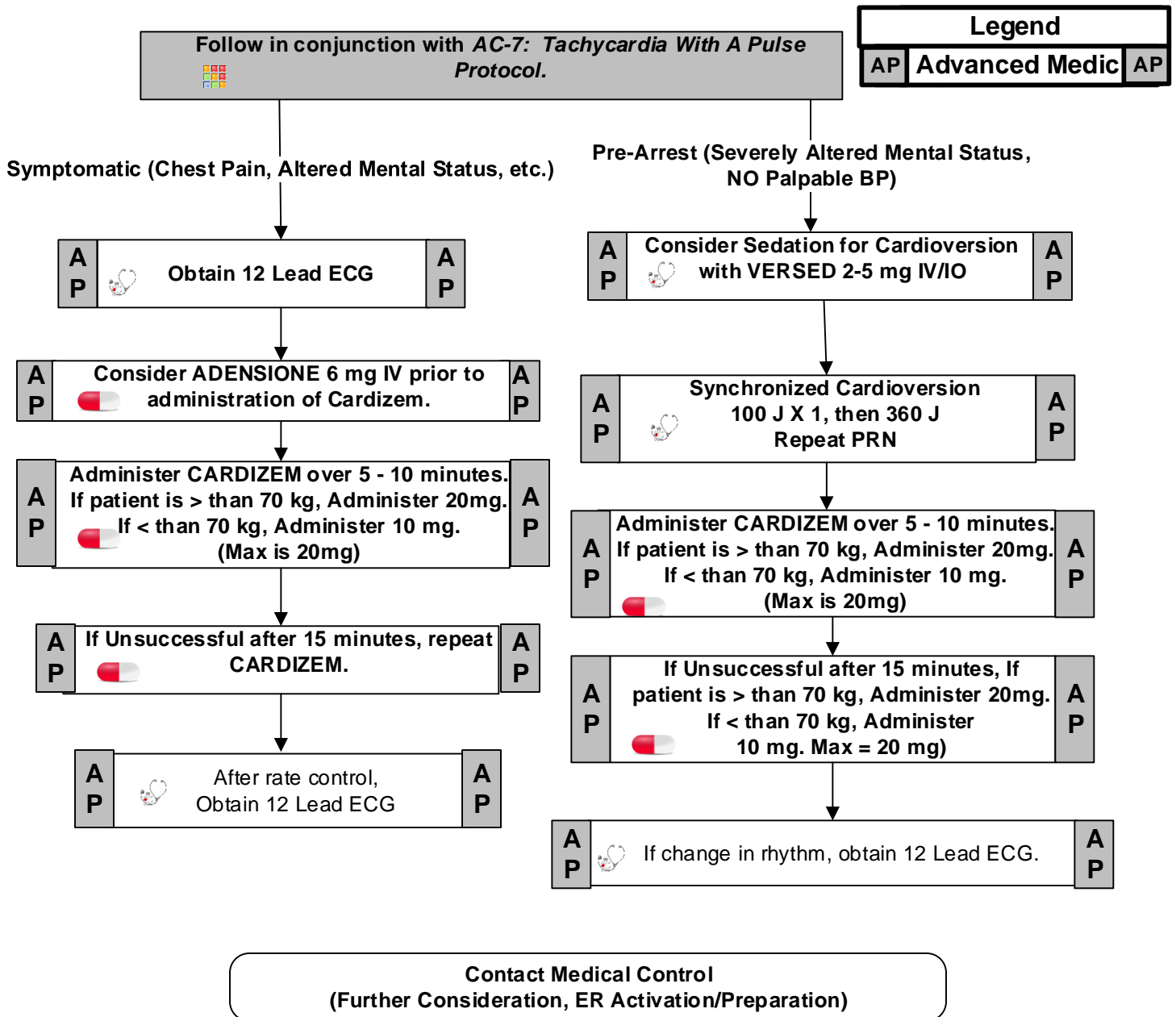
A P		Administer SODIUM BICARBONATE 50 mEq (1 amp) IV.	A P

Contact Medical Control
(Further Consideration, ER Activation/Preparation)

KEY POINTS/CONSIDERATIONS

- Sudden cessation of struggling, complaints of trouble breathing, shallow or labored breathing should be considered a pre-arrest event and the patient needs to be aggressively reevaluated.

AP-2: Atrial Fibrillation



- KEY POINTS/CONSIDERATIONS**
- Do not give Cardizem if tachycardia is a compensatory mechanism for an underlying issue (pulmonary edema, dehydration, etc.).
 - Cardizem should be used with caution in patients who take Beta Blockers and Calcium Channel Blockers at the same time.
 - Contraindicated in patients with heart block, Ventricular Tachycardia, wide QRS tachycardia, WPW, Hypotensive patients, patients with diminished preload and sick sinus syndrome.
 - Take consideration with patients with impaired liver function because it is hepatically metabolized.

AP-3: Behavioral Emergencies

Follow in conjunction with **General- Behavioral/Patient Restraint** Protocol.

