

Universal

- ②0 **4** Airway
- ②0 **6** Breathing (Hypoxia)
- ②0 **8** Circulation (Shock)
- ②0 **10** Hypertension
- ②0 **12** Bradycardia
- ②0 **14** Tachycardia
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Welcome

- Think of this like a **tool box**, not a **cookbook**.
- You should **use several protocols** at the same time on every call.
- You may use any intervention marked for your level or lower.

Basic

- Basic procedures are assumed for every call.
- Don't forget: scene safe, BSI, ABC's, call for **ALS**, notify the ED, etc.
- Every patient should have a full assessment including vital signs.
- Ask about **medical allergies** and **pregnancy** before giving meds.

Call

- Call for online **Medical Direction** at any time for advice on:
- Any questions, problems, or if uncertain for any reason.
- Getting permission to **deviate** from these protocols.
- If unable to contact, remember: **Get the patient to the hospital**.

Protocols

- Protocols mean you **can**, but not always that you **should**.
- Use only enough to stabilize and/or improve. Don't follow blindly.
- Skip anything unnecessary. Not every box need to be completed.
- The listed **order suggests importance**, but is not absolute.

Severity

- Severity is a **subjective judgement** that requires thought.
- Not all decisions are black and white. Use this text as a guide.
- **Reassess and restart** protocols as needed during a call.
- Use good clinical sense to decide what takes precedence.

Presume

- Presume routine things when appropriate, like:
- SpO₂, EKG, EtCO₂, glucometer, phlebotomy, etc.
- Regular layperson **first aid** treatments like splinting & band-aids.
- Note: protocols may also include reminders (like "12-Lead").

Pediatric

- Pediatric considerations are **included** in every protocol.
- Patients 13 y/o and over (13+) are generally given **adult** therapy.
- Children (1-12) and Infants (<1) are considered **peds**.
- Use Peds Reference or other approved source for peds dosing.

Critical Care

- Critical Care considerations are for **credentialed paramedics only**.
- Provider's responsibility to maintain **mandatory prerequisites**.
- Must be approved **for that specific protocol** by the agency OMD.
- All deadlines expire on the last day of the month (grace period).

References

- References are included. This text is not comprehensive.
- Medications may appear as **brand name®** or **generic**.

WVEMS Protocols 2020

Protocols, Procedures, Policies and Medications
of the Western VA EMS Medical Direction Committee

Editors: Drs. Ekey, LePera, and Stanley



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WVEMS Council

1944 Peters Creek Rd.
Roanoke, VA 24017

Phone: 540-562-3482

Web: <https://wvems.org>

Email: western@vaems.org

Protocol Flow and Intervention Symbols

Indications

Use Judgement

Don't Forget

Important Note

Concept
• And Details

WARNING

Basic Life Support (BLS)

EMR

EMT

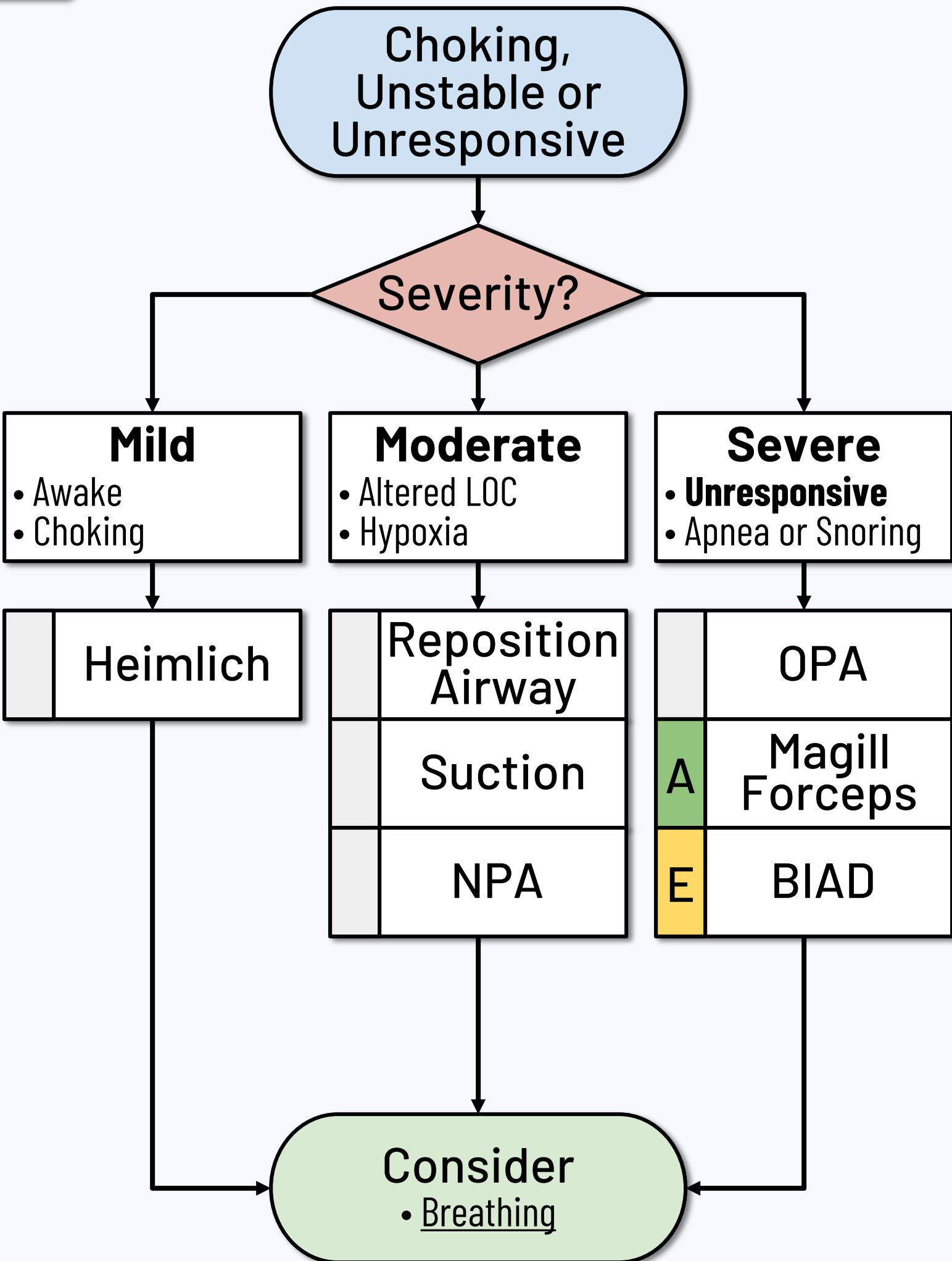
AEMT

Advanced Life Support (ALS)

I Intermediate

P Paramedic

P Critical Care Paramedic



Airway Imperatives

- Maintain the simplest effective airway. **Escalate only if needed.**
- If BIAD fails, **try again with a different size.**
 - Most common failure of a BIAD is inappropriate size.
- Use several techniques to confirm airway:
 - Physical Exam: lung sounds, skin color, tube condensation, etc.
 - Vitals: rising SpO₂, good EtCO₂ (capnography or capnometry)
- Be prepared to escalate airway if signs of **Poor Perfusion**.
- **E** May Suction BIAD/ETT/trach/stoma with flexible cath (French).

Poor Perfusion

- Suspect if **several** of these:
 - **Altered Mental Status**
 - Skin Pale, Cool, Diaphoretic
 - Tachycardia, Hypotension
 - Dyspnea, Tachypnea

Notes

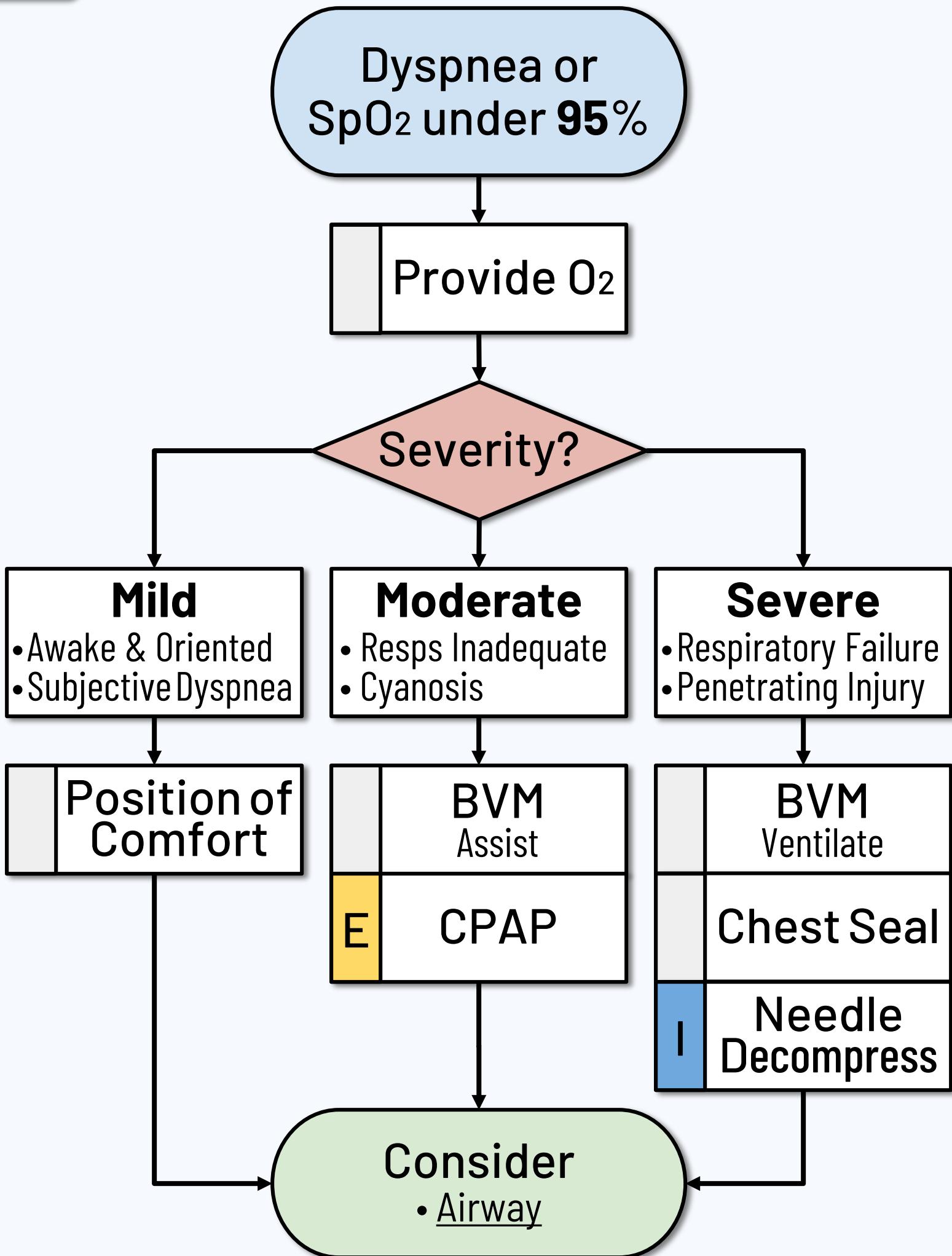
- Consider placing an OG-Tube if BIAD will accommodate it.
- Secure BIAD well. Use tape or manufactured holding device.
 - May place c-collar (even without trauma) to help stabilize.
- Use caution with NPA if signs of facial trauma.
- Reposition with: Head Tilt / Chin Lift (med) or Jaw Thrust (trauma).
- Endotracheal intubation is **not included** in this protocol.
 - Consider Intubation if appropriate and cleared for Critical Care.

Pediatrics

- Suspect an airway obstruction. Use back blows if indicated.
- Do not use blind finger sweeps.

References

- ACLS: <https://www.ahajournals.org/doi/10.1161/CIR.0000000000000916> [Ver: 2020]
- PALS: <https://www.ahajournals.org/doi/10.1161/CIR.0000000000000901> [Ver: 2020]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 9



Breathing Imperatives

- Dyspnea with **penetrating trauma** is a **severe** problem.
 - Apply a chest seal to any penetrating injury to neck or trunk.
 - Do not wait for hypoxia to develop.
- Spontaneous or traumatic **PTX** can be a **severe** problem.
 - Needle Decompress for Hypotension or persistent hypoxia.
- **BVM**: Use two providers and two handed technique if able.
 - Maintain EtCO₂ 35-45 mmHg. Avoid hyperventilation.
 - During CPR: alternate **30 : 2** until BIAD placed.
- **CPAP**: Requires a patient that is awake and compliant.
 - Contraindicated with vomiting, hypotension or altered LOC.

BVM Rate

- Adult / Peds: **Q 6 sec (10 /min)**

Notes

- Provide O₂ at appropriate doses. Titrate for effect.
 - Nasal Cannula (NC): 1 - 6 L/min
 - Non-Rebreather (NRB): 10 - 15 L/min
- Consider **reducing** supplemental O₂ if SpO₂ rises above 98%.
 - Hyperoxia can make some conditions worse.
- If SpO₂ unavailable or machine fails: use good clinical judgment.

Pediatrics

- Refer to Neonate for any peds **under 1 month** (< 31 days) old.
- Use caution to prevent barotrauma from BVM.

References

- ACLS: <https://www.ahajournals.org/doi/10.1161/CIR.0000000000000916> [Ver: 2020]
- PALS: <https://www.ahajournals.org/doi/10.1161/CIR.0000000000000901> [Ver: 2020]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 10

Systolic Under

- Adult (13+): **90 mmHg**
- Child (1-12): **70 mmHg**
- Infant (< 1): **60 mmHg**

Severity?**Mild**

- Adequate Perfusion
- No Symptoms

Moderate

- Adequate Perfusion
- Tachy or Dizzy

Severe

- Poor Perfusion
- Altered LOC

A	Saline Lock
E	12-Lead

A	NS Bolus
E	12-Lead

A	NS Bolus
I	Epi Drip
I	Dopamine
E	12-Lead

Consider

- Tachycardia, Bradycardia
- Bleeding, Altered LOC

NS Bolus: 1,000 mL	IV/IO x2	Adult Doses
Epi Drip: 1 gtt/s	IV/IO Titrated Drip	
Dopamine: 5 mcg/kg/min	IV/IO Titrated Drip	

Shock Imperatives

- Consider underlying causes:
 - Bradycardia, Tachycardia
 - Cardiac, Anaphylaxis
 - Diabetic, Overdose / Tox
 - Major Trauma, Exposure

Poor Perfusion

- Suspect if **several** of these:
 - **Altered Mental Status**
 - Skin Pale, Cool, Diaphoretic
 - Tachycardia, Hypotension
 - Dyspnea, Tachypnea

Medication

- **NS Bolus** (0.9% Saline): indicated for **poor perfusion**.
 - May call **Medical Control** for more fluids after initial boluses.
- **Epi Drip** (Epinephrine): Mix and use as follows:
 - Add 1 mg **Epi** into a 1,000 mL bag of NS (1 mcg/mL).
 - Adults (13+ y/o): Use a macro drip (10 or 15 per mL) set.
 - Peds (0-12 y/o): Use a micro drip (60 per mL) set.
 - Start at 1 drop per second and **titrate as needed**.
- **Dopamine** (Intropin[®]): for medical causes refractory to **Epi**.
 - May titrate **up to 4x starting dose** if needed.

Notes

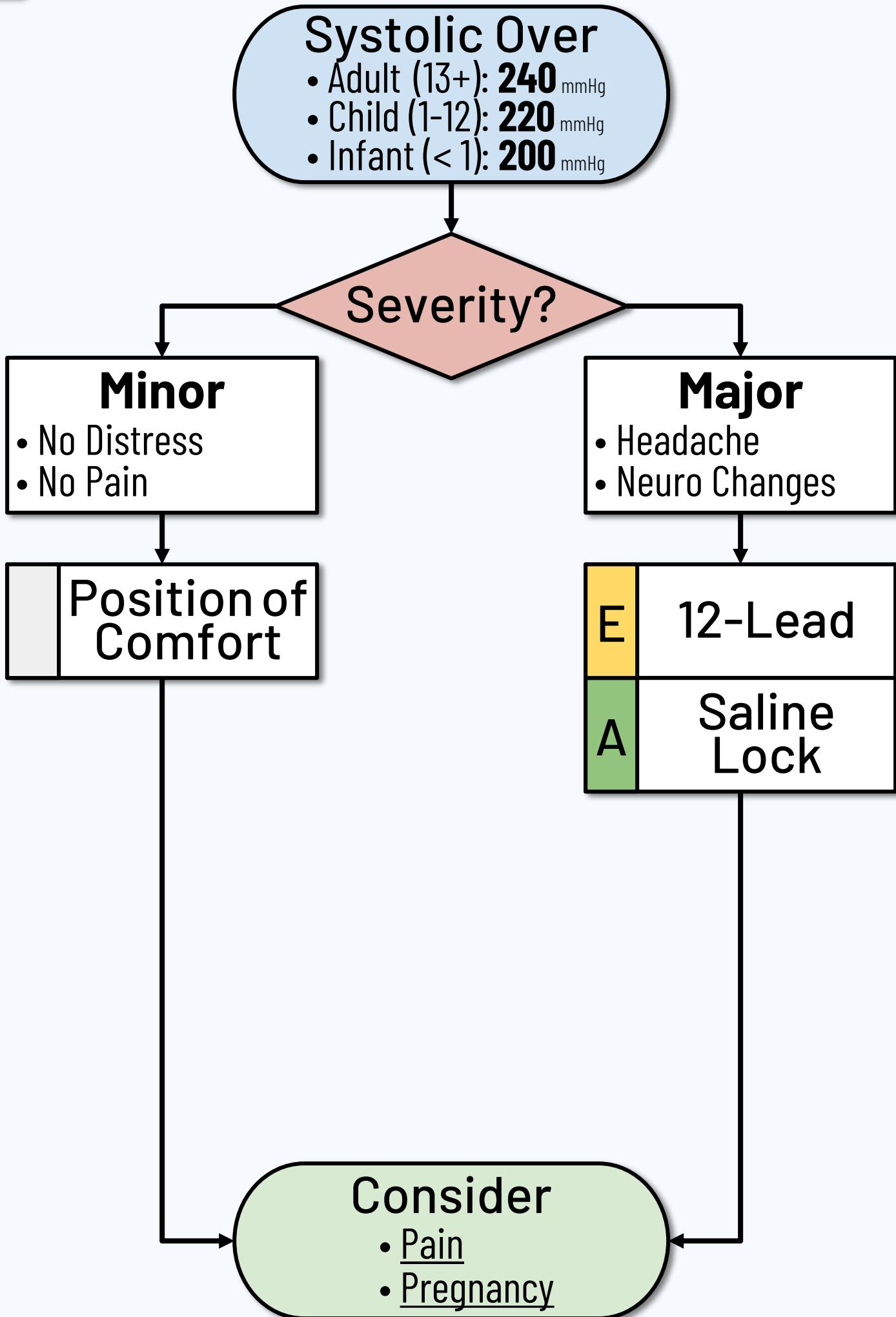
- Give fluids and reassess. Start pressors if poor response.
- Recheck lung sounds before and after fluid administration.