Legend		
AP	Advanced Medic	AP

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P Administer **HALOPERIDOL (HALDOL) 5 mg IM** for patients with psychosis and head injuries. Do not administer if the patient has a history of seizures or prolonged QT intervals. **A**
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OR

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P If chemical agitation or alcohol withdrawal is suspected, administer **VERSED 2.5 - 5 mg IV/IN/IM/IN** titrated to effect. **A**
P

A
P For Pediatric patients- administer **VERSED 0.1 mg/kg IV/IO/IM/IN**. **A**
P

Contact Medical Control
(Further Consideration, ER Activation/Preparation)

AP-4: Cardiac Arrest- Ventricular Fibrillation/Pulseless V-Tach

Vasopressin produces the same positive effects as epinephrine in terms of vasoconstriction and increasing the blood flow to the brain and heart during CPR. Moreover, vasopressin does not have the negative, adverse effects of epinephrine on the heart, such as increased ischemia and irritability and, paradoxically, the propensity for VF.

Legend		
AP	Advanced Medic	AP

Amiodarone relaxes vascular smooth muscle, reduces peripheral vascular resistance (afterload), and slightly increases cardiac index. Amiodarone shows beta blocker-like and calcium channel block-like action on the SA and AV nodes, increases the refractory period via sodium and potassium channel effects.

Follow in conjunction with **Cardiac Arrest- Ventricular Fibrillation/Pulseless V-Tach Protocol**.

Administer **VASOPRESSIN** one time dose of **40 units IV/IO** push before administration of Epinephrine.

Replace administration of Lidocaine during cardiac arrest with Amiodarone. Administer **AMIODARONE 300 mg IV/IO bolus. May repeat 150 mg IV/IO bolus.**
Amiodarone must be diluted with a minimum of 15 cc of 0.9% Normal Saline.

Contact Medical Control
(Further Consideration, ER Activation/Preparation)

Advanced Paramedic Guidelines

AP-5: Conscious Sedation

Legend


AP Advanced Medic AP

A P	INDICATIONS: Adjunct to Fentanyl in patients with severe traumatic pain associated with:	A P
	<ul style="list-style-type: none">• Chemical extrication (entrapments)• Extremity fractures/dislocations with circulatory compromise• Excited delirium- not responding to Versed.• Reduce and/or realign open fractures due to increased risk of bone loss.• Reduction of knee, patella, elbow, and ankle dislocations as well as realignment of long bone fractures.	



A P	CONTRAINDICATIONS:	A P
	<ul style="list-style-type: none">• Hypertension• Patients less than 1 year old• Head injuries with increased ICP• Pregnant patients	



A P	Administer KETAMINE 0.5 – 2.0 mg/kg IV/IO over 1 minute. If IV/IO unsuccessful, Administer KETAMINE 4 mg/kg IM. Use the same dose for a child as you do for an adult.	A P
	 For reductions and/or realignments, administer KETAMINE 2.0 mg/kg IV/IO .	

Contact Medical Control
(Further Consideration, ER Activation/Preparation)

AP-6: DAI: Drug Assisted Intubation

REQUIREMENTS:

- Advanced Paramedic ONLY.
- A Second Provider must be on scene that is cleared to intubate.
- Pediatric patients require medical control contact.

INDICATIONS:

- Life threatening respiratory issues (Adult respiratory arrest, respiratory insufficiency or inability of patient to protect airway) with inability to manage airway adequately with noninvasive measures.

CONTRAINDICATIONS:


- Unresponsive patient with adequate ventilations and adequate protection of airway.
- Patients in whom airway can be managed with noninvasive measures.


Legend



AP	Advanced Medic	AP
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A P		Administer ZOFRAN 4 mg – 8mg IV/IO prior to induction.	A P
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A P	SEDATION (ALWAYS give first): KETAMINE 2 mg/kg IV/IO		A P
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A P	<p><u>Paralysis:</u> ROCURONIUM 1.0 mg/kg IV/IO </p> <p><u>If Rocuronium is contraindicated:</u> SUCCINYLCHOLINE 1.0 - 1.5 mg/kg IV/IO; Max dose of 140 mg. Total Dose is 225 mg. </p> <p>If paralysis is inadequate, may repeat Succinylcholine at ½ the original dose.</p>	A P
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A P		During intubation, a Bougie must be utilized.	A P
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A P	<p><u>Confirm Endotracheal Tube Placement by at least 3 different means:</u> </p> <ul style="list-style-type: none"> • End Tidal Capnometry (mandatory) • Bilateral Lung Sounds • Absence of Epigastric Sounds • Equal Chest Wall Excursion • Misting in ET Tube <p>If intubation attempts fail in the first 20-30 seconds, assist ventilations and repeat attempts. If repeated attempts fail, ventilate patient until paralysis wears off. Consider use of King Airway. Secure the airway.</p>	A P
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AP-6: DAI: Drug Assisted Intubation (continued)

Legend		
AP	Advanced Medic	AP

A P	Medication Following Intubation:	A P
	MIDAZOLAM (VERSED) 2 mg IV/IO 	
	FENTANYL 100 mcg IV/IO	
	KETAMINE 0.5-2 mg/kg IV/IO	
Continue to re-dose as clinically indicated		

Contact Medical Control
(Further Consideration, ER Activation/Preparation)

KEY POINTS/CONSIDERATIONS

Rocuronium Contraindications:

- Known Seizure Activity
- At Risk For Seizure
- Known Allergy

Succinylcholine Contraindications:

Known Hyperkalemia	Known History of Malignant Hyperthermia
Severe Crush and/or Trauma Injuries > 5 days old	Chronic Abdominal Infection/Sepsis
Burn Injuries > 8 hours old	Patient with Chronic Paralysis
Pseudocholinesterase Deficiencies	

AP-7: Hemostatic Agent- Quikclot Gauze

Legend		
AP	Advanced Medic	AP

**APP-1 Hemostatic Agent
guideline removed from APP guidelines.**

**See BREMS Bleeding/Hemorrhage Control
Protocol 29**

AP-8: LEVOPHED (NOREPINEPHRINE)

Indicated for:

- Hypotension in adults unresponsive to fluid challenges (systolic < 90mmHg) due to:
 - Cardiogenic shock
 - Septic shock
 - Neurogenic shock

Legend

AP Advanced Medic AP

A P	➢ Administer LEVOPHED IV/IO infusion 5 mcg/min. Titrate to a systolic BP > 90mmHg. Maximum infusion rate is 12 mcg/min.	A P
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Levophed Adult Dosage Chart 60 gtts/min (drip set)

mcg/min	2	4	6	8	10	12
Drops/min.	2	4	6	8	10	12

Administration:

Mix 16 mg (4 vials, 4 mg each) in 250ml of D5W. This concentration give 1 mcg/ min. = 1 ml/hr. in the starting doses. Note this will alter slightly as the titration increases.

**Contact Medical Control
(Further Consideration, ER Activation/Preparation)**

KEY POINTS/CONSIDERATIONS

- **Use of a larger vein is required to reduce the risk of necrosis.**
- Norepinephrine is a potent vasoconstrictor and may cause hypertension. The rate of flow should be carefully monitored and blood pressures should be taken every 2-3 minutes.
- Extravasation of Levophed into tissue may cause tissue necrosis. The IV should be checked prior to administration for patency, and should be monitored frequently during administration. If the IV infiltrates, notify hospital staff ASAP for possible antidote treatment.
- Should not be given to patients with mesenteric or peripheral vascular thrombosis because of risk of increasing ischemia and extending the area of infarction.
- Use with extreme caution in patients receiving monoamine oxidase inhibitors (MAO's), antihistamines, amphetamines or antidepressants of the triptyline or imipramine types because of the risk of severe prolonged hypertension.

AP-9: Nitroglycerin IV Administration

Legend		
AP	Advanced Medic	AP

A P	Nitroglycerin is the most effective, predictable and rapid-acting medication available for preload reduction. Multiple studies demonstrated greater efficacy and safety with a faster onset of action with Nitroglycerin than with Furosemide or Morphine Sulfate. IV Nitroglycerin at high doses provides rapid and titratable preload and afterload reduction.	A P
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A P	INDICATIONS: <ul style="list-style-type: none"> Life threatening respiratory distress caused by cardiogenic pulmonary edema. Must be used with non-invasive ventilation (CPAP) 	A P
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A P	CONTRAINDICATIONS: <ul style="list-style-type: none"> Pediatric Patients Blood Pressure < 160 systolic 	A P
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A P	Follow BREMS AM-28: Respiratory Distress (to include CHF, Pulmonary Edema) Protocol. 	A P
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A P	<p>If B/P is greater than 160 systolic. Administer loading dose of 400 mcg/min for 2 minutes. Then decrease dose to 50 mcg/min.</p> <ul style="list-style-type: none"> Titrate dosage up or down 10 mcg/kg until target BP (140/90) is achieved.  Perform BP reading every 2 minutes. When systolic B/P drops by 10 mmHg, begin to titrate Nitroglycerin down. If B/P drops below 140/90, TURN OFF NITROGLYCERIN. Start second IV as soon as possible.  	A P
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Contact Medical Control
(Further Consideration, ER Activation/Preparation)

AP-10: Stroke




Follow in conjunction with *AM-30: Stroke protocol.*

Legend


AP Advanced Medic AP

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If patient **IS ELIGIBLE** to receive tPA **AND**
Manual systolic BP is > 185 **AND** Manual diastolic BP is > 110 (2 checks
within 5 minutes), **Administer LABETALOL 10 mg IV/IO over 1 to 2**
 **minutes.**

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If patient is **NOT ELIGIBLE** for tPA **AND**
Manual systolic BP is >220 **AND** Manual diastolic BP is >120 (2 checks within 5 minutes),
 **Administer LABETALOL 10mg IV/IO over 1 to 2 minutes.**

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TPA Inclusion Criteria: Circle yes or no

- Yes No Age 18 or older?
- Yes No Clinical diagnosis of ischemic stroke with a measurable neurologic deficit?
- Yes No Time when patient was last seen normal _____.
Well established as < 3 hours (180 minutes) before treatment can begin.