Pediatrics

- The majority of peds decompensation is airway related.
- Fluids are important for hypotension. Pressors are a last resort.
- Use Peds Reference or other approved source for peds dosing.

References

- ACLS: <https://www.ahajournals.org/doi/10.1161/CIR.0000000000000916> [Ver: 2020]
- PALS: <https://www.ahajournals.org/doi/10.1161/CIR.0000000000000901> [Ver: 2020]
- Medscape Vitals: <https://emedicine.medscape.com/article/2172054> [Ver: 11/18]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 7, 29



Hypertension Imperatives

- Confirm elevated systolic BP with two reliable blood pressures.
- HTN is a frequent reaction to Pain and acute stress.
 - Investigate and **treat pain and underlying causes** first.
- Inappropriate use of antihypertensives can **cause harm**.
 - Lowering BP during a stroke can **cause harm**.
- Even mild HTN (SBP <160 mmhg) in late Pregnancy may be pathologic.
 - It may indicate preeclampsia and progress to Seizures.

Notes

- Major neurologic changes include:
 - Obvious weakness, paralysis, seizure, etc.
 - Severe headache and vomiting
 - Vision **loss** (not simple flashes or double vision)

Pediatrics

- Malignant HTN is unlikely in pediatrics. Consider other causes.

References

- ACLS: <https://www.ahajournals.org/doi/10.1161/CIR.0000000000000916> [Ver: 2020]
- PALS: <https://www.ahajournals.org/doi/10.1161/CIR.0000000000000901> [Ver: 2020]
- Medscape Vitals: <https://emedicine.medscape.com/article/2172054> [Ver: 11/18]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 7

Pulse Under

- Adult (13+): **60** /min
- Child (1-12): **70** /min
- Infant (< 1): **80** /min

Severity?**Mild**

- Adequate Perfusion
- No Symptoms

Moderate

- Adequate Perfusion
- Chest Pain, Weak

Severe

- Poor Perfusion
- Unresponsive

E 12-Lead**A** Saline Lock**E** 12-Lead**I** Atropine**I** Pacing**Epi****Peds****E** 12-Lead

Consider

- Breathing, Hyper K⁺
- Overdose / Tox

Atropine: 0.5 mg IV/IO Q 5 min x3**Adult****Epi: Use Peds Reference** IV/IO Q 5 min**Peds**

Bradycardia Imperatives

- Slow, wide complex bradycardia may be due to Hyperkalemia.
- Consider Overdose if clinically suspected.
 - Several common meds can produce bradycardia.

Poor Perfusion

- Suspect if **several** of these:
 - **Altered Mental Status**
 - Skin Pale, Cool, Diaphoretic
 - Hypotension
 - Dyspnea, Tachypnea

Medications

- **Atropine**: may not be effective (but is also not harmful) for:
 - 3° Heart Block, Heart Transplant
- **Epi** (Epinephrine): Preferred agent over **Atropine** in peds.
 - Use Epi (brady) dosing from Peds Reference.

Notes

- Pacing: Start at **80 bpm / 80 mA**. Escalate mA as needed.
 - Alternate: follow manufacturer's or OMD's dosing guideline.

Pediatrics

- Refer to Neonate for any peds **under 1 month** (< 31 days) old.
- Frequently a Breathing problem: don't forget O_2 .
- Even a single pill of some meds can cause severe bradycardia.
 - Consider opiate, Ca^{2+} or β -blocker Overdose.
- Consider effects of maternal medication in breast milk.
- Use Peds Reference or other approved source for peds dosing.

References

- ACLS: <https://www.ahajournals.org/doi/10.1161/CIR.0000000000000916> [Ver: 2020]
- PALS: <https://www.ahajournals.org/doi/10.1161/CIR.0000000000000901> [Ver: 2020]
- Medscape Vitals: <https://emedicine.medscape.com/article/2172054> [Ver: 11/18]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 13, 20

Tachycardia

Pulse Over

- Adult (13+): **100** /min
- Child (1-12): **130** /min
- Infant (< 1): **160** /min

Severity?

Mild

- Adequate Perfusion
- Simple Tachycardia

Moderate

- Adequate Perfusion
- **Critical Arrhythmia**

Severe

- Poor Perfusion
- **Critical Arrhythmia**

E 12-Lead

A NS Bolus

E 12-Lead

A NS Bolus

I Cardioversion

E 12-Lead

Magnesium

If Torsades

A NS Bolus

Adenosine

If QRS \leq 120 ms

Amiodarone

If QRS $>$ 120 ms

Consider

- Circulation, Pain
- Fever, Bleeding

NS Bolus: 1,000 mL	IV/IO x1
Adenosine: 12 mg	IV/IO Q 5 min x2
Amiodarone: 150 mg	IV/IO over 10 min
Magnesium: 2 g	IV/IO x1

Adult
Doses

Tachycardia Imperatives

- Must distinguish a simple tachycardia from a critical arrhythmia.
- **Simple Tachycardias** (like Sinus Tach) occur for many reasons.
 - Reactive causes like: Shock, Pain, Fever or Bleeding, etc.
 - Hidden causes like: OD / Tox, Psychiatric or Anaphylaxis, etc.
 - Cardiac causes like: A-Flutter or A-Fib w/ RVR, etc.
 - Treat the cause. Avoid anti-arrhythmics or cardioversion.
- **Critical Arrhythmias** (like SVT or V-Tach w/ pulse) are usually fast.
 - But a fast pulse is not always critical. Judgement is necessary.
 - **I** May try vagal maneuvers (e.g. modified valsalva).

Critical Arrhythmia

- Suspect if pulse over:
 - Adult (13+): **150** /min
 - Child (1-12): **180** /min
 - Infant (<1): **220** /min

Poor Perfusion

- Suspect if **several** of these:
 - **Altered Mental Status**
 - Skin Pale, Cool, Diaphoretic
 - Tachycardia, Hypotension
 - Dyspnea, Tachypnea

Medications

- **Adenosine** (Adenocard[®]): Give **rapid IV push**.
 - Use caution in patients with a history of WPW, COPD or asthma.
- **Amiodarone** (Pacerone[®]): Give over 10 min IV drip.

Notes

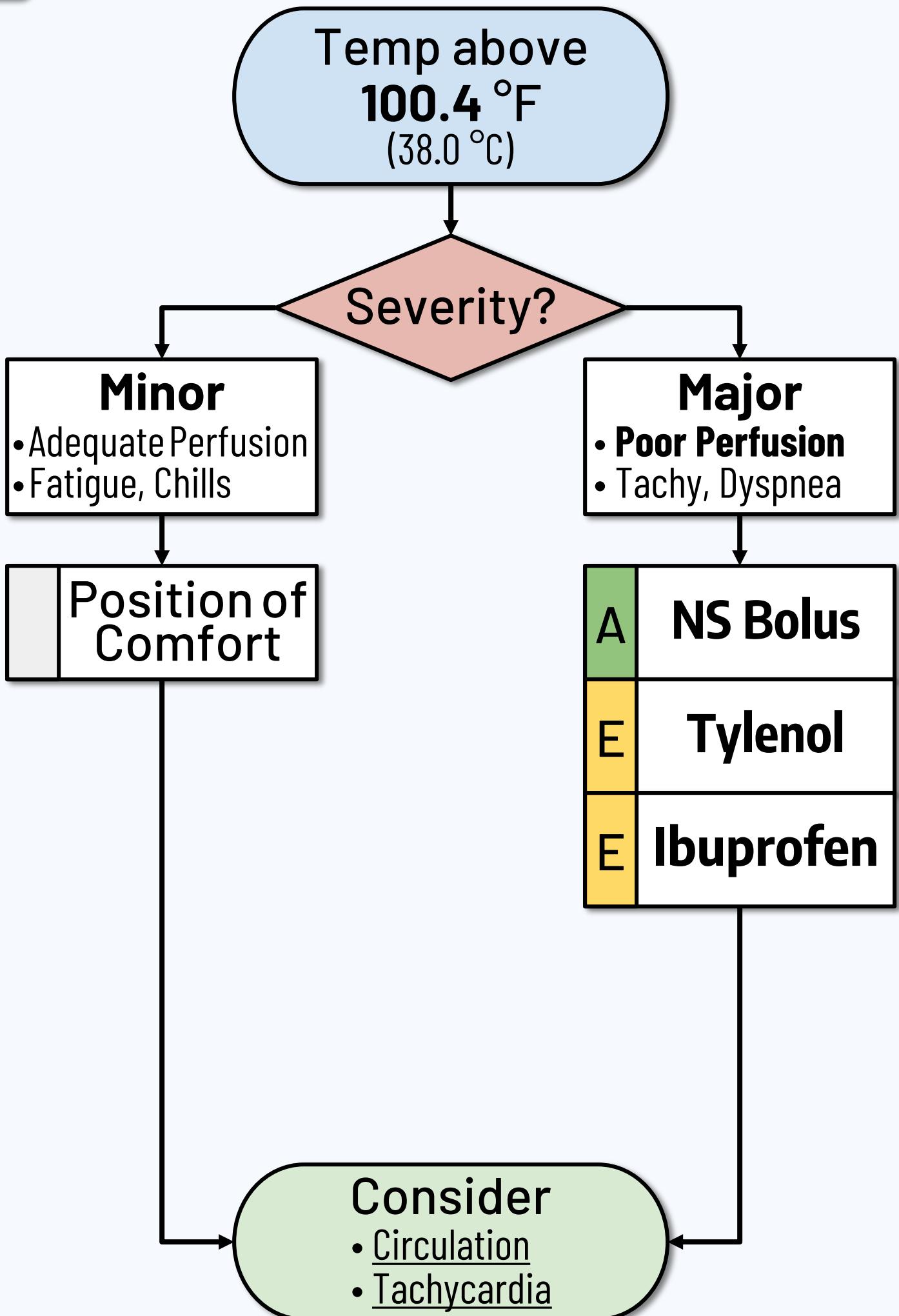
- Cardioversion: Enable **SYNC**. Start at **50 J**. Escalate as needed.
 - Alternative: follow manufacturer's or OMD's dosing guidance.

Pediatrics

- Use Peds Reference or other approved source for peds dosing.

References

- ACLS: <https://www.ahajournals.org/doi/10.1161/CIR.0000000000000916> [Ver: 2020]
- PALS: <https://www.ahajournals.org/doi/10.1161/CIR.0000000000000901> [Ver: 2020]
- Medscape Vitals: <https://emedicine.medscape.com/article/2172054> [Ver: 11/18]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 13, 20



NS Bolus: 1,000 mL	IV/IO x1	Adult Doses
Tylenol: 500 mg	PO Q 15 min x2	
Ibuprofen: 400 mg	PO Q 15 min x2	

Fever Imperatives

- Use an appropriate mask for any cough or respiratory disease.
- Fever is a response to an infection.
 - Hyperthermia caused by environment or drugs is different.
 - Fever medications are contraindicated in Hyperthermia.
- Aggressive EMS fluid for sepsis without Shock is unnecessary.

Medications

- **Tylenol®** (Acetaminophen): contraindicated with liver disease
- **Ibuprofen** (Advil®, Motrin®): contraindicated with GI bleeding

Poor Perfusion

- Suspect if **several** of these:
 - **Altered Mental Status**
 - Skin Pale, Cool, Diaphoretic
 - Tachycardia, Hypotension
 - Dyspnea, Tachypnea

Notes

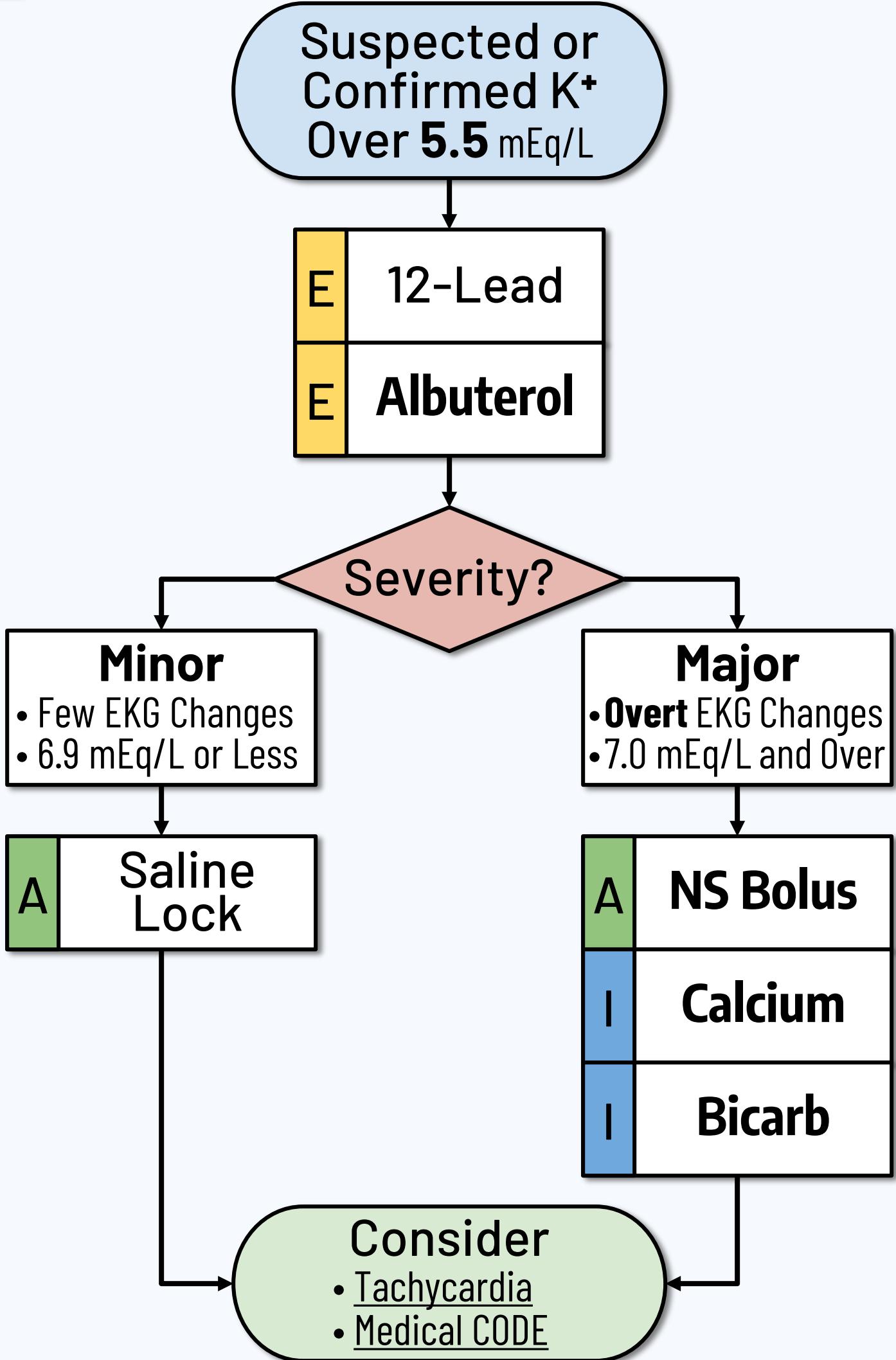
- Temporal thermometers are inaccurate on sweaty skin.
- Oral thermometers are inaccurate after PO fluids or while talking.
- Consider Sepsis if appropriate and cleared for Critical Care.

Pediatrics

- Peds under 5 y/o may have a Seizure caused by fever.
 - It is usually self limiting and does not require intervention.
 - Consider intervention if longer than 5 min or Seizure reoccurs.
- Breaking tablets in half is appropriate. Do not break capsules.
- Withhold medications if unable to provide accurate dose.
- Use Peds Reference or other approved source for peds dosing.

References

- ACLS: <https://www.ahajournals.org/doi/10.1161/CIR.0000000000000916> [Ver: 2020]
- PALS: <https://www.ahajournals.org/doi/10.1161/CIR.0000000000000901> [Ver: 2020]
- Medscape Vitals: <https://emedicine.medscape.com/article/2172054> [Ver: 11/18]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 13



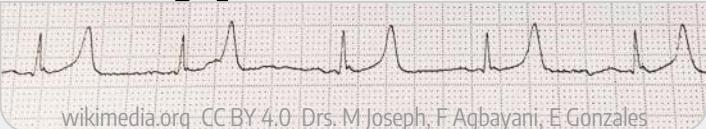
Albuterol: 10 mg	NEB (4 nebs) x1
NS Bolus: 1,000 mL	IV/IO x2
Calcium: 1 g	IV/IO x1
Bicarb: 50 mEq	IV/IO x1

Adult
Doses

Hyperkalemia Imperatives

- Be aggressive with treatment if there are EKG changes.
 - Elevated potassium can be very dangerous.
- Don't delay transport to wait for EKG interpretation.

Hyper K⁺ EKG



wikimedia.org CC BY 4.0 Drs. M Joseph, F Agbayani, E Gonzales

K⁺ EKG Changes

- From minor to life threat:
 - Peaked T-waves
 - Long PRI / Loss of P-wave
 - Wide QRS (over 120 ms)
 - Slow V-Tach (**sine wave**)

Medications

- **Albuterol** (Ventolin[®]): May give without an EKG if hyperkalemic.
 - Start with quadruple (**4x**) the standard dose in one neb.
- **NS Bolus** (0.9% Saline): Aggressive fluids help dilute potassium.
 - Consider aggressive fluids even without Hypotension.
- **Calcium** (gluconate): **Avoid** with **Rocephin** or Digoxin[®] (fatal)
- **Bicarb** (Sodium Bicarbonate): Use for widening QRS on EKG.
- Flush line well between **Calcium** and **Bicarb** (do **not** mix).