TPA Exclusion Criteria Absolute (Strong) Contraindications within the 3 hour window: Circle yes or no

- Yes No Other stroke/serious head trauma within the last 3 months
- Yes No Major surgery within the last 14 days
- Yes No Known history of intracranial hemorrhage
- Yes No Sustained SBP > 185 or DBP >110 Hg
- Yes No Aggressive treatment necessary to lower BP
- Yes No Symptoms suggestive of Subarachnoid Hemorrhage
- Yes No GI or urinary tract hemorrhage within 21 days
- Yes No Arterial puncture at a non-compressible site within 7 days

Relative Contraindications within the 3 hour window: Circle yes or no

- Yes No Symptoms minor/rapidly improving
- Yes No Seizure at onset of stroke
- Yes No Serum glucose <50 or > 400 mg/dl
- Yes No Hemorrhagic eye disorder
- Yes No Recent acute MI (within previous 6 weeks)
- Yes No Suspected septic embolism
- Yes No Known infective endocarditis

Additional Exclusions for patients in the 3 to 4.5 hour window

(otherwise inclusion/exclusion criteria same as the 3 hour window) Circle yes or no

- Yes No Age > 80 years
- Yes No NIHSS > 25
- Yes No Oral anticoagulant treatment (Coumadin) regardless of INR
- Yes No Combination of prior stroke AND diabetes

Contact Medical Control
(Further Consideration, ER Activation/Preparation)

AP-11: TXA (TRANEXAMIC ACID)

Indications: Must meet all criteria below

- Adults (age 16 or greater) with hemorrhagic shock from trauma.
- Evidence of significant blunt or penetrating traumatic injury (e.g., motor vehicle crash, (MVC) with ejection, rollover MVC, fall > 20 ft, pedestrian struck, penetrating injury to the torso)
- Evidence of or concern for severe internal or external hemorrhage (e.g., bleeding requiring a tourniquet, unstable pelvic fracture, two or more proximal long-bone fractures, etc.)
- Must have sustained tachycardia 120 bpm and/or sustained hypotension with systolic blood pressure 90mmHg or less.
- Time since the initial injury is known to be < 3 hours.
- **Do not give TXA if less than 15 minutes from intervention**
- **Administration of TXA should not delay transport.**
- A score of 2 or more on the Assessment of Blood Consumption (ABC) Score for Massive Transfusion (www.mdcalc.com). In the ABC Score studies, scores ≥ 2 were likely to require massive transfusion.


Legend

AP	Advanced Medic	AP
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Protocol to be used in conjunction with **Protocol 28: Injury- Bleeding/ Hemorrhage Control.**

Assess of Blood Consumption (ABC) SCORE

Penetrating Mechanism	No = 0	Yes = 1
SBP < 90	No = 0	Yes = 1
HR > 120	No = 0	Yes = 1
FAST Positive (if available)	No = 0	Yes = 1

A	Administer TRANEXAMIC ACID 1 gram in 100 ml NS IV/IO infused over	A
P	 10 minutes. (If given as an IV push, may cause hypotention).	P


Contact Medical Control
(Further Consideration, ER Activation/Preparation)

AP-12: Pain Management

Background: Pain medication should be given in an amount sufficient to manage the pain, not necessarily to eliminate it.

Legend

AP Advanced Medic AP

Perform initial assessment and treat priority conditions 

Assess pain severity. Use combination of pain scale, circumstances, MOI, injury, and/or illness severity.

Fentanyl

Ketamine

Morphine

Fentanyl 1 mcg/kg IV / IO / IM (over 2-3 mins) or IN

Max initial dose
50 mcg

After 10 minutes, may repeat 25 mcg every 5 minutes as needed until improvement.

Ketamine 10mg IV/IO
After 10 minutes, may repeat 10mg

Ketamine
May be combined with the following:
Fentanyl 25 mcg

Administer ZOFRAN 4 mg via ODT.
May repeat if needed.

MORPHINE SULFATE 0.1mg/kg mg slow IV/ IO/IM up to 10 mg.
Monitor respirations and BP closely

Contact Medical Control
(Further Consideration, ER Activation/Preparation)

KEY POINTS/CONSIDERATIONS


Note: Continuous ECG, pulse oximetry and BP monitoring (every 5 minutes) are mandatory during and after the administration of pain medication.


- Response to analgesics may vary dramatically from patient to patient. It may be appropriate to start with LESS THAN the weight-based dose. For example, minimal doses of opioids may be effective for pain management and/or cause respiratory depression in the elderly, and the opiate naïve, Consider starting dose 12.5 mcg of Fentanyl with Ketamine in these patients.
- Do not administer pain medication with hypoperfusion.
- Administer Diphenhydramine 12.5 mg IV if the patient experiences itching.
- Burn patients may require higher than usual opioid doses to effect adequate pain control.

AP-13: Bolus Dose (Push Dose) Epinephrine


Legend		
AP	Advanced Medic	AP

A P	<p>INDICATIONS:</p> <ul style="list-style-type: none"> • Bradycardia with symptomatic hypotension • Suspected Septic Shock unresponsive to fluid resuscitation • Distributive shock (spinal and anaphylactic) shock unresponsive to fluids • Cardiogenic shock and ROSC with hypotension refractory to fluids or if pulmonary edema develops 	A P
	<p>CONTRAINDICATIONS:</p> <p>Hemorrhagic shock states</p>	

- Perform initial assessment and treat priority conditions
 - Insure empiric fluid resuscitation
- 

Mixing bolus dose (push dose) epinephrine: **NEVER administer bolus dose epinephrine in a concentration other than 1:100,000** 