Notes

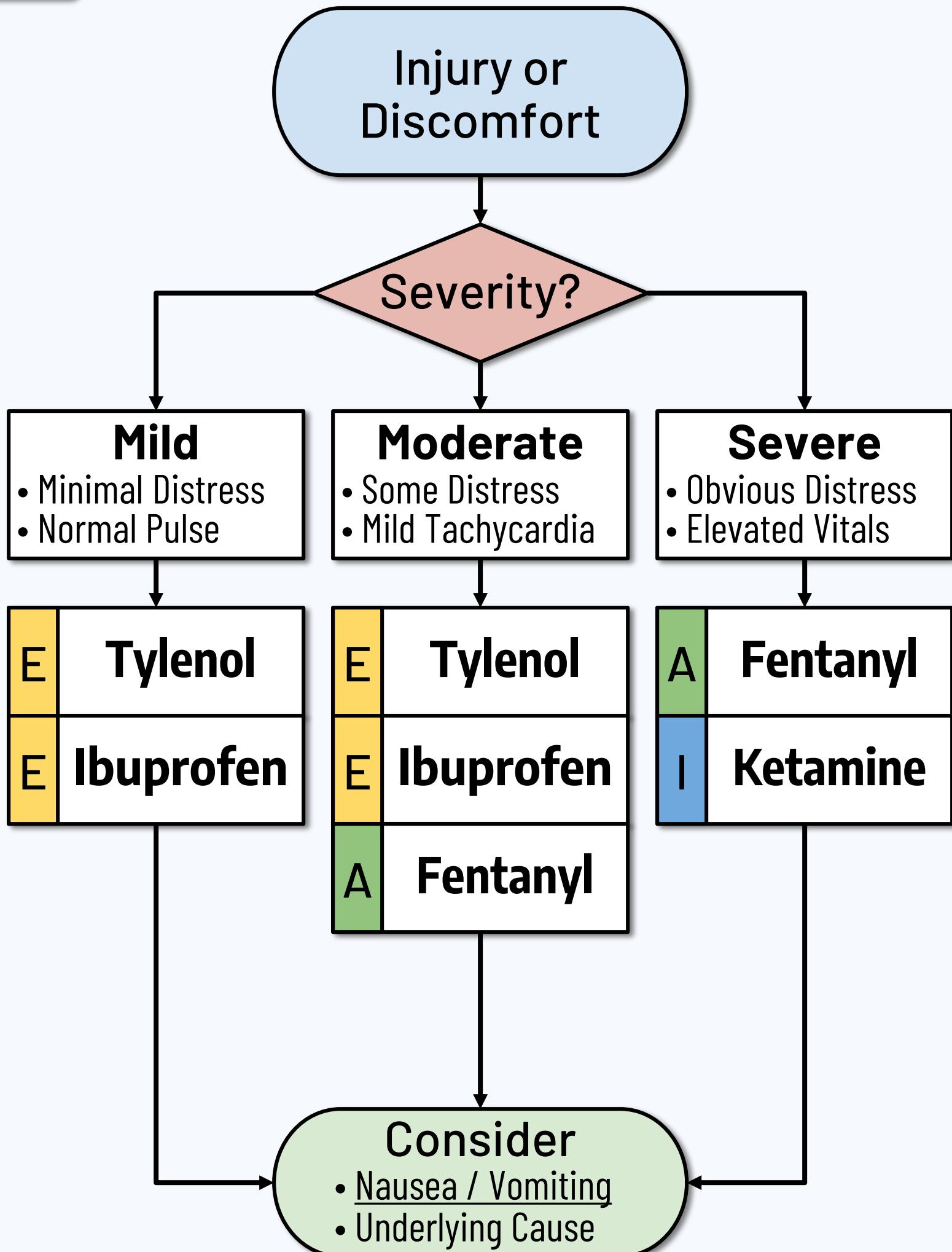
- Consider hyperkalemia in a **dialysis** or renal failure patient.
 - If called to a dialysis center, inquire about the last K⁺ level.
 - Avoid starting an IV in the same extremity as dialysis access.
- Consider hyperkalemia during any Crush or suspension injury.

Pediatrics

- Use Peds Reference or other approved source for peds dosing.

References

- ACLS: <https://www.ahajournals.org/doi/10.1161/CIR.0000000000000916> [Ver: 2020]
- PALS: <https://www.ahajournals.org/doi/10.1161/CIR.0000000000000901> [Ver: 2020]
- Medscape Hyperkalemia: <https://emedicine.medscape.com/article/240903> [Ver: 4/20]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 28



Tylenol: 500 mg	PO	Q 15 min x2	Adult Doses
Ibuprofen: 400 mg	PO	Q 15 min x2	
Fentanyl: 50 mcg	IV/IO, IM/IN	Q 5 min x4	
Ketamine: 20 mg	IV/IO, IM/IN	Q 5 min x2	

Pain Imperatives

- EMS pain control is indicated for recent injury or sudden pain:
 - Major Trauma, Obvious Fractures
 - Sudden Abdominal Pain or Chest Pain
- PO pain meds are of limited use during short transports.
 - Consider **deferring** PO meds for mild / moderate pain to the ED.

Medications

- **Tylenol**[®] (Acetaminophen): contraindicated with liver disease
- **Ibuprofen** (Advil[®], Motrin[®]): contraindicated with GI bleeding
- **Fentanyl** (Sublimaze[®]): contraindicated for non-acute pain like:
 - Toothache, Headache (migraine), Sciatica, Fibromyalgia, etc.
- **Ketamine** (Ketalar[®]): contraindicated for non-acute pain like:
 - Toothache, Headache (migraine), Sciatica, Fibromyalgia, etc.

Notes

- Pain is subjective. Clinical judgment is required.
 - It is appropriate to try another med if the first is ineffective.
 - Changes in pain scale are more useful than absolute numbers.

Pediatrics

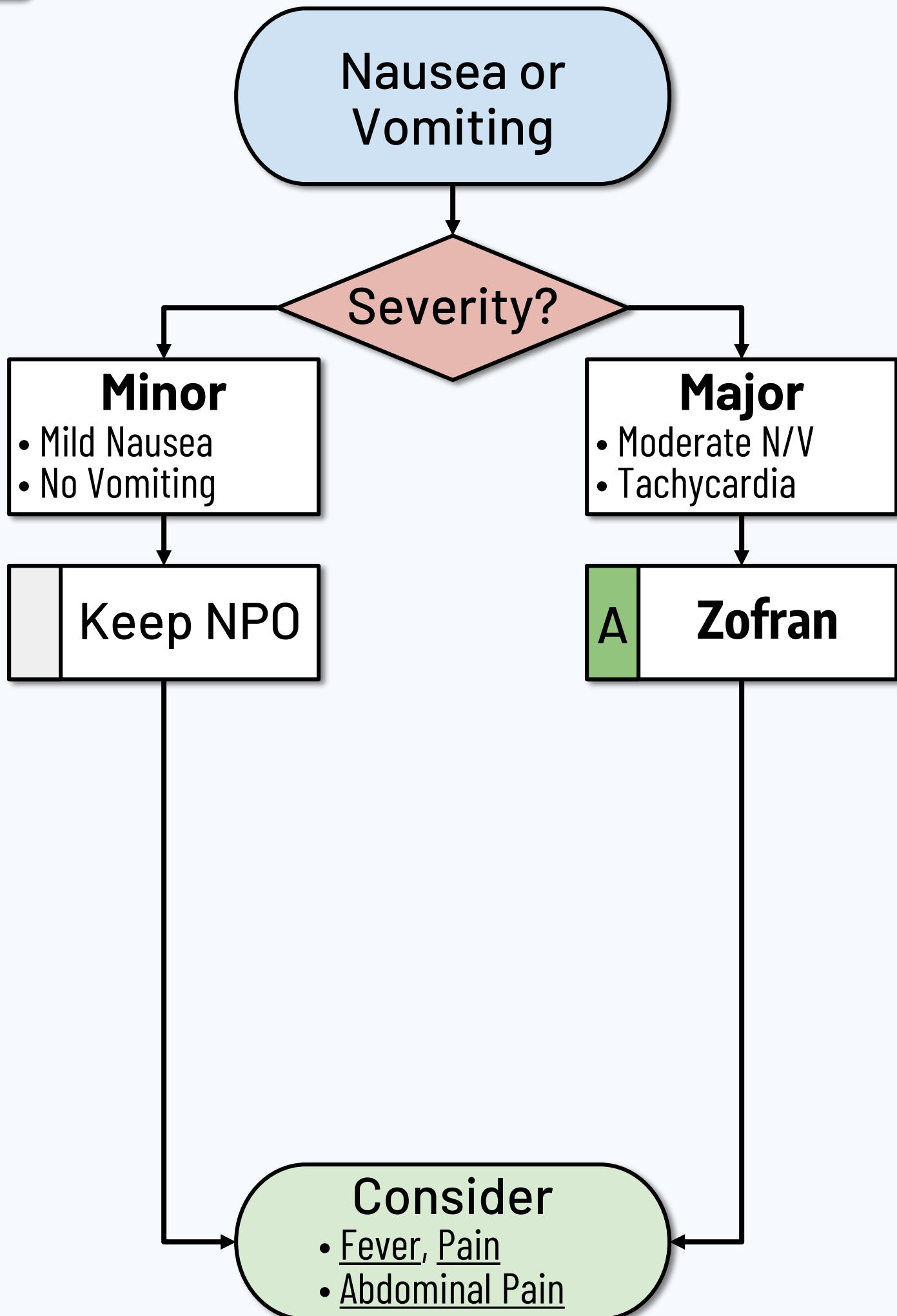
- Breaking tablets in half is appropriate. Do not break capsules.
- Withhold medications if unable to provide accurate dose.
- Use Peds Reference or other approved source for peds dosing.

NEMSSIS: 9914051, 9914071

References

- **ACLS:** <https://www.ahajournals.org/doi/10.1161/CIR.0000000000000916> [Ver: 2020]
- **PALS:** <https://www.ahajournals.org/doi/10.1161/CIR.0000000000000901> [Ver: 2020]
- **Medscape Pain:** <https://emedicine.medscape.com/article/310834> [Ver: 1/20]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 14, 26

Reviewed: Nov 2017



Zofran: 4 mg

IM/IN, IV/IO

Q 5 min x2

Adult

Nausea / Vomiting Imperatives

- It is appropriate to **pre-treat for nausea** before symptoms start.
 - Consider before any intervention that may cause nausea.
 - Especially if vomiting would cause serious complications.
- **Avoid oral** food, fluids or meds. Try to use alternate routes.
 - Keep patients **NPO** (*Nil Per Os*: Lat. "nothing through the mouth")

Medications

- **Zofran[®]** (Ondansetron): Use for all causes of nausea & vomiting.
 - Use caution with Bradycardia, and Overdose / Tox.
 - Consider 12-Lead if hx/risk of long QT or electrolyte imbalance.

Notes

- Consider an atypical Cardiac cause in diabetics and the elderly.

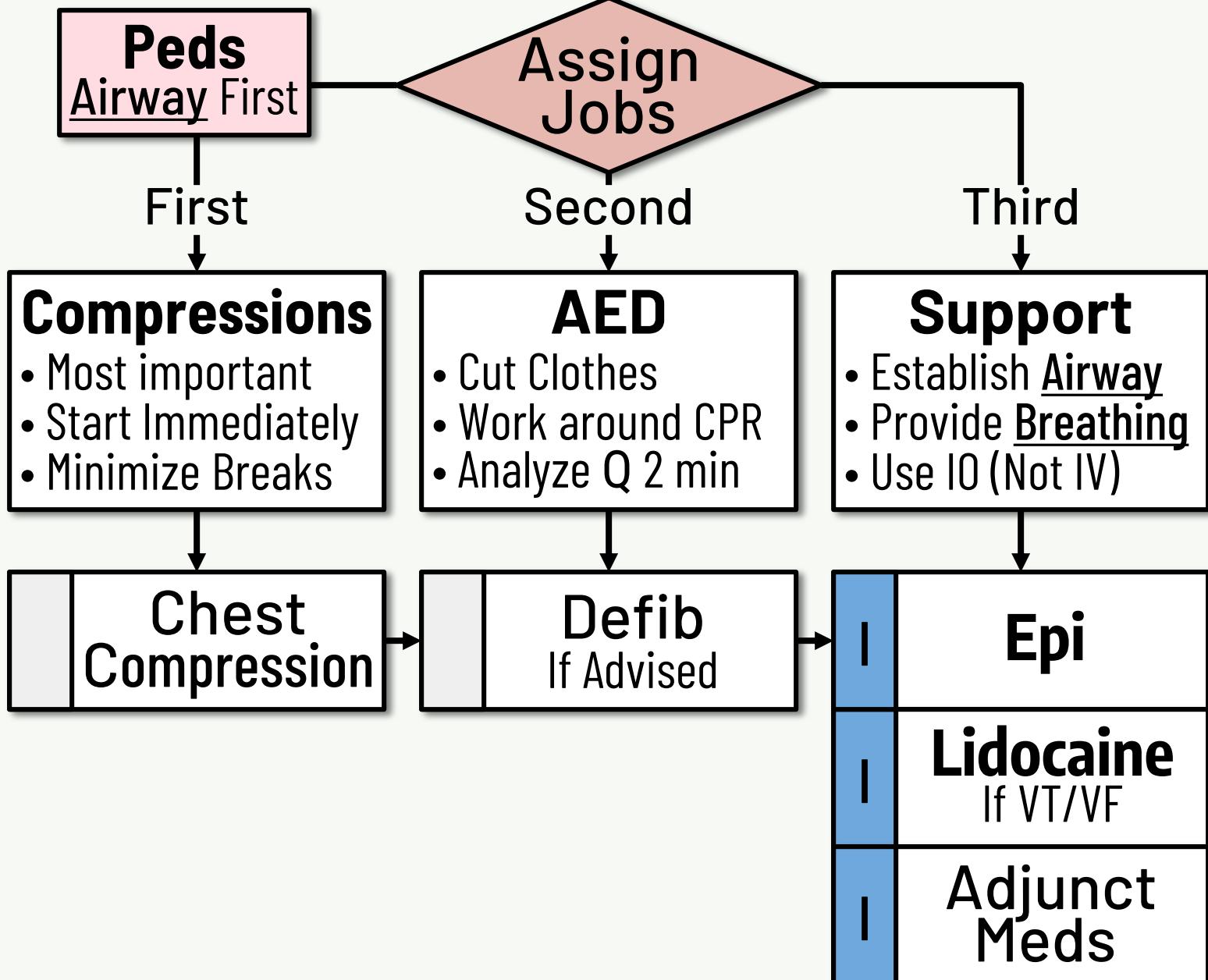
Pediatrics

- Use Peds Reference or other approved source for peds dosing.

References

- Medscape Vomiting: <https://emedicine.medscape.com/article/933135> [Ver: 11/18]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 7, 29

No Pulse
No Obvious Death
No DNR/POST



Disposition

- BLS: Get ALS ASAP
- ALS: Attempt 30 min

Epi: 1 mg	IO	Q 5 min	Adult
Lidocaine: 100 mg	IO	Q 5 min x3	
Epi: 0.01 mg/kg	IO	Q 5 min	Peds
Lidocaine: 1 mg/kg	IO	Q 5 min x3	

CODE Imperatives

- Start compressions in place.
 - Transport ASAP if ROSC.
 - Transport ASAP if **peds, pregnant** or any other **Special Case**.
- **BLS:** Get ALS ASAP. Transport ASAP if witnessed or after any shock.
- **ALS:** Try for **30 min.** If no ROSC:
 - Call for Termination

Compressions

- Adult/Peds: **120 /min**
- OPA/NPA: **30:2 w/ BVM**
- BIAD: **Continuous**

Medications

- If no response to initial therapy, consider **adjunct medications**:

I	Amiodarone: 300 → 150 mg	IO x2	Persistent VT/VF
I	Bicarb: 50 mEq	IO x1	Persistent VT/VF
I	Calcium: 1 g	IO x1	Persistent VT/VF
I	Magnesium: 2 g	IO x1	Torsades

- Flush line well between **Calcium** and **Bicarb** (do **not mix**).

Notes

- Use caution with **compressions** and **defib** in a moving vehicle.
- EtCO₂ can help identify ROSC and guide termination decision.
- A well run CODE should operate like a **pit crew**. Focus on your job.

Pediatrics

- Use 15:2 compression ratio for dual rescuer BLS resuscitation.
- Refer to Neonate for any peds **under 1 month** (< 31 days) old.
- Use Peds Reference or other approved source for peds dosing.

References

- ACLS: <https://www.ahajournals.org/doi/10.1161/CIR.0000000000000916> [Ver: 2020]
- PALS: <https://www.ahajournals.org/doi/10.1161/CIR.0000000000000901> [Ver: 2020]
- Medscape CPR: <https://emedicine.medscape.com/article/1344081> [Ver: 9/20]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 21

Return of Pulse

Reassess

- Establish Airway
- Provide Breathing
- Treat Circulation

Emergency Transport

E	12-Lead
A	Saline Lock
I	Ketamine If Agitated

Consider

- Altered LOC
- Diabetic, Overdose

Ketamine: 20 mg

IV/IO

Q 5 min x2

Adult

Medical ROSC Imperatives

- Most important aspect is to prioritize emergent transport.
 - **Get the patient to the hospital.**
 - Move with purpose, but don't sacrifice patient stability.
- Second most important is to treat Hypotension.
 - Be aggressive with fluids and pressors to treat Circulation.
- Avoid hyperventilation. It can cause Hypotension and repeat arrest.

Medications

- **Ketamine** (Ketalar®): Use if biting on BIAD or overt discomfort.
 - Consider Sedation if appropriate and cleared for Critical Care.

Notes

- EtCO₂ can help identify ROSC.
- Therapeutic hypothermia is **not included** in this protocol.
 - This is also known as targeted temperature management.

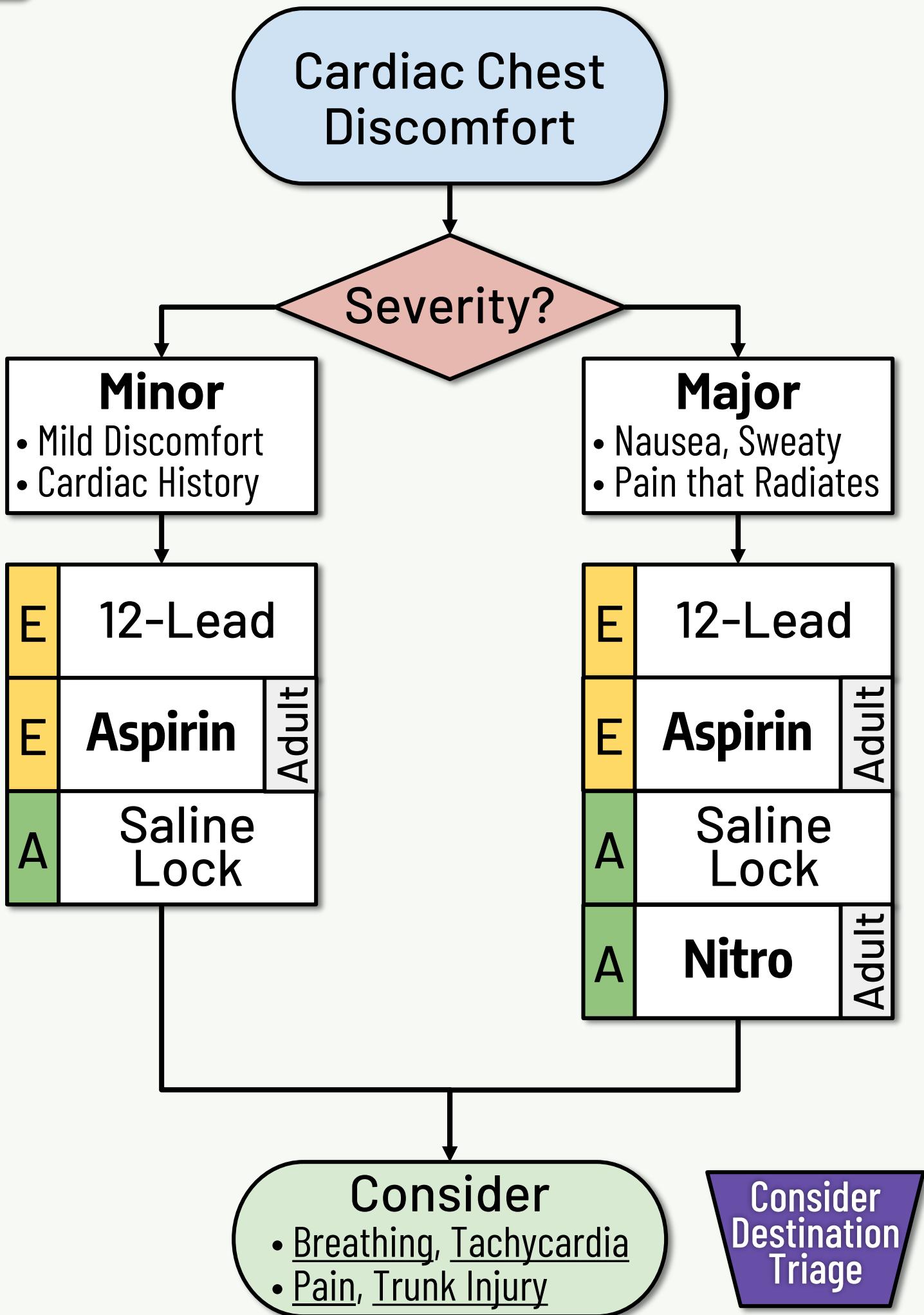
Pediatrics

- Arrhythmias are common after ROSC, but are usually self-limited.
- Use Peds Reference or other approved source for peds dosing.

NEMSSIS: 9914019

References

- ACLS: <https://www.ahajournals.org/doi/10.1161/CIR.0000000000000916> [Ver: 2020]
- PALS: <https://www.ahajournals.org/doi/10.1161/CIR.0000000000000901> [Ver: 2020]
- Medscape ROSC: <https://www.medscape.com/viewarticle/762373> [Ver: 2012]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 21



Aspirin: 4x 81 mg

PO x1

Adult Doses

Nitro: 0.4 mg

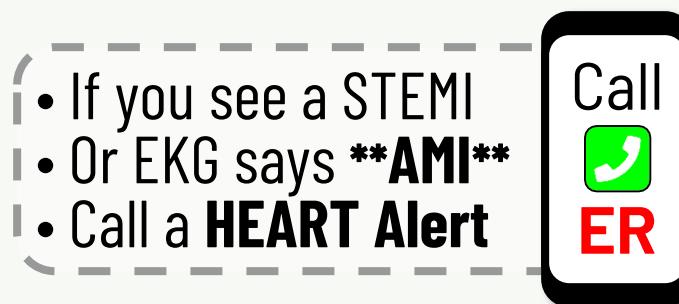
SL Q 5 min x3

Chest Pain Imperatives

- This protocol is for suspected **cardiac** (ACS) emergencies only.
 - For pain resulting from chest trauma, refer to Trunk Injury.
 - For palpitations refer to Tachycardia or Bradycardia.
- Place **defib pads** on all patients with an identified STEMI.

Medications

- **Aspirin** (Baby ASA): contraindicated with GI bleeding or peds.
 - Have patient **chew four** (4) 81mg tabs (not enteric coated).
- **Nitro** (Nitroglycerin): May cause Hypotension.
 - Contraindicated if Hypotensive or inferior STEMI.
 - Contraindicated if recent (36 h) use of Viagra, Cialis, or Levitra.
 - **E** May assist pt with their own **Nitro** if appropriate.



Notes

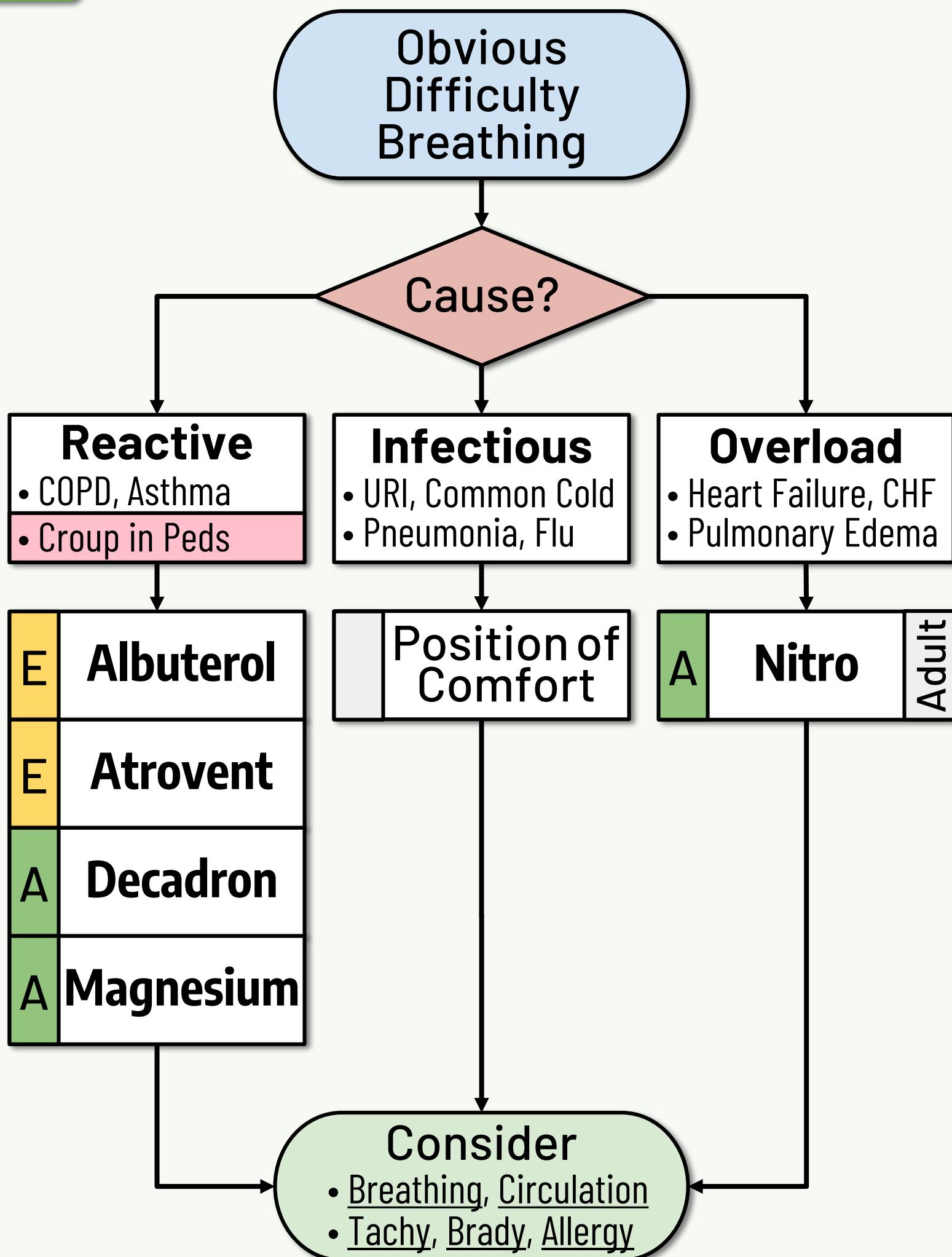
- Consider an atypical cardiac presentation in **diabetics** and **elderly**.
 - Actual chest pain is not always present.
 - Patients may have chest "discomfort" or be weak or sweaty.
 - Ask about: nausea, SOB, abd pain, altered LOC, cardiac hx, etc.

Pediatrics

- Cardiac pain is unlikely in peds. Consider other causes.
- **Aspirin** and **Nitro** are contraindicated in peds chest pain.

References

- ACLS: <https://www.ahajournals.org/doi/10.1161/CIR.0000000000000916> [Ver: 2020]
- PALS: <https://www.ahajournals.org/doi/10.1161/CIR.0000000000000901> [Ver: 2020]
- Medscape ACS: <https://emedicine.medscape.com/article/1910735> [Ver: 9/20]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 20



Albuterol: 2.5 mg	NEB	Q 5 min x4	Adult Doses
Atrovent: 0.5 mg	NEB	x1	
Decadron: 8 mg	IM, IV/IO, PO	x1	
Magnesium: 2 g	IV/IO	over 10 min	
Nitro: 0.4 mg	SL	Q 5 min x3	

Dyspnea Imperatives

- Breathing (O_2 and CPAP) should take precedence over meds.
- SpO_2 and $EtCO_2$ should be used extensively for dyspnea.

Medications

- **Decadron**[®] (Dexamethasone): May give IV formulation PO.
 - May mix the IV solution with juice or drink it straight.
 - PO is not appropriate for patients in extremis. Use IM or IV/IO.
- **Nitro** (Nitroglycerin): May cause Hypotension.
 - May use **double dose** (0.8 mg) if hypertensive & requiring CPAP.
 - Contraindicated if Hypotensive or Inferior STEMI.
 - Contraindicated if recent (36h) use of Viagra, Cialis or Levitra.
- **Albuterol** (Ventolin[®]) & **Atrovent**[®] (Ipratropium bromide):
 - May combine in same nebulizer. May cause palpitations.

Notes

- Consider an atypical Cardiac cause in diabetics and the elderly.
- Anxiety can also cause dyspnea and hyperventilation.
 - Consider simple reassurance for obvious benign anxiety.

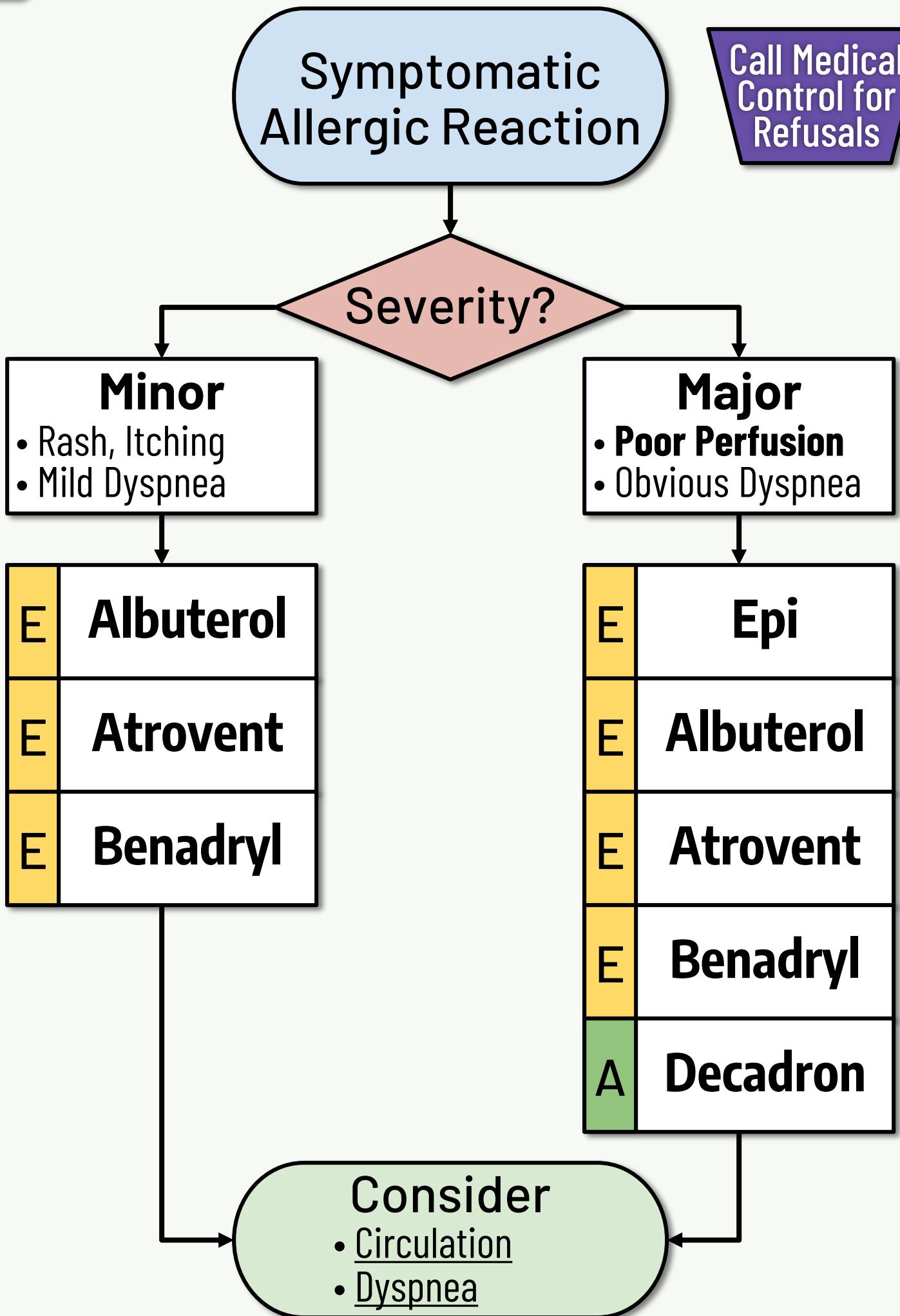
Pediatrics

- Defer aggressive evaluation if any concern for **epiglottitis**.
 - Agitation can make it much worse.
 - Epiglottitis is unlikely in fully vaccinated patients.
- **Croup** is an infection that is best treated like a reactive cause.
- Use Peds Reference or other approved source for peds dosing.

References

- Medscape COPD: <https://emedicine.medscape.com/article/297664> [Ver: 9/20]
- Medscape Asthma: <https://emedicine.medscape.com/article/296301> [Ver: 9/20]
- Medscape CHF: <https://emedicine.medscape.com/article/163062> [Ver: 5/18]
- Medscape Croup: <https://emedicine.medscape.com/article/962972> [Ver: 10/19]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 10, 19

Call Medical Control for Refusals



Albuterol: 2.5 mg NEB Q 5 min x4

Atrovent: 0.5 mg NEB x1

Benadryl: 25 mg IM, IV/IO, PO x1

Epi: 0.3 mg auto, IM Q 5 min x3

Decadron: 8 mg IM, IV/IO, PO x1

Adult Doses

Allergic Reaction Imperatives

- Airway symptoms and facial swelling indicate a major reaction.
 - Lip and tongue swelling can be an immediate life threat.
- **A** Use IM, IV/IO (if able) for any patient in extremis.

Medications

- **Epi** (Epinephrine): Treat major reactions **aggressively**.
 - Use for any major Airway, Breathing or Circulation problems.
 - Common side effects: chest discomfort, palpitations, shaking
 - **Be cautious** in patients over 50 y/o or with CAD or chest pain.
 - **E** May only use auto-injector or color coded admin system.
 - **EpiPen Jr.**[®]: Use for 4-9 y/o. **EpiPen**[®]: Use for 10+ y/o.
- **Albuterol** (Ventolin[®]): Use for any dyspnea or wheezing.
 - Unlikely to help with rash or itching. May cause palpitations.
- **Decadron**[®] (Dexamethasone): May give IV formulation PO.
 - May mix the IV solution with juice or drink it straight.
- **Benadryl**[®] (Diphenhydramine): Do not give IV formulation PO.
 - **E** May only give PO (use OTC pills or tabs).

Poor Perfusion

- Suspect if **several** of these:
 - **Altered Mental Status**
 - Skin Pale, Cool, Diaphoretic
 - Tachycardia, Hypotension
 - Dyspnea, Tachypnea

Notes

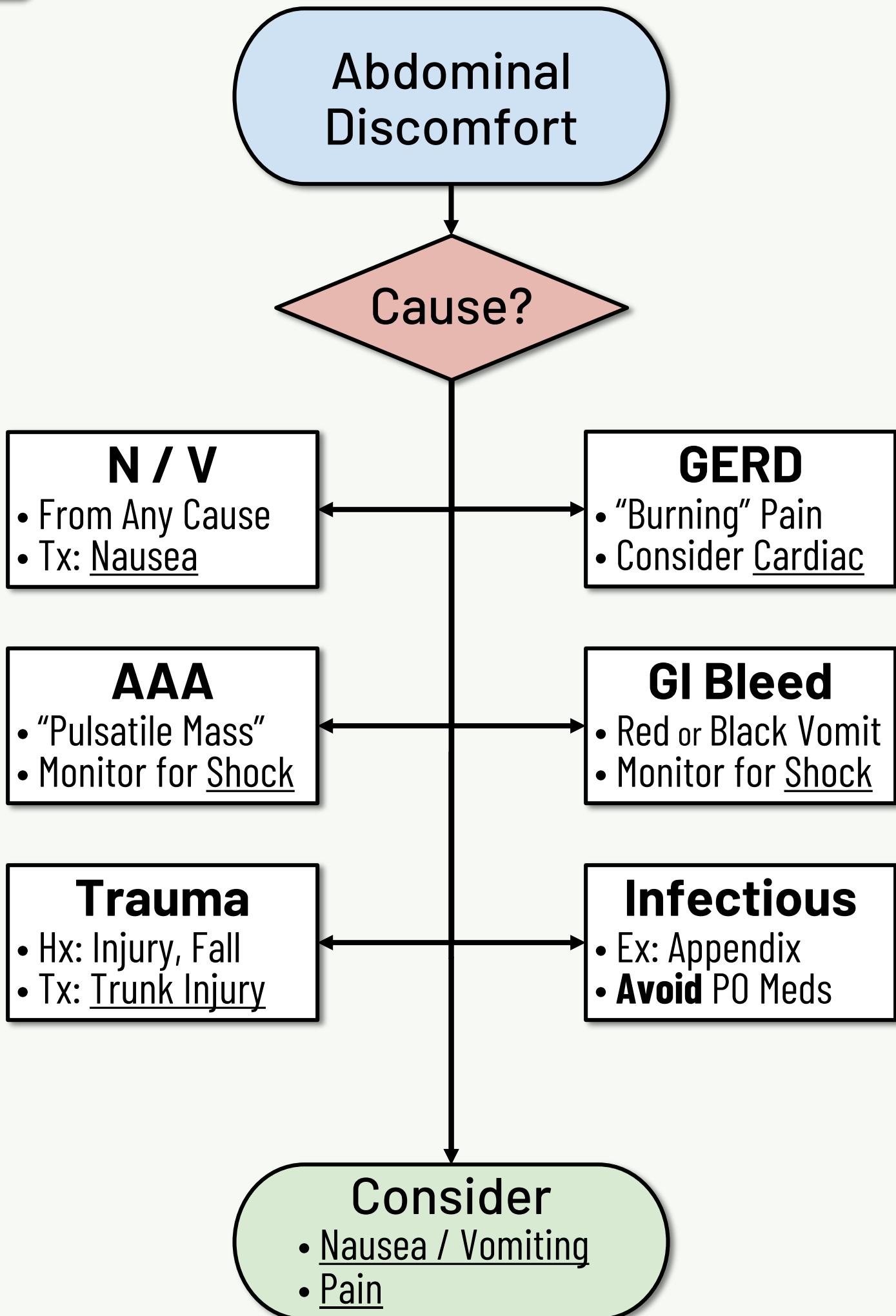
- Rapid onset of symptoms indicates a more severe reaction.
- Severe reactions may also include N/V and abdominal pain.