Concentration	Mix
1:10,000	Draw 1ml and mix with 9ml of NS (Makes 1:100,000)
1:1,000	Draw 1ml and mix with 9ml of NS (Makes 1:10,000) Then draw 1ml and mix with 9ml of NS (Makes 1:100,000)

- Administer 0.5 ml (5 mcg) IV/IO every 1-3 min
Titrate to:
- A systolic blood pressure > 90 mmHg
 - A mean arterial pressure (MAP) > 65 mmHg
 - A modified shock index (MSI) < 1.3
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$MSI = HR/MAP$
 $MSI < 0.7 = \text{hyperdynamic}$
 $MSI > 1.3 = \text{hypodynamic}$
 $MAP = [(DBP \times 2) + SBP]/3$
 Formula Calculators www.mdcalc.com

Contact Medical Control
(Further Consideration, ER Activation/Preparation)

- KEY POINTS/CONSIDERATIONS**
- Note:
- Continuous ECG, pulse oximetry and BP monitoring (every 5 minutes) are mandatory during and after bolus dose (push dose) epinephrine
 - **NEVER administer bolus dose epinephrine in a concentration other than 1:100,000**

APP-1: Blind Insertion Airway Device

Legend		
AP	Advanced Medic	AP

**APP-1 Blind Insertion Airway Device
guideline removed from APP guidelines.**

See BREMS Airway i-gel insertion procedure 8.

APP-1: Blind Insertion Airway Device (continued)

Legend		
AP	Advanced Medic	AP

APP-1 Blind Insertion Airway Device
guideline removed from APP guidelines.

See BREMS Airway i-gel insertion procedure 8.

APP-2: Difficult Airway Evaluation

Evaluating for the difficult airway:

Between 1-3% of patients who require endotracheal intubation have airways that make intubation difficult. Recognizing those patients who may have a difficult airway allows the paramedic to proceed with caution and to keep as many options open as possible. It also allows the paramedic to prepare additional equipment (such as a cricothyrotomy kit) that may not ordinarily be part of a standard airway kit. **The mnemonic LEMON is useful in evaluating patient for signs that may be consistent with a difficult airway and should raise the paramedic's index of suspicion.**

Legend

AP	Advanced Medic	AP
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LOOK EXTERNALLY:

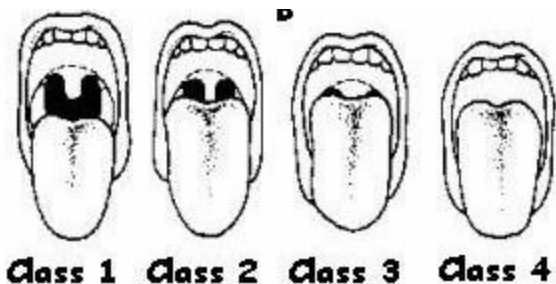
External indicators of either difficult intubation or difficult ventilation include: presence of a beard or moustache, abnormal facial shape, extreme cachexia, edentulous mouth, facial trauma, obesity, large front teeth or "buck teeth", high arching palate, receding mandible, short bull neck.

EVALUATE 3-3-2 RULE:

- 3 fingers between the patients' teeth (patient's mouth should open adequately to permit three fingers to be placed between the upper and lower teeth)
- 3 fingers between the tip of the jaw and the beginning of the neck (under the chin)
- 2 fingers between the thyroid notch and the floor of the mandible (top of the neck)

MALLAMPATI:

This scoring system is based on the work of mallampati et al published in the Canadian Anesthesia Society Journal in 1985. The system takes into account the anatomy of the mouth and the view of various anatomical structures when the patient opens his mouth as wide as possible. This test is performed with the patient in the sitting position, the head held in a neutral position, the mouth wide open, and the tongue protruding to the maximum. Inappropriate scoring may occur if the patient is in the supine position (instead of sitting), if the patient phonates or if the patient arches his or her tongue.



- Class I (easy)= visualization of the soft palate, fauces, uvula, anterior and posterior pillars.
- Class II= visualization of the soft palate, fauces and uvula.
- Class III= visualization of the soft palate and the base of the uvula.
- Class IV (difficult)= soft palate is not visible at all.

OBSTRUCTION:

Besides the obvious difficulty if the airway is obstructed with a foreign body, the paramedic should also consider other obstructers such as tumor, abscess, epiglottitis, or expanding hematoma.

NECK MOBILITY:

Ask the patient to place their chin on their chest and to tilt their head backward as far as possible. Obviously, this will not be possible in the immobilized trauma patient.

APP-3: Endotracheal Tube Introducer (Bougie)

Indications:

- Patient must meet the clinical indication for oral intubation.

Legend

AP	Advanced Medic	AP
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Contraindications:

- Three attempts at orotracheal intubation.
- Do not use on endotracheal tube smaller than 6.0
- Do not use for nasotracheal intubation.