Pediatrics

- Use Peds Reference or other approved source for peds dosing.

References

- Medscape Hives: <https://emedicine.medscape.com/article/137362> [Ver: 3/18]
- Medscape Anaphylaxis: <https://emedicine.medscape.com/article/135065> [Ver: 5/18]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 23



Abdominal Pain Imperatives

- Investigate and treat the underlying cause.
- This protocol is for **medical** causes of abdominal pain.
 - For traumatic abdominal pain, refer to Trunk Injury.
- Inquire about Pregnancy and consider complications.
- Prepare for Hypotension if suspected:
 - **AAA:** Midline "pulsatile mass" in the elderly
 - **GI Bleeding:** Black stool (melena) or "coffee ground" emesis
- Avoid PO meds with severe abdominal pain.

Notes

- Consider an atypical Cardiac cause in diabetics and the elderly.

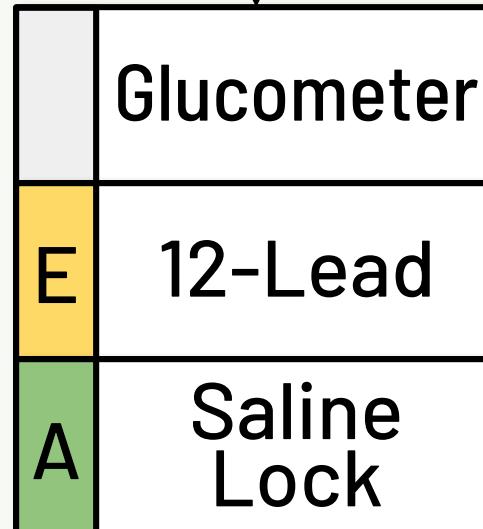
Pediatrics

- Simple constipation is a common cause in peds.
 - It does not require aggressive EMS intervention.

References

- Medscape Abd Pain: <https://emedicine.medscape.com/article/776663> [Ver: 7/18]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 26

Confused or
Unresponsive
(but breathing)



Cause?

Diabetic

- Hx: Diabetes
- Abnormal Glucose

Psychiatric

- Suicidal, Homicidal
- Delusions, Psychosis

Overdose/Tox

- Hx: Ingestion/Exposure
- Obvious Drugs/EtOH

Injury

- Head Injury, Bleeding
- Cold / Heat Exposure

Seizure

- Hx: Epilepsy
- Shaking, Confused

Fever

- Hx: Illness or Sepsis
- Skin Hot

Stroke

- Facial Droop, Weakness
- Slurred Speech

Cardiac

- Brady, Tachy
- Shock, Chest Pain

Altered LOC Imperatives

- Altered LOC and syncope are **complex** problems.
 - Most important step is to consider and **search for the cause**.
 - Investigate the scene and take a careful history.
- Unstable patients should be treated aggressively.
 - Be prepared for a Medical CODE.
- Alcohol and drugs can mask other causes of altered LOC.
 - **Don't assume** Intoxication is the only problem.
- Syncope may be caused by or result in trauma.
 - Maintain a high index of suspicion.

Notes

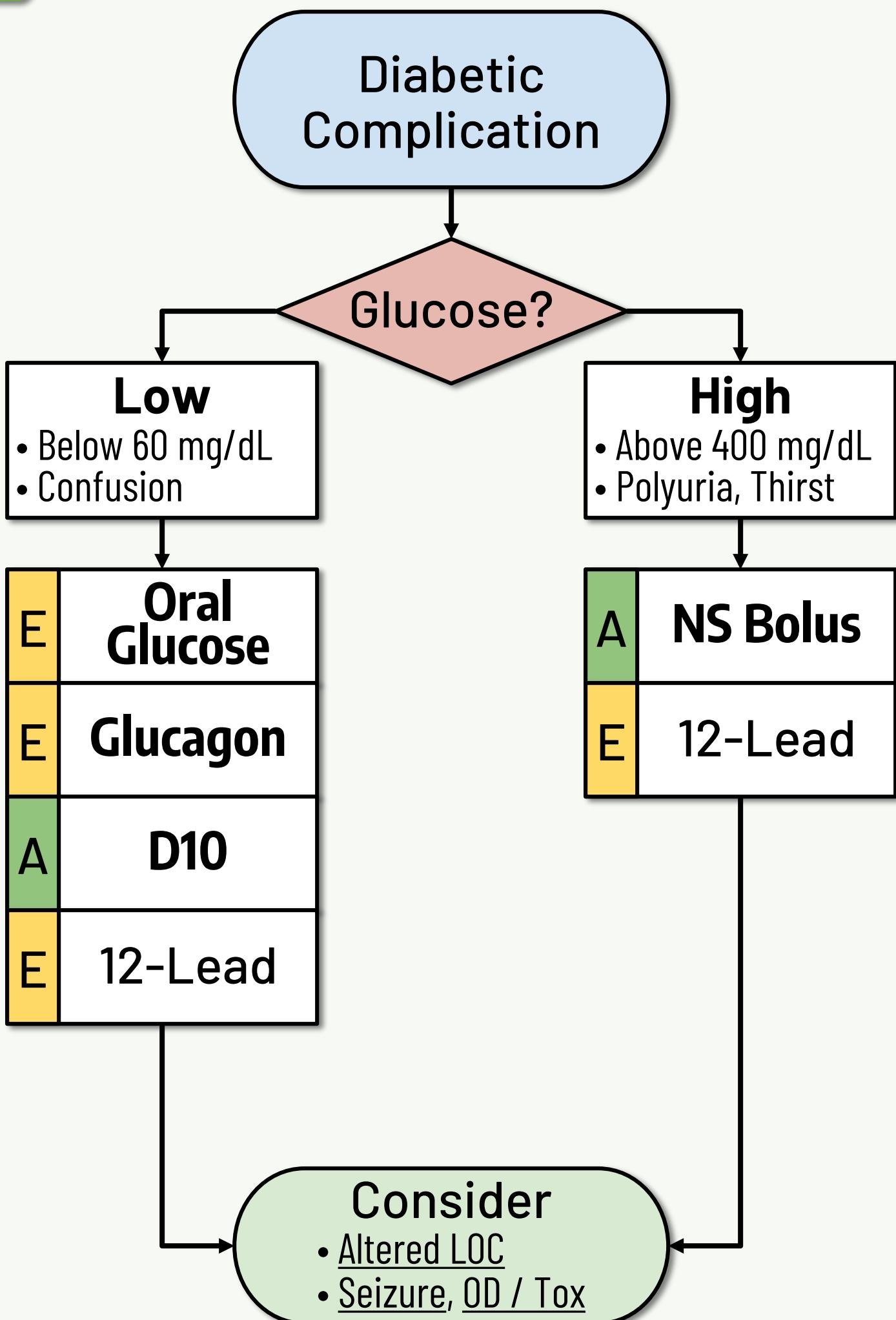
- Consider an atypical Cardiac cause in diabetics and the elderly.
- Consider Sepsis if cleared for Critical Care and pt is delirious.

Pediatrics

- Most causes of transient syncope are benign.
- Prolonged altered LOC indicates potentially serious pathology.
- Syncope **during exertion** can be a true cardiac emergency.

References

- Medscape Syncope: <https://emedicine.medscape.com/article/811669> [Ver: 1/17]
- Medscape Delirium: <https://emedicine.medscape.com/article/793247> [Ver: 9/18]
- Medscape Hypoglycemia: <https://emedicine.medscape.com/article/122122> [Ver: 7/20]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 22



Oral Glucose: 15 g	PO	Q 5 min x3	Adult Doses
Glucagon: 1 mg	IM/IN	x1	
D10: 100 mL	IV/IO	Q 5 min x5	
NS Bolus: 1,000 mL	IV/IO	x1	

Diabetic Imperatives

- EMS intervention is not required for mild asymptomatic patients.
- Consider a concurrent Cardiac emergency in the elderly.
 - Many diabetic emergencies benefit from a **12-Lead if able.**
- Consider other causes of Altered LOC even with hypoglycemia.
- Hypoglycemia from **sulfonylureas** can be refractory and profound.
 - Ex: glipizide (Glucotrol[®]), glyburide, glimepiride (Amaryl[®])
 - Call **Medical Control** for any refusal if taking **sulfonylureas**.

Medications

- **Oral Glucose** (Glutose 15TM): Avoid if patient cannot swallow.
 - Consider regular food as an alternative if available.
 - Prioritize food and drinks with **simple sugar**.
 - Also provide complex carbs/protein (**like peanut butter**).
- **Glucagon** (Glucagen[®]): Caution - improvement is temporary!
 - **Must provide additional glucose** after administration.
 - Give PO glucose if able and be prepared to give **D10**.
 - Call **Medical Control** for all refusals after **Glucagon**.
 - **E** Only use intranasal (IN) route for administration.
- **D10** (Dextrose 10%): Recheck glucose prior to repeat dosing.
 - May attempt without glucometer if hypoglycemia likely.

Notes

- Avoid starting an IV in the **legs or feet** of a diabetic patient.
- Sustained hyperglycemia may lead to **Diabetic Ketoacidosis**.
 - Consider DKA / HHS if appropriate and cleared for Critical Care.

Pediatrics

- Use Peds Reference or other approved source for peds dosing.

References

- Medscape Hypoglycemia: <https://emedicine.medscape.com/article/122122> [Ver: 6/20]
- Medscape DKA: <https://emedicine.medscape.com/article/118361> [Ver: 5/19]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 22



Symptomatic
Toxic Exposure
or Overdose

Call Medical
Control for
Refusals

Severity?

Minor

- Adequate Perfusion
- Minor Symptoms

A

Saline
Lock

Major

- Poor Perfusion
- Toxic Effects

I
E
A

Administer
Antidote

12-Lead

Saline
Lock



Consider

- Other Co-ingestions
- Shock, Brady, N/V

Toxin

Opiates	Narcan: 0.4-4 mg	IM/IN, IV/IO	Adult Antidote Doses
β-blocker	Glucagon: 1 mg	IM/IN	
Organophos	Atropine: 2 mg	IM, IV/IO	
Ca-blocker	Calcium: 1 g	IV/IO	
Tricyclic	Bicarb: 50 mEq	IV/IO	

Reviewed: Dec 2020

Overdose / Tox Imperatives

- Collect a detailed history and **SDS** (Safety Data Sheet) if able:
 - Substance, quantity and time of ingestion or exposure
- Monitor Airway closely with all **caustic ingestions**.
- Not all ingestions require a specific antidote or intervention.
 - Stable patients may be monitored and transported.
 - Supportive care is sufficient for **Alcohol** (ethanol) intoxication.

Medications

- **Narcan**[®] (Naloxone): Should only be used to treat **Hypoxia**.
 - May provide premeasured **intranasal** doses only.
 - A Avoid rapid reversal. Titrate to oxygenation.
 - May repeat PRN. Call **Medical Control** for refusal w/ **Narcan**.
- **Glucagon, Atropine**: Likely will need **multiple doses**.
- **Calcium** (gluconate): **Avoid** with **Rocephin** or Digoxin[®] (fatal).
- **Bicarb** (Sodium Bicarbonate): Use for any EKG changes.
- Flush line well between **Calcium** and **Bicarb** (do **not** mix).
- **Mark 1**TM (Atropine/2-PAM): May use if MCI / nerve agent
- **Cyanokit**[®] (Cyanide antidote): May use kit if indicated

Notes

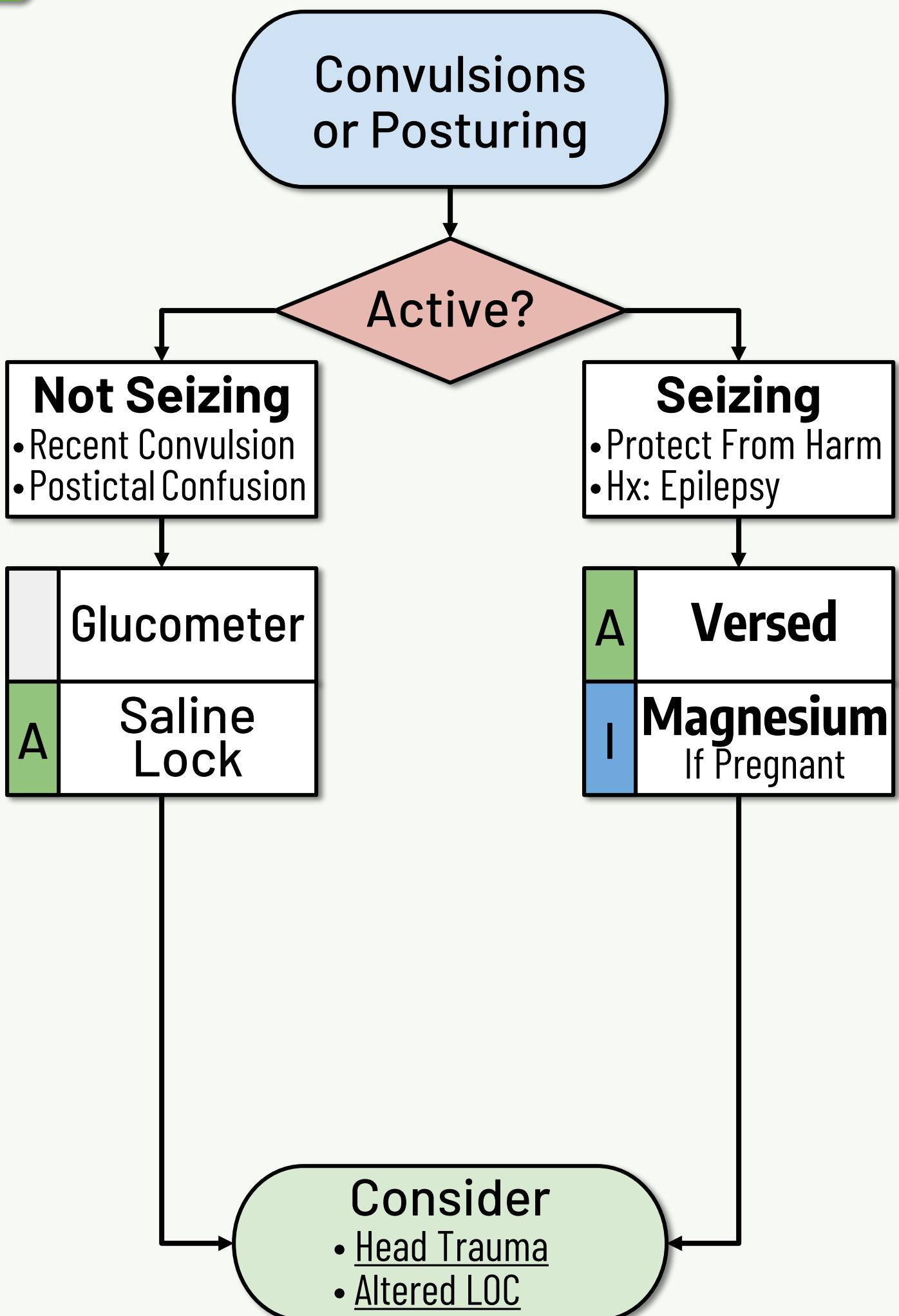
- If substance is known, consider **Poison Control**: 800-222-1222.
- This protocol includes chemical **ingestions** and organophosphates.
 - For **skin** exposure refer to Burns; for **gas** refer to Inhalation.

Pediatrics

- Just a **single pill** of some adult meds can cause major symptoms.
 - Be prepared to treat Shock if overdose is suspected.
 - Ingested **cigarettes or vape fluid** (nicotine) can be **fatal**.
- Use Peds Reference or other approved source for peds dosing.

References

- Medscape Opioids: <https://emedicine.medscape.com/article/815784> [Ver: 6/20]
- Medscape Tricyclics: <https://emedicine.medscape.com/article/819204> [Ver: 5/20]
- Medscape Organophosphate: <https://emedicine.medscape.com/article/167726> [Ver: 12/20]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 25



Versed: 5 mg IV/IO, IM/IN Q 5 min x2

Adult Doses

Magnesium: 2 g IV/IO x1

Seizure Imperatives

- Active convulsions with Altered LOC should be treated promptly.
 - Meds are contraindicated without active convulsions.
- Non-specific shaking with normal LOC may not need intervention.
- Non-epileptic **pseudoseizures** do not require EMS intervention.
 - Consider other causes such as Psychiatric or OD / Tox.
- Aggressively treat seizures due to alcohol or benzo withdrawal.

Medications

- **Versed®** (Midazolam): Only appropriate for active convulsions.
 - May start with half dose when given IV/IO.
- **Magnesium** (sulfate): May cause Hypotension and Dyspnea.
 - Useful for seizures in **late Pregnancy** (20 weeks & over).
 - Do not provide in early pregnancy. Eclampsia is unlikely.

Notes

- Obtain details of patient's **seizure meds** if immediately available.
- Seizures can come in groups, be prepared to treat another seizure.
- Confusion after seizure is common and may last over 30 min.
 - Transient stroke-like paralysis is also possible but is not a CVA.

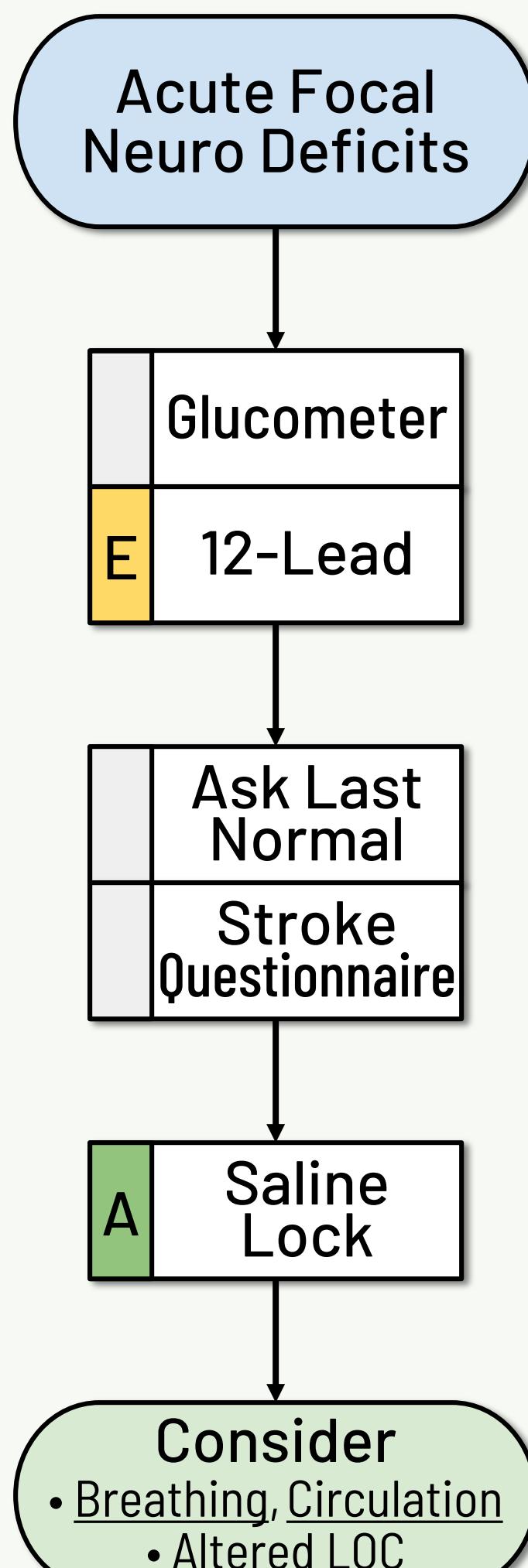
Pediatrics

- Peds under 5 y/o may have a seizure caused by Fever.
 - It is usually self limiting and does not require intervention.
 - Consider medication if longer than 5 min or seizure reoccurs.
 - Aggressively treat any peds seizure not associated with Fever.
- Use Peds Reference or other approved source for peds dosing.

References

- Medscape Seizure: <https://emedicine.medscape.com/article/1184846>
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 22

[Ver: 10/20]



Stroke Imperatives

- Treatment is time sensitive. Do not delay transport for procedures.
- **Time Last Normal** is not necessarily when symptoms started.
 - If noticed upon waking up: last normal is before bed.
 - If altered LOC: last normal is when someone saw them normal.
- Stroke Questionnaires: Use the **Cincinnati Stroke** FAST exam.
 - Consider additional screening if able (Stroke VAN or NIHSS).
- Attempt a Saline Lock **only once**. Leave other sites for ED staff.

Cincinnati Stroke

- Facial Droop?
- Arm Drift?
- Slurred Speech?
- Time Last Normal?

Stroke VAN

- Vision: Partial / Total Loss?
- Aphasia: Trouble Speaking?
- Neglect: Ignoring One Side?

- If you suspect a CVA
- & Last Normal **< 6 h**
- Call a **STROKE Alert**



Notes

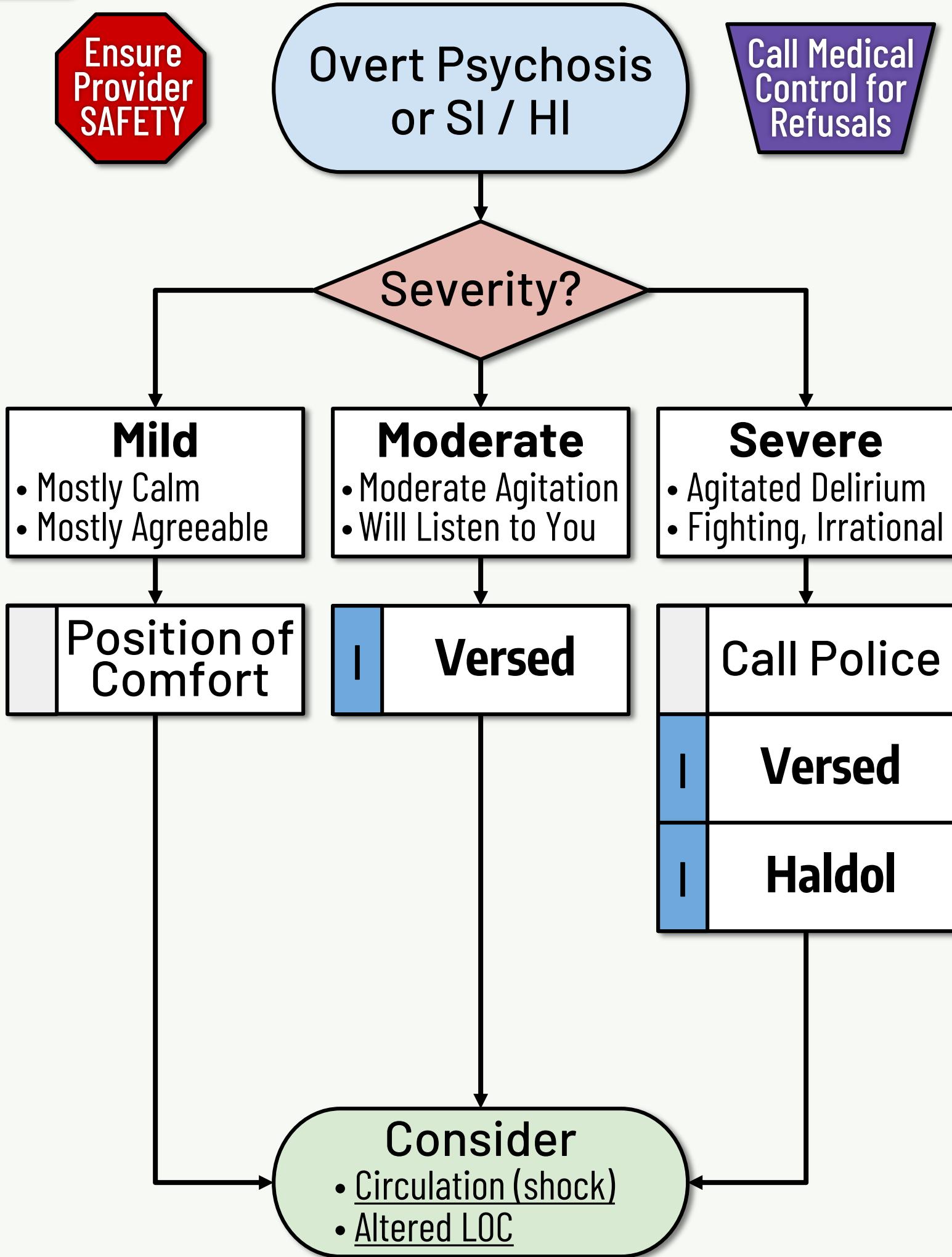
- Most thrombolytic therapy must occur **within 6 hours**.
 - Vascular intervention may be possible out to 24 hours.
- Encourage family or guardian to accompany patient.
 - There are important decisions to be made quickly at the ED.
 - Record phone number for family or guardian if possible.

Pediatrics

- Stroke is unlikely in peds. Consider other causes of Altered LOC.

References

- ACLS: <https://www.ahajournals.org/doi/10.1161/CIR.0000000000000916> [Ver: 2020]
- Medscape Stroke: <https://emedicine.medscape.com/article/1916852> [Ver: 5/20]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 22

**Versed: 5 mg**

IV/IO, IM/IN

x1

Adult Doses**Haldol: 5 mg**

IM

x1

Psychiatric Imperatives

- **Do not assume** psychosis. Evaluate and treat for other causes.
- Psychiatric patients may not have the capacity to Refuse.
 - Involve Police and call **Medical Control** for any psych refusal.
- Use of any restraint presents significant medical (and legal) risk.
 - Use **only to ensure safety** of patient and providers.
 - Use only when risk of harm is greater than risk of restraint.
 - Elderly or frail patients are unlikely to need restraint.
 - Restraint should be a **last resort**.
- Physical restraint should only be used in conjunction with Police.
 - **Ask for Police** help if the patient is physically combative.
 - Monitor closely for Airway or Breathing complications.

Medications

- **Versed**[®] (Midazolam): May start with half dose when given IV/IO.
- **Haldol**[®] (Haloperidol): Requires transport and **ALS** monitoring.

Notes

- Consider calling **Medical Control** for repeat dosing.
- SI / HI: Suicidal or Homicidal Ideation
 - Thoughts or acts of hurting themselves or other people.
- Consider Sedation if appropriate and cleared for Critical Care.

Pediatrics

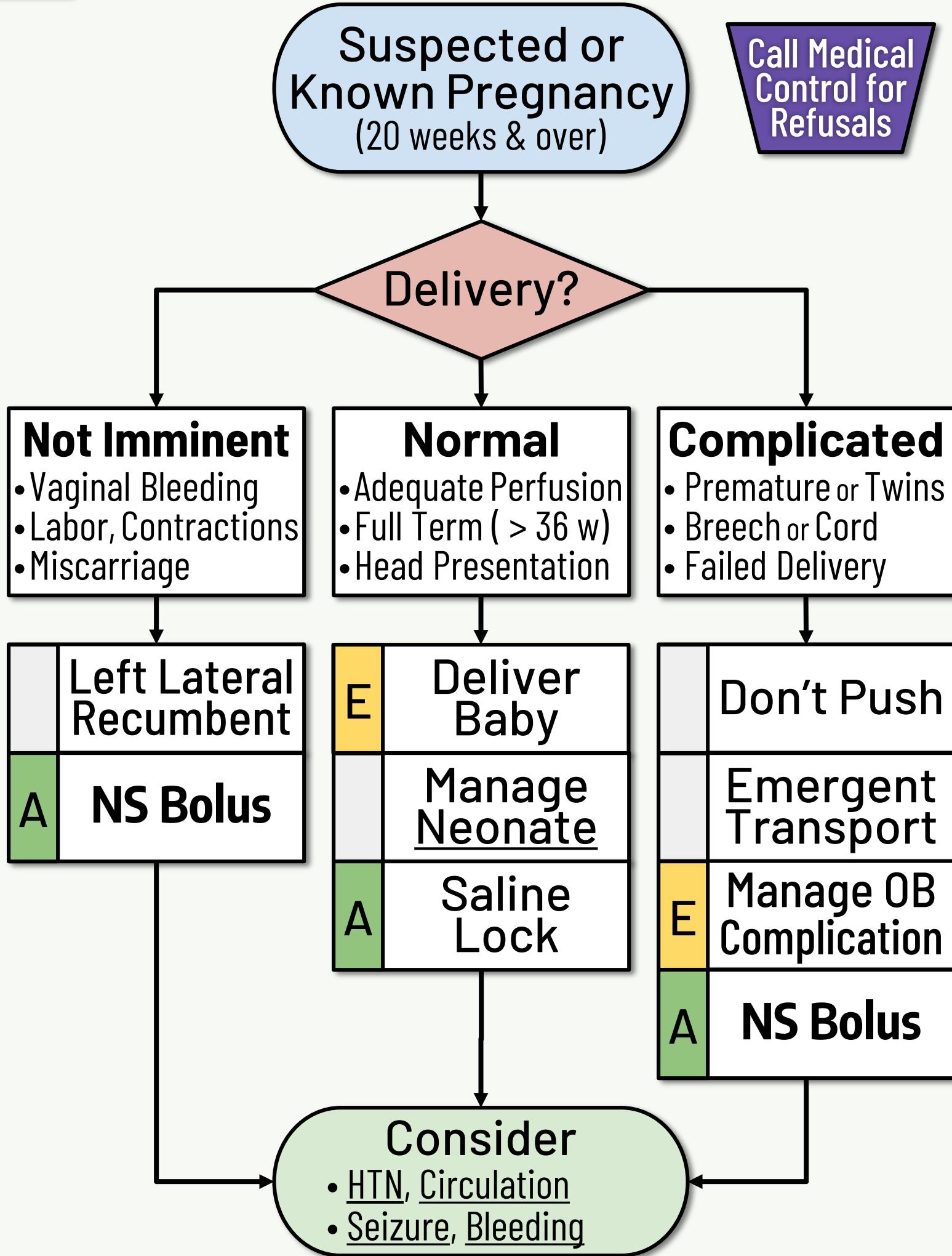
- Consider calling **Medical Control** prior to restraining peds.
- Use Peds Reference or other approved source for peds dosing.

References

- Medscape Suicide: <https://emedicine.medscape.com/article/2013085>
- Medscape Aggression: <https://emedicine.medscape.com/article/288689>
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 27

[Ver: 8/19]

[Ver: 6/17]



NS Bolus: 1,000 mL

IV/IO

x1

Adult

Pregnancy / Delivery Imperatives

- This protocol applies to **late pregnancy** (20 weeks & over).
 - Uterus palpable **above the umbilicus** suggests late pregnancy.
 - There are no specific EMS interventions for early pregnancy.
- Any SBP reading above 140 mmHg may be **preeclampsia**.
 - Prioritize transport. Call **Medical Control** for any refusal.
- Aggressively treat any Seizure as **eclampsia**.
- Any **maternal trauma** after 20 weeks should be transported.
 - Fetus may have injury that is not immediately obvious.
 - Even minor trauma (simple falls, etc) can cause fetal harm.
- **Prioritize transport for any complications** with delivery.
 - **Reduce cord** if found around the neck.
- **Manage OB Complications** during transport:
 - Failed Delivery / Shoulder Dystocia: transport knees to chest
 - Prolapsed Cord: fingers in vagina to remove pressure on cord
 - Breech: support presenting part, do not pull on part

Notes

- Remember not all medications are safe in pregnancy.
 - Call **Medical Control** if any question.
- **Fundal massage** is important to help stop postpartum bleeding.
- May attempt **home delivery** if uncomplicated and imminent.
 - Crowning and urge to push suggest delivery is imminent.
- Attempt to have a **chaperone** present for any genital evaluation.

Pediatrics

- Refer to Neonate for management of the newborn baby.

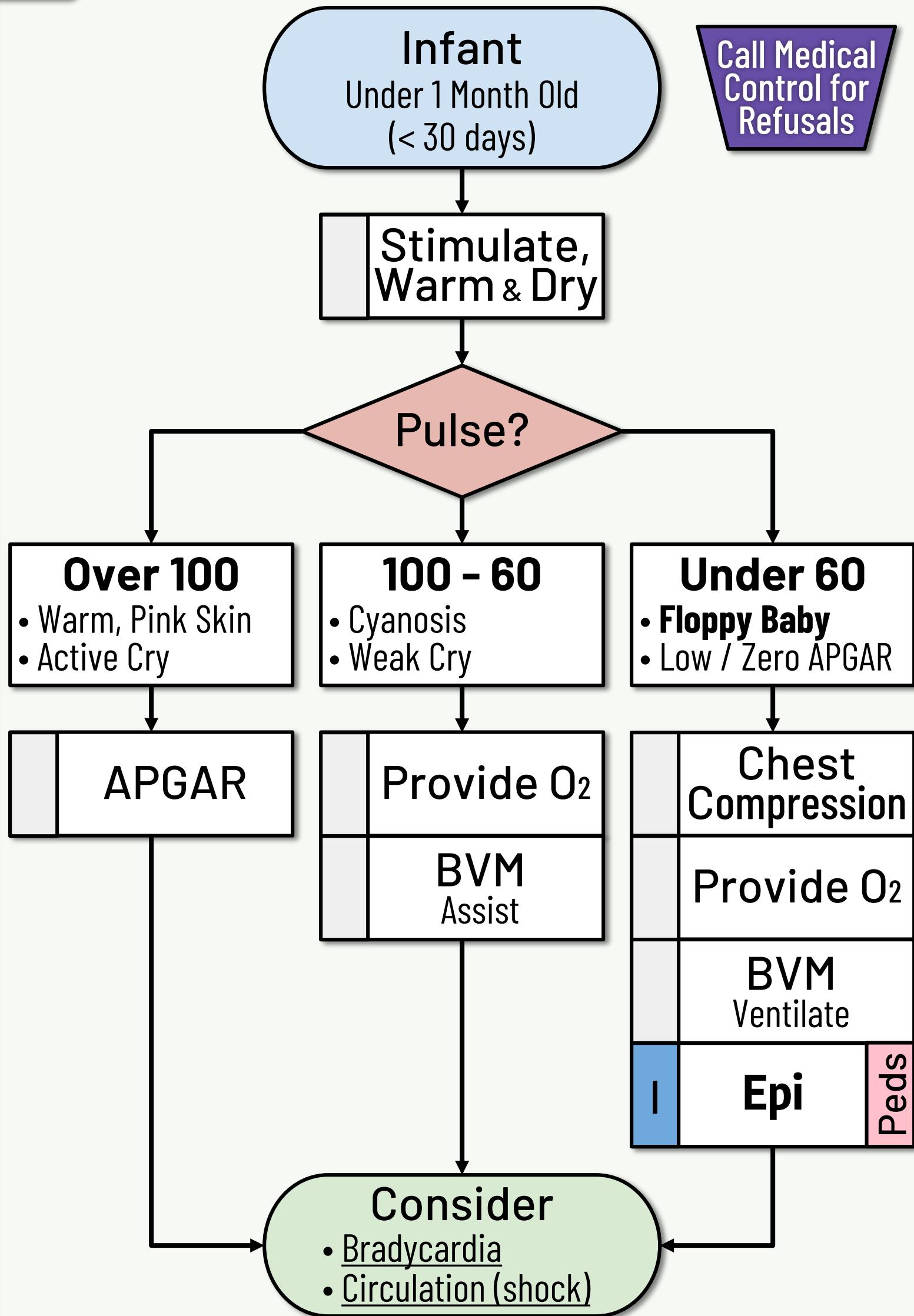
References

- Medscape Delivery: <https://emedicine.medscape.com/article/260036>
- Medscape Eclampsia: <https://emedicine.medscape.com/article/253960>
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 36

[Ver: 1/19]

[Ver: 4/19]

Call Medical Control for Refusals



Epi: 0.5 mL (1 mg per 10 mL)

IV/IO

Q 5 min

Peds

Compressions

- Neonate: **120 /min**
- OPA/NPA: **3:1 w/ BVM**
- BIAD: **Continuous**

BVM Rate

- Neonate: **Q2 sec (30 /min)**

Neonate Imperatives

- Most respond to stimulation.
 - Suction mouth then nose.
 - Clamp & cut cord.
 - Dry off. Keep warm.
 - Use **BVM if any distress.**
- Other less common causes of newborn distress include:
 - Pneumothorax, Hypoglycemia, Shock

APGAR:	2	1	0
• Appearance	pink	blue	gray
• Pulse	100+	99-1	0
• Grimace	good	poor	none
• Activity	kicks	weak	limp
• Respiration	cry	gasp	0