Procedure:

1. Holding the Bougie in your right hand and the angled tip pointing upward, gently advance the bougie anteriorly (under the epiglottis or over the posterior notch) to the glottic opening (cords).
2. Gently advance the device until resistance is encountered at the carina.
3. If no resistance is encountered and the entire length of the bougie is inserted, the device is in the esophagus.
4. The bougie is correctly placed when you see the device going through the cords, when you feel the washboard effect of the tip on the trachea, and/or when you meet resistance while advancing the bougie (bougie is at the carina).
5. Once positioned, withdraw the bougie until the black line mark is aligned with the lip and advance the lubricated ETT over the bougie and into the trachea. This indicates that the tip is well beyond the cords and the proximal end has enough length to slide the ETT over.
6. If resistance is encountered- caused by the ETT catching on the arytenoids or aryepiglottic folds- withdraw the ETT slightly, rotate 90 degrees and reattempt. If this is unsuccessful, use a smaller tube.
7. At no time should the ETT be forced as this may cause, or be caused by laryngospasm.
8. Once ETT is in position, while holding the tube, remove the bougie through the ETT.

APP-4: QuikClot Gauze

Legend

AP Advanced Medic AP

**APP-1 Hemostatic Agent
guideline removed from APP guidelines.**

**See BREMS Bleeding/Hemorrhage Control
Protocol 29**

APP-5: Surgical Cricothyrotomy

Indications:

- Patient in need of definitive airway management.
- Provider unable to pass endotracheal tube orally or nasally.
- Examples include airway obstruction, laryngospasm, severe facial trauma, clenched teeth, hemorrhage and profound emesis.

Legend

AP	Advanced Medic	AP
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Contraindications:

- The patient CAN be managed with orotracheal or nasotracheal intubation
- Children less than 8 years of age
- Transected trachea
- Fractured larynx
- Laryngotracheal disruption

Procedure:

1. Gather equipment and supplies:
 - Scalpel
 - Bougie
 - # 6 cuffed ET Tube
 - Suction equipment
 - Bag valve system.
2. Demonstrate universal precautions.
3. Position patient supine and expose neck in a neutral position. Prep the site when possible.
4. Identifies anatomical structures:
 - Thyroid cartilage
 - Cricothyroid notch
 - Tracheal rings
5. Palpate the cricothyroid membrane with the non dominant hand. The membrane is inferior to the cricoid cartilage.
6. Make a 3-5 cm midline vertical incision over the cricothyroid membrane using a scalpel with a #11 or #15 blade.
7. Identify and incise the cricothyroid membrane transversely using the scalpel .
8. Insert bougie behind scalpel.
9. Remove scalpel.
10. Slide #6 cuffed ETT over bougie.
11. Inflate the cuff
12. Ventilate
13. Secure appropriately.

KEY POINTS/CONSIDERATIONS

- Laceration of cricoid, thyroid or tracheal cartilage can cause significant bleeding.
- Beware of false passage into subcutaneous tissues
- There is high risk of Infection
- Possible long term side effects: subglottic stenosis

APP-6: TRANEXAMIC ACID (TXA)

Indications: Must meet all criteria below

- Adults (Age 16 or greater) with hemorrhagic shock from trauma.
- Evidence of significant blunt or penetrating traumatic injury(e.g., motor vehicle crash, (MVC) with ejection, rollover MVC, fall > 20 ft, pedestrian struck, penetrating injury to the torso)
- Evidence of or concern for severe internal or external hemorrhage (e.g., bleeding requiring a tourniquet, unstable pelvic fracture, two or more proximal long-bone fractures, etc.)
- Must have sustained tachycardia 120 bpm and/or sustained hypotension with systolic blood pressure 90mmHg or less.
- Time since the initial injury is known to be < 3 hours.
- A score of 2 or more on the ABC Score for Massive Transfusion (www.mdcalc.com).

Legend

AP	Advanced Medic	AP
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Contraindications:

- **Do not give TXA if less than 15 minutes from hospital intervention.**
- **Administration of TXA should not delay transport.**
- Less than 16 years of age.
- Non-hemorrhagic shock.
- Non-traumatic hemorrhagic shock.
- Hemorrhagic shock stabilized.
- Known or suspected intracerebral hemorrhage
- If patient is on the following anticoagulants, do not administer TXA:
 - Warfarin (Coumadin)
 - Pradaxa
 - Elequis
 - Xarelto
 - Plavix

Side Effects:

- Acute gastrointestinal disturbances (nausea, vomiting, diarrhea).

Procedure:

1. Establish IV/IO.
2. Mix 1 gram in 100 ml of Normal Saline infused over 10 minutes.

APP-7: Mechanical Ventilation (Injury Prevention)

REQUIREMENTS:

- Advanced Paramedic ONLY.

INDICATIONS:

- Intubated patient requiring ongoing ventilation
- Pediatric patients require medical control contact

CONTRAINDICATIONS:

EQUIPMENT:

- Ventilator
- Ventilator Circuit
- Oxygen Source
- Oximetry
- Capnography

Legend		
AP	Advanced Medic	AP

PROCEDURE:

- Gather all necessary equipment
- Select AC mode of ventilation (or similar mode)
- PEEP 5
- I:E = 1:2
- Vt: 8ml/kg *use Ideal Body Weight, IBW*
- Frequency: 18
- Flow: 60-80 LPM
- FiO₂: 60%
- Pmax: 10 above Peak Airway Pressure
- Continuous Oximetry & Capnography are required
- Monitor "Flow" display for evidence of Auto-PEEP
- Monitor Plateau Pressure
- Provide adequate analgesia and then sedation
- Use below graph to make adjustments to maintain SpO₂ of 90-95%

Lower PEEP/higher FiO₂

FiO₂	0.3	0.4	0.4	0.5	0.5	0.6	0.7	0.7
PEEP	5	5	8	8	10	10	10	12

FiO₂	0.7	0.8	0.9	0.9	0.9	1.0
PEEP	14	14	14	16	18	18-24

APP-7: Mechanical Ventilation (continued) (Injury Prevention)

Legend		
AP	Advanced Medic	AP

KEY POINTS/CONSIDERATIONS

IDEAL BODY WEIGHT (IBW) / Predicted Body Weight (PBW):

- Males: $IBW(kg) = 50 + 2.3(\text{height in inches} - 60)$
- Females: $IBW(kg) = 45.5 + 2.3(\text{height in inches} - 60)$

HEIGHT	PBW	4 ml	5 ml	6 ml	7 ml	8 ml
4' 0" (48)	17.9	72	90	107	125	143
4' 1" (49)	20.2	81	101	121	141	162
4' 2" (50)	22.5	90	113	135	158	180
4' 3" (51)	24.8	99	124	149	174	198
4' 4" (52)	27.1	108	136	163	190	217
4' 5" (53)	29.4	118	147	176	206	235
4' 6" (54)	31.7	127	159	190	222	254
4' 7" (55)	34	136	170	204	238	272
4' 8" (56)	36.3	145	182	218	254	290
4' 9" (57)	38.6	154	193	232	270	309
4' 10" (58)	40.9	164	205	245	286	327
4' 11" (59)	43.2	173	216	259	302	346
5' 0" (60)	45.5	182	228	273	319	364
5' 1" (61)	47.8	191	239	287	335	382
5' 2" (62)	50.1	200	251	301	351	401
5' 3" (63)	52.4	210	262	314	367	419
5' 4" (64)	54.7	219	274	328	383	438
5' 5" (65)	57	228	285	342	399	456
5' 6" (66)	59.3	237	297	356	415	474
5' 7" (67)	61.6	246	308	370	431	493
5' 8" (68)	63.9	256	320	383	447	511
5' 9" (69)	66.2	265	331	397	463	530
5' 10" (70)	68.5	274	343	411	480	548
5' 11" (71)	70.8	283	354	425	496	566
6' 0" (72)	73.1	292	366	439	512	585
6' 1" (73)	75.4	302	377	452	528	603
6' 2" (74)	77.7	311	389	466	544	622
6' 3" (75)	80	320	400	480	560	640
6' 4" (76)	82.3	329	412	494	576	658
6' 5" (77)	84.6	338	423	508	592	677
6' 6" (78)	86.9	348	435	521	608	695
6' 7" (79)	89.2	357	446	535	624	714
6' 8" (80)	91.5	366	458	549	641	732
6' 9" (81)	93.8	375	469	563	657	750
6' 10" (82)	96.1	384	481	577	673	769
6' 11" (83)	98.4	394	492	590	689	787
7' 0" (84)	100.7	403	504	604	705	806

PBW and Tidal
Volume for Females

HEIGHT	PBW	4 ml	5 ml	6 ml	7 ml	8 ml
4' 0" (48)	22.4	90	112	134	157	179
4' 1" (49)	24.7	99	124	148	173	198
4' 2" (50)	27	108	135	162	189	216
4' 3" (51)	29.3	117	147	176	205	234
4' 4" (52)	31.6	126	158	190	221	253
4' 5" (53)	33.9	136	170	203	237	271
4' 6" (54)	36.2	145	181	217	253	290
4' 7" (55)	38.5	154	193	231	270	308
4' 8" (56)	40.8	163	204	245	286	326
4' 9" (57)	43.1	172	216	259	302	345
4' 10" (58)	45.4	182	227	272	318	363
4' 11" (59)	47.7	191	239	286	334	382
5' 0" (60)	50	200	250	300	350	400
5' 1" (61)	52.3	209	262	314	366	418
5' 2" (62)	54.6	218	273	328	382	437
5' 3" (63)	56.9	228	285	341	398	455
5' 4" (64)	59.2	237	296	355	414	474
5' 5" (65)	61.5	246	308	369	431	492
5' 6" (66)	63.8	255	319	383	447	510
5' 7" (67)	66.1	264	331	397	463	529
5' 8" (68)	68.4	274	342	410	479	547
5' 9" (69)	70.7	283	354	424	495	566
5' 10" (70)	73	292	365	438	511	584
5' 11" (71)	75.3	301	377	452	527	602
6' 0" (72)	77.6	310	388	466	543	621
6' 1" (73)	79.9	320	400	479	559	639
6' 2" (74)	82.2	329	411	493	575	658
6' 3" (75)	84.5	338	423	507	592	676
6' 4" (76)	86.8	347	434	521	608	694
6' 5" (77)	89.1	356	446	535	624	713
6' 6" (78)	91.4	366	457	548	640	731
6' 7" (79)	93.7	375	469	562	656	750
6' 8" (80)	96	384	480	576	672	768
6' 9" (81)	98.3	393	492	590	688	786
6' 10" (82)	100.6	402	503	604	704	805
6' 11" (83)	102.9	412	515	617	720	823
7' 0" (84)	105.2	421	526	631	736	842