Notes

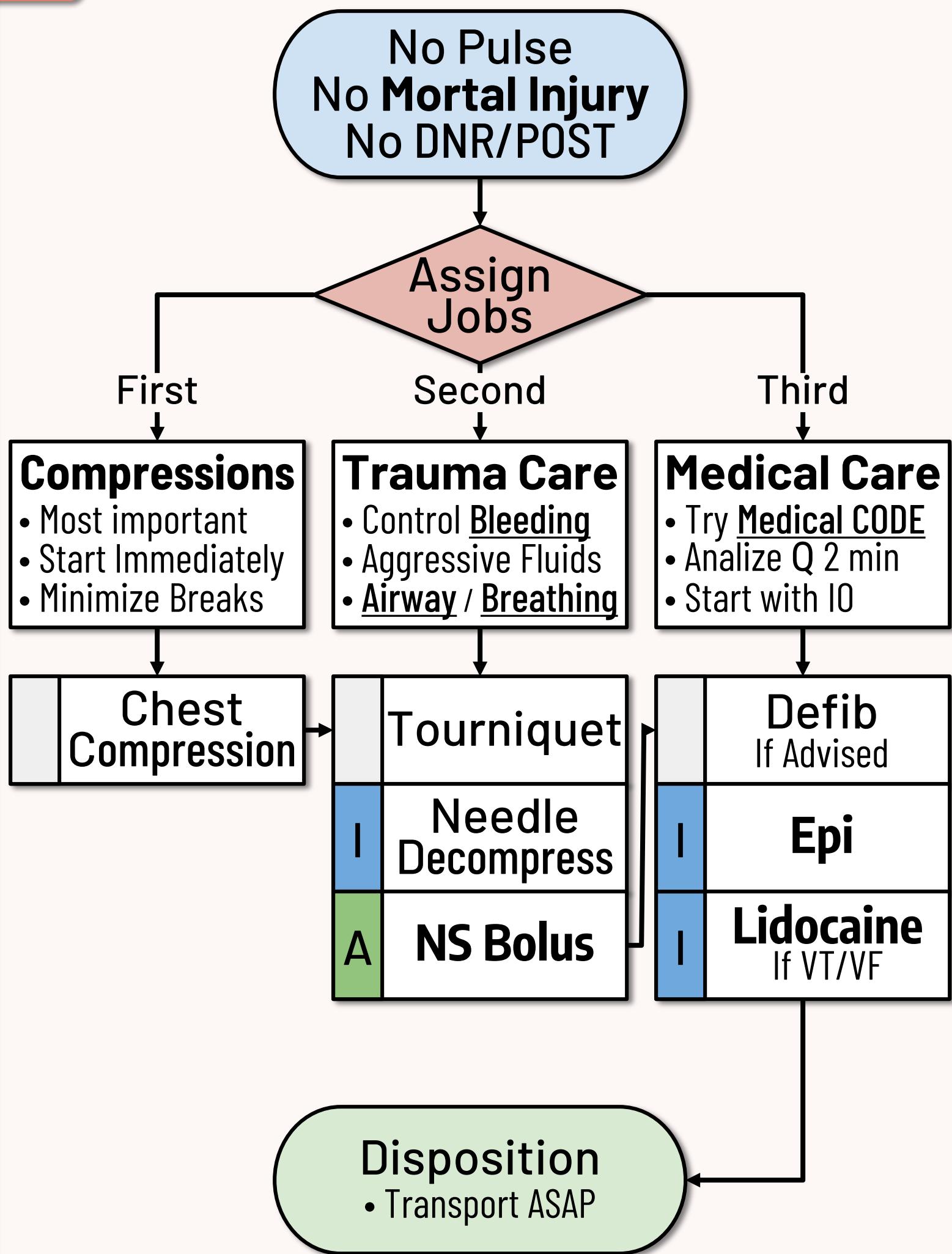
- Document 1 and 5 minute **APGAR** scores.
 - Add total points from each of the five categories.
- Use mom and baby **ID bands** if available.
- **Meconium suction** is not included in this protocol.
- Avoid high flow oxygen into a newborn's eyes.

Adults

- This protocol is for infants under 1 month (< 30 days) old only.
- It does not apply to adults or older peds.

References

- PALS: <https://www.ahajournals.org/doi/10.1161/CIR.0000000000000901> [Ver: 2020]
- Medscape Delivery: <https://emedicine.medscape.com/article/260036> [Ver: 1 / 19]
- Medscape Neonate: <https://emedicine.medscape.com/article/977002> [Ver: 2 / 19]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 36



NS Bolus: 1,000 mL	IV/IO	x2
Epi: 1 mg	IV/IO	Q 5 min
Lidocaine: 100 mg	IV/IO	Q 5 min x3

Adult
Doses

CODE Imperatives

- Place **Tourniquets** if needed.
 - Hemostasis is critical.
- Try bilateral **Needle Decompression**.
 - Hidden pneumothorax may cause traumatic arrest.
- This protocol applies to cardiac arrest caused by **severe trauma**.
 - Refer to Medical CODE for arrest with only incidental injuries.
- Definitive treatment for traumatic arrest is the operating room.
 - Prioritize compression, tourniquets and **transport ASAP**.

Compressions

- Adult/Peds: **120 /min**
- OPA/NPA: **30:2 w/ BVM**
- BIAD: **Continuous**

- If Any Trauma CPR
- Or Unstable Vitals
- Call a **TRAUMA Alert**



Mortal Injuries

- Decapitation or Exposed Brain
- Destruction of Trunk or Organs
- Burned Beyond Recognition
- Massive Blunt Force, Explosion
- Over 30 min Since Arrest

Medications

- **NS Bolus** (0.9% Saline): Appropriate use in trauma is critical.
 - Be aggressive with fluid for Hypotension or **poor perfusion**.
 - Avoid aggressive fluids once SBP above **90 mmHg**.

Notes

- Use caution with **compressions** and **defib** in a moving vehicle.
- EtCO₂ can help identify ROSC and guide termination decision.
- A well run CODE should operate like a **pit crew**. Focus on your job.

Pediatrics

- Use Peds Reference or other approved source for peds dosing.

References

- ATLS®: <https://viaaerarcp.files.wordpress.com/2018/02/atls-2018.pdf> [Ver: 2018]
- NAEMSP Mortal Injuries: <https://doi.org/10.3109/10903127.2012.755586> [Ver: 1 / 13]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 29, 34

Return of Pulse

Reassess

- Establish Airway
- Provide Breathing
- Treat Circulation

Emergent Transport

Tourniquet

I **Needle Decompress**

E **12-Lead**

A **Saline Lock**

I **Ketamine**
If Agitated

Consider
• Bleeding, Shock
• Medical ROSC

Consider Destination Triage

Ketamine: 20 mg

IV/IO

Q 5 min x2

Adult

Trauma ROSC Imperatives

- Most important aspect is to prioritize emergent transport.
 - **Get the patient to the hospital.**
- Reassess and repeat Needle Decompression as needed.
 - Repeat immediately if decompensation after initial success.
- Reassess and apply additional Tourniquets as needed.
 - Pack and apply pressure for trunk bleeding.
- Consider a concurrent medical cause preceding the trauma.



- If Any Trauma CPR
- Or Unstable Vitals
- Call a **TRAUMA Alert**

Poor Perfusion

- Suspect if **several** of these:
 - **Altered Mental Status**
 - Skin Pale, Cool, Diaphoretic
 - Tachycardia, Hypotension
 - Dyspnea, Tachypnea

Medications

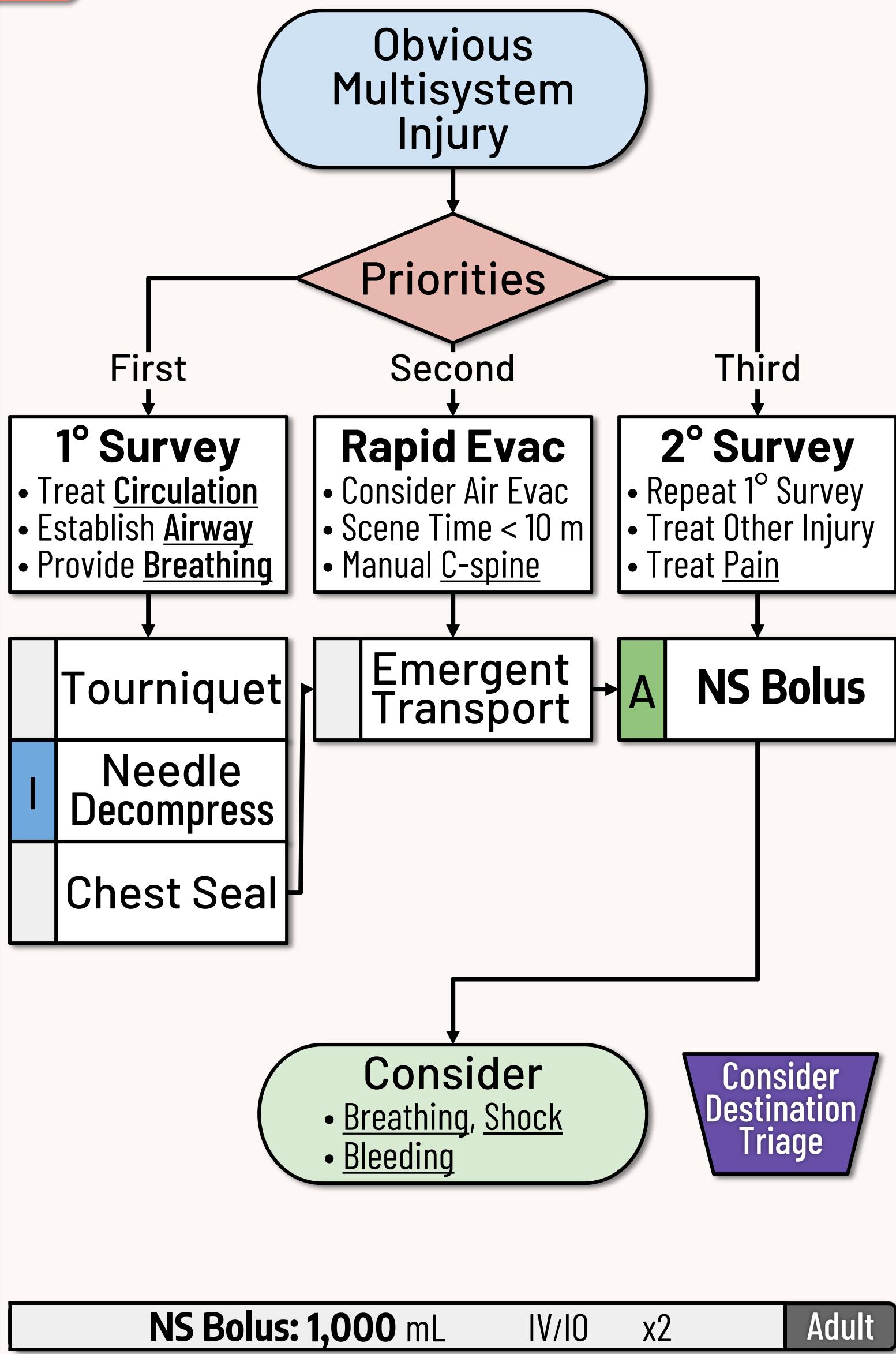
- **Ketamine** (Ketalar[®]): Use if biting on BIAD or overt discomfort.
 - Consider Sedation if appropriate and cleared for Critical Care.

Pediatrics

- Use Peds Reference or other approved source for peds dosing.

References

- ACLS: <https://www.ahajournals.org/doi/10.1161/CIR.0000000000000916> [Ver: 2020]
- ATLS[®]: <https://viaaerarcp.files.wordpress.com/2018/02/atls-2018.pdf> [Ver: 2018]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 29, 34



Major Trauma Imperatives

- Rapid transport is **critical** for massive life threatening injury.
 - **Get the patient to the hospital.**
 - Delay transport only to address major threats to life.
 - Secondary survey and treatment can occur during transport.
- It is appropriate to start with rapid manual immobilization only.
 - May delay placing the c-collar and LBB to the secondary survey.
 - You should delay extremity splinting to the secondary survey.



Poor Perfusion

- Suspect if **several** of these:
 - **Altered Mental Status**
 - Skin Pale, Cool, Diaphoretic
 - Tachycardia, Hypotension
 - Dyspnea, Tachypnea

Medications

- **NS Bolus** (0.9% Saline): Appropriate use in trauma is critical.
 - Be aggressive with fluid for Hypotension or **poor perfusion**.
 - Avoid aggressive fluids once SBP above **90** mmHg.

Notes

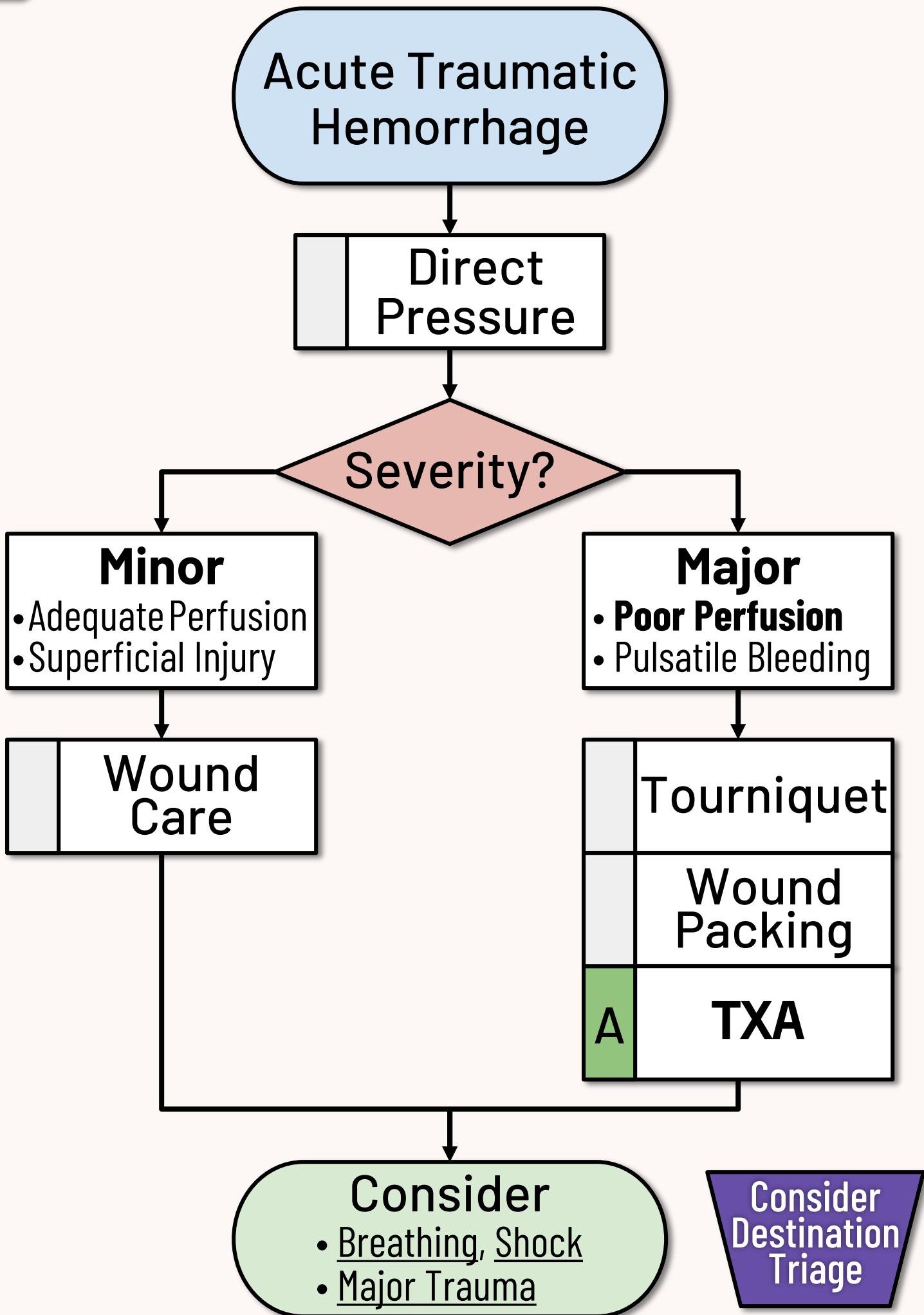
- Do not remove **impaled** objects. Splint object in position found.
- **Mechanism** is an important indicator of injury severity.

Pediatrics

- Use Peds Reference or other approved source for peds dosing.

References

- Medscape Polytrauma: <https://emedicine.medscape.com/article/1270888> [Ver: 12/18]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 29, 34



TXA: 1 g

IV/IO

over 10 min

Adult

Bleeding Imperatives

- Advance to **Tourniquet rapidly** for major arm / leg bleeding.
 - Write the time of Tourniquet application on the patient.
- Avoid tourniquets or wound packing for:
 - Unstable, depressed or open skull fractures; chest wounds
 - Bleeding from body orifices: vagina, rectum, ear, mouth, etc.

- If Major Intervention
- Or Major Mechanism
- Call a **TRAUMA Alert**



Poor Perfusion

- Suspect if **several** of these:
 - **Altered Mental Status**
 - Skin Pale, Cool, Diaphoretic
 - Tachycardia, Hypotension
 - Dyspnea, Tachypnea

Medications

- **TXA** (Tranexamic Acid): Avoid if injury 3+ hours old or known PE.
 - Use for any **major external traumatic** bleeding.
 - Use for suspected **intra-abdominal bleeding** w/ poor perfusion.
 - Such as: pelvic fracture, rigid abdomen, abdominal contusions
 - Avoid for other forms of suspected internal bleeding.

Notes

- Consider removing bystander dressings to investigate severity.
- **Lacerations** benefit from repair within the first few hours.
- Bandage wounds after bleeding is controlled.