PBW and Tidal
Volume for Males

Contact Medical Control for Further Consideration

APP-8: Mechanical Ventilation (Obstructive)

A P	REQUIREMENTS: <ul style="list-style-type: none"> Advanced Paramedic ONLY. 	A P
	INDICATIONS: <ul style="list-style-type: none"> Intubated patient requiring ongoing ventilation Pediatric patients require medical control contact 	
	CONTRAINDICATIONS:	
	EQUIPMENT: <ul style="list-style-type: none"> <input type="checkbox"/> Ventilator <input type="checkbox"/> Ventilator Circuit <input type="checkbox"/> Oxygen Source <input type="checkbox"/> Oximetry <input type="checkbox"/> Capnography 	

Legend		
AP	Advanced Medic	AP

A P	PROCEDURE: <ul style="list-style-type: none"> <input type="checkbox"/> Gather all necessary equipment <input type="checkbox"/> Select AC mode of ventilation (or similar mode) <input type="checkbox"/> PEEP 0 <input type="checkbox"/> I:E = 1:2 <input type="checkbox"/> Vt: 8ml/kg *use Ideal Body Weight, IBW* <input type="checkbox"/> Frequency: 10 <input type="checkbox"/> Flow: 60-80 LPM <input type="checkbox"/> FiO₂: 40% <input type="checkbox"/> Pmax: 10 above Peak Airway Pressure <input type="checkbox"/> Continuous Oximetry & Capnography are required ➤ Monitor "Flow" display for evidence of Auto-PEEP ➤ Monitor Plateau Pressure <input type="checkbox"/> Provide adequate analgesia and then sedation ➤ Use below graph to make adjustments to maintain adequate SpO₂ (these patients may retain CO₂) 	A P
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Lower PEEP/higher FiO₂

FiO₂	0.3	0.4	0.4	0.5	0.5	0.6	0.7	0.7
PEEP	5	5	8	8	10	10	10	12

FiO₂	0.7	0.8	0.9	0.9	0.9	1.0
PEEP	14	14	14	16	18	18-24

APP-8: Mechanical Ventilation (continued) (Obstructive)

Legend

AP Advanced Medic AP

KEY POINTS/CONSIDERATIONS

IDEAL BODY WEIGHT (IBW) / Predicted Body Weight (PBW):

- Males: $IBW(kg) = 50 + 2.3(\text{height in inches} - 60)$
- Females: $IBW(kg) = 45.5 + 2.3(\text{height in inches} - 60)$

HEIGHT	PBW	4 ml	5 ml	6 ml	7 ml	8 ml
4' 0" (48)	17.9	72	90	107	125	143
4' 1" (49)	20.2	81	101	121	141	162
4' 2" (50)	22.5	90	113	135	158	180
4' 3" (51)	24.8	99	124	149	174	198
4' 4" (52)	27.1	108	136	163	190	217
4' 5" (53)	29.4	118	147	176	206	235
4' 6" (54)	31.7	127	159	190	222	254
4' 7" (55)	34	136	170	204	238	272
4' 8" (56)	36.3	145	182	218	254	290
4' 9" (57)	38.6	154	193	232	270	309
4' 10" (58)	40.9	164	205	245	286	327
4' 11" (59)	43.2	173	216	259	302	346
5' 0" (60)	45.5	182	228	273	319	364
5' 1" (61)	47.8	191	239	287	335	382
5' 2" (62)	50.1	200	251	301	351	401
5' 3" (63)	52.4	210	262	314	367	419
5' 4" (64)	54.7	219	274	328	383	438
5' 5" (65)	57	228	285	342	399	456
5' 6" (66)	59.3	237	297	356	415	474
5' 7" (67)	61.6	246	308	370	431	493
5' 8" (68)	63.9	256	320	383	447	511
5' 9" (69)	66.2	265	331	397	463	530
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6' 1" (73)	75.4	302	377	452	528	603
6' 2" (74)	77.7	311	389	466	544	622
6' 3" (75)	80	320	400	480	560	640
6' 4" (76)	82.3	329	412	494	576	658
6' 5" (77)	84.6	338	423	508	592	677
6' 6" (78)	86.9	348	435	521	608	695
6' 7" (79)	89.2	357	446	535	624	714
6' 8" (80)	91.5	366	458	549	641	732
6' 9" (81)	93.8	375	469	563	657	750
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4' 11" (59)	47.7	191	239	286	334	382
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5' 2" (62)	54.6	218	273	328	382	437
5' 3" (63)	56.9	228	285	341	398	455
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5' 8" (68)	68.4	274	342	410	479	547
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6' 4" (76)	86.8	347	434	521	608	694
6' 5" (77)	89.1	356	446	535	624	713
6' 6" (78)	91.4	366	457	548	640	731
6' 7" (79)	93.7	375	469	562	656	750
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6' 10" (82)	100.6	402	503	604	704	805
6' 11" (83)	102.9	412	515	617	720	823
7' 0" (84)	105.2	421	526	631	736	842

PBW and Tidal
Volume for Males

Contact Medical Control for Further Consideration