Pediatrics

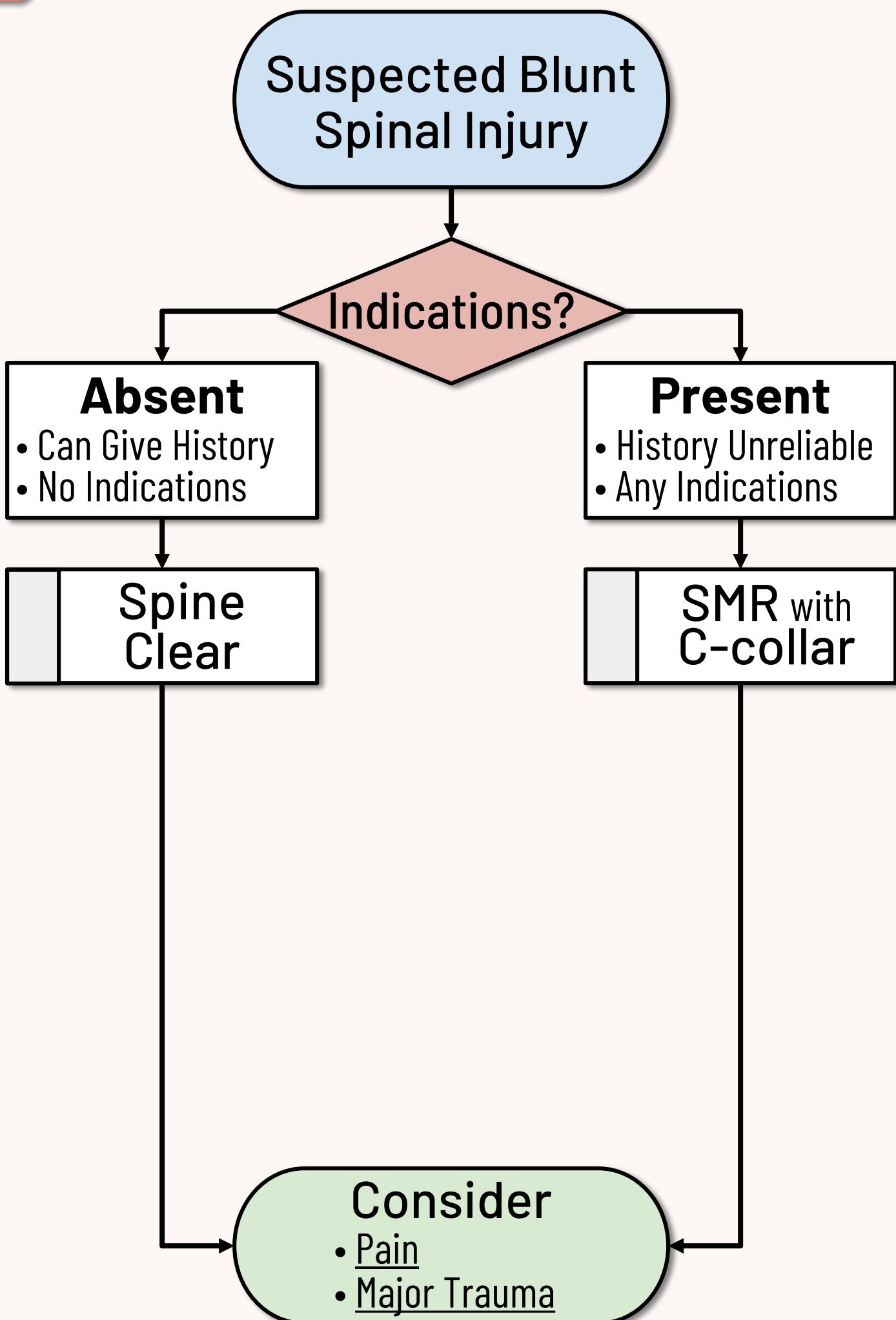
- Hypotension is a late sign of Shock in peds.
- Use Peds Reference or other approved source for peds dosing.

NEMESIS: 9914083

References

- ACLS: <https://www.ahajournals.org/doi/10.1161/CIR.0000000000000916> [Ver: 2020]
- ATLS®: <https://viaaerearcp.files.wordpress.com/2018/02/atls-2018.pdf> [Ver: 2018]
- Stop the Bleed®: <https://www.stopthebleed.org/> [Ver: 2020]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 29, 34

Reviewed: Oct 2020

**Indications**

- | | |
|--------------------|-----------------------------------|
| • Spine Tenderness | • Altered LOC from Baseline |
| • Spine Deformity | • Acutely Intoxicated |
| • Neuro Deficits | • Distracting Injury or Mechanism |

Immobilization Imperatives

- While backboards have historically been used to attempt spinal immobilization, **SMR** may also be achieved by use of a scoop stretcher, vacuum splint, **ambulance cot**, or other similar device to which a patient is safely secured. †
- A long spine board, a scoop stretcher, or a vacuum mattress is recommended to assist with **patient transfers** ... to minimize flexion, extension, or rotation of the possibly injured spine. †
- There is no role for **SMR** in penetrating trauma. †
- SMR requires **supine positioning** and a **c-collar**.
- Awake, compliant patients may be safely secured with seat belts.

Notes

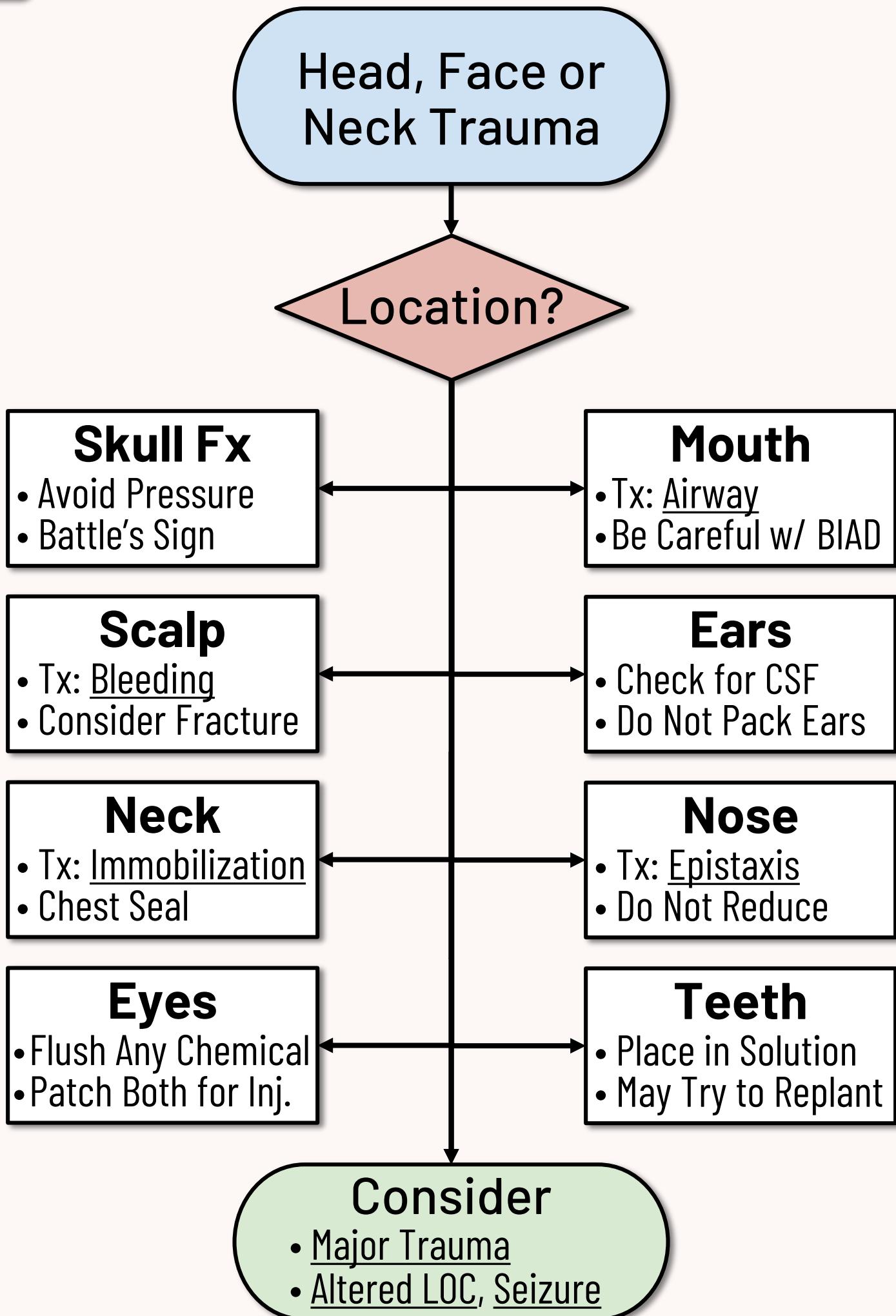
- **Spine Tenderness or Deformity** includes any:
 - Midline neck or back pain, tenderness, step off etc.
- **Neuro Deficits** include any new symptoms of neurologic injury:
 - Unconscious greater than 1 min, or seizure
 - Paralysis, weakness, numbness, or vision changes
 - Shooting 'electric' pain or tingling in any extremity
- **Altered LOC from Baseline** includes any change in mentation:
 - GCS less than baseline, new confusion
- **Acute Intoxication** includes any alteration in mentation due to:
 - Alcohol, medications or illegal drugs
- **Distracting Injury or Mechanism** may include:
 - Airway trauma, obvious SOB, major bleeding, unstable vitals
 - Fall > 10 ft, flail chest, unstable pelvis, 2° or 3° Burn > 10%
 - Major fracture, crushed, mangled or amputated extremity
 - High risk MVC: ejection, roll over, death in vehicle, struck by car

Pediatrics

- Any child that cannot provide a reliable history should have **SMR**.

References

- ACS-COT, ACEP, NAEMSP: [SMR in Trauma - Joint Statement](#) † [Ver: 2018]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 33



Head Injury Imperatives

- Transport emergently if sudden changes in LOC.
- Hyperventilate to reduce EtCO₂ (30-35 mmHg) if signs of herniation:
 - Obvious HTN with profound bradycardia
 - Altered LOC with unequal pupils or posturing
- Do not remove **impaled** objects. Splint object in position found.
- Wrap amputated parts in saline gauze and place in sealed bag.
 - Transport on ice if available. Record time placed on ice.
- **Lacerations** benefit from repair within the first few hours.
- **Mechanism** predicts severity.

- If Major Intervention
- Or Major Mechanism
- Call a **TRAUMA Alert**



Notes

- **Skull Fx:** May cause bruising behind ears or around both eyes.
- **Scalp:** Lacerations may bleed aggressively. Direct pressure if no fx.
- **Neck:** All penetrations should have a chest seal.
- **Eye:** Contamination benefits from copious flushing (NS or water).
 - Patch both eyes for any penetrating injury.
- **Mouth:** Monitor Airway. May skip BIAD if obvious complications.
- **Ear:** Check any discharge for CSF by dropping on white paper.
 - A yellow / clear halo suggests CSF leak from skull fracture.
- **Nose:** Do not attempt to reduce. Treat for Epistaxis.
- **Teeth:** Transport avulsions in Hank's solution or NS.
 - Attempt replantation only in uncomplicated & isolated injury.
- **Concussion:** Usually does not require EMS intervention.

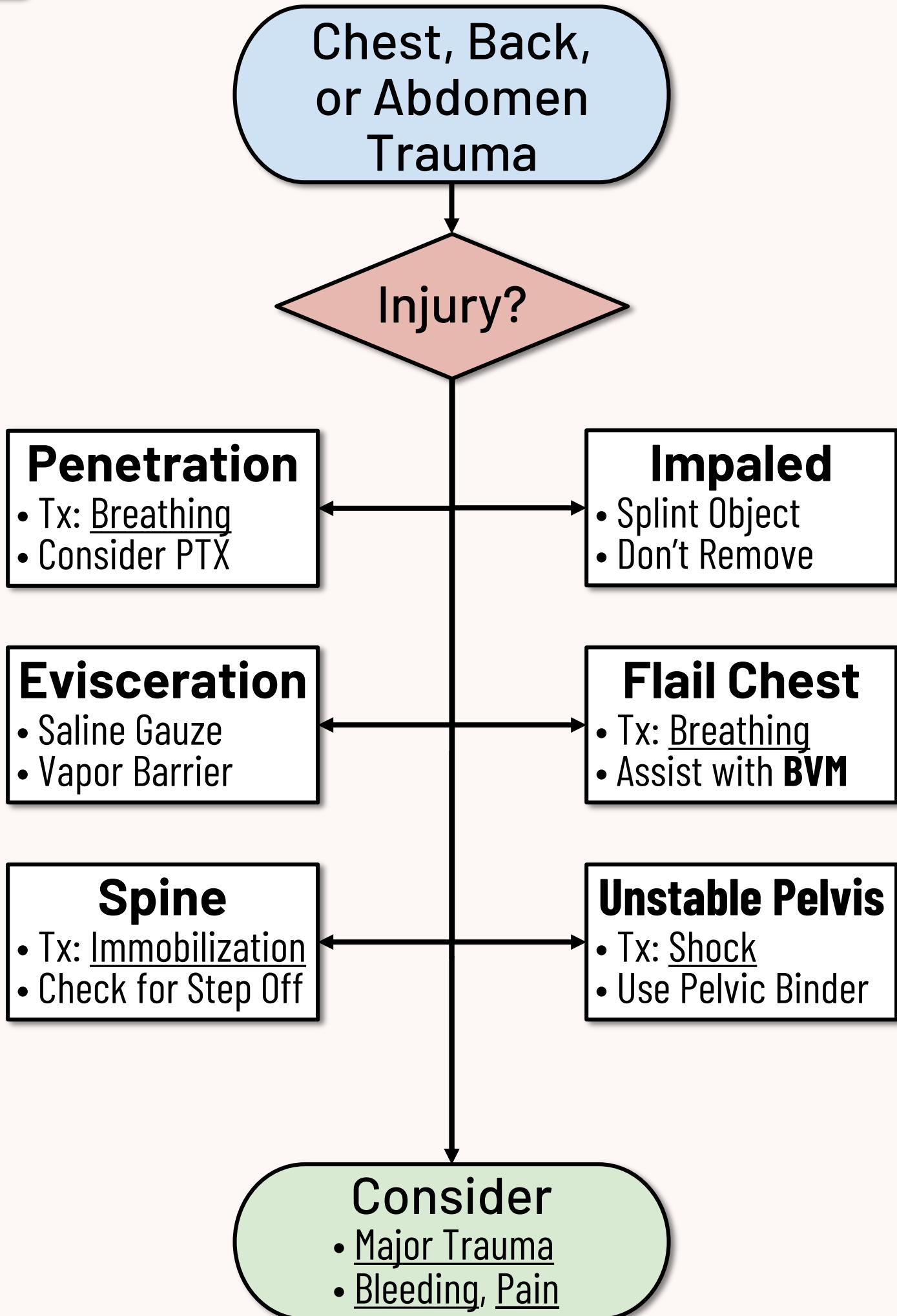
Pediatrics

- Do not attempt replantation for primary (baby) teeth.
- Use Peds Reference or other approved source for peds dosing.

References

- Medscape Head Injury: <https://emedicine.medscape.com/article/1163653>
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 33

[Ver: 10/18]



Trunk Injury Imperatives

- Do not remove **impaled** objects. Splint object in position found.
- **Lacerations** benefit from repair within the first few hours.
- **Mechanism** is an important indicator of injury severity.

- If Major Intervention
- Or Major Mechanism
- Call a **TRAUMA Alert**



Notes

- **Penetration:** All penetrations should have a chest seal.
- **Evisceration:** Cover with saline gauze and vapor barrier.
- **Spine:** Monitor for Neuro Deficits and treat Immobilization.
- **Impaled:** Cut object free of wreckage. Do not remove from patient.
- **Flail Chest:** Monitor for Pneumothorax. Use BVM for Dyspnea.
- **Unstable Pelvis:** Assess with compression once. Use **Pelvic Binder**.

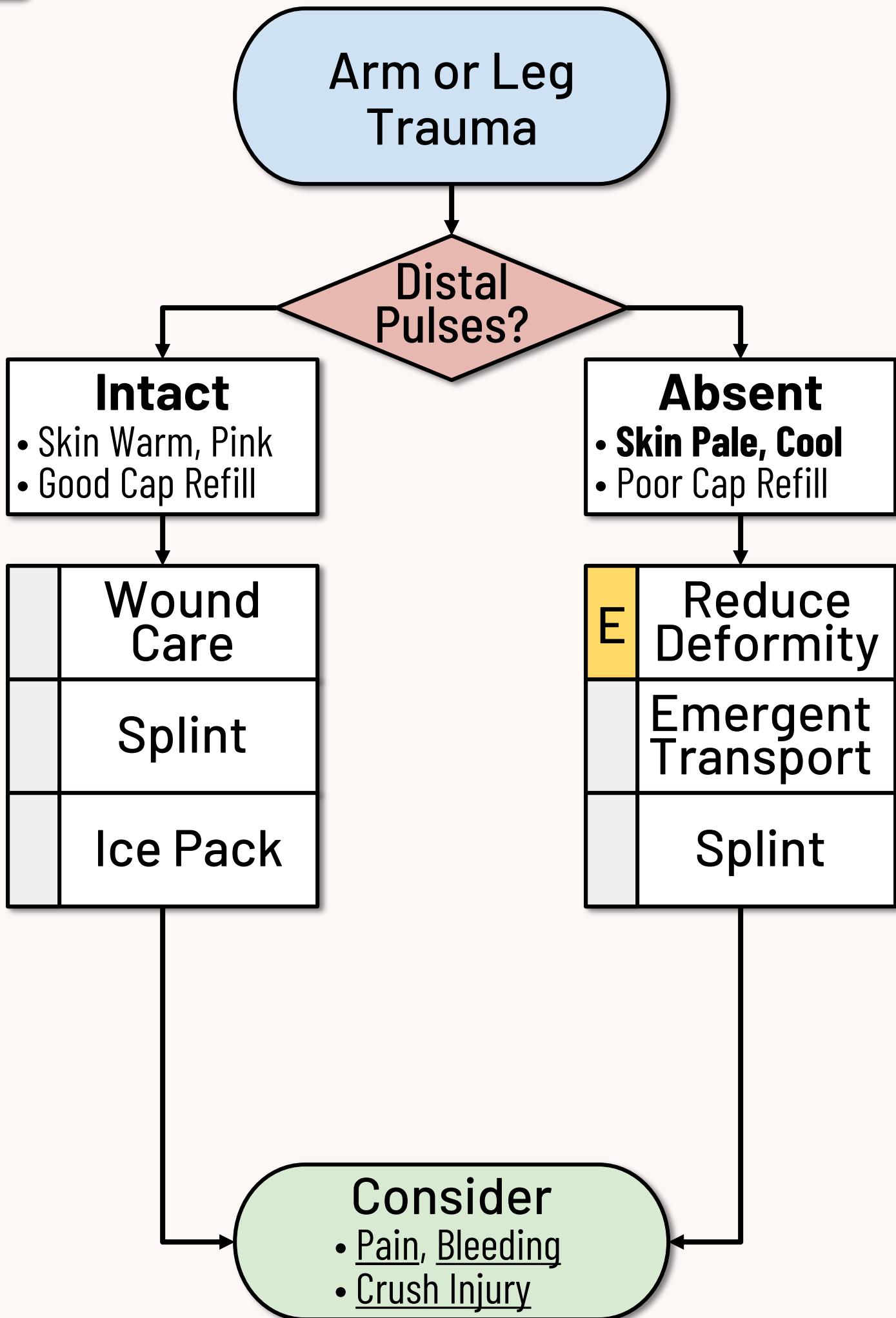
Pediatrics

- Trunk injury is more likely in peds struck by a car.

NEMESIS: 9914193

References

- Medscape Blunt Chest: <https://emedicine.medscape.com/article/428723> [Ver: 9/20]
- Medscape Penetrating Abd: <https://emedicine.medscape.com/article/2036859> [Ver: 1/17]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 31



Extremity Injury Imperatives

- **Pulseless extremities** and **amputations** are true emergencies.
 - Record time of injury. Transport ASAP.
 - Wrap amputated parts in saline gauze and place in sealed bag.
 - Place bag on ice if available. Record time placed on ice.
- Remove adjacent and distal jewelry if able.
- Record peripheral neurovascular status before and after splinting.
- Consider a traction splint for **femur fractures** when appropriate.
 - Massive internal bleeding is possible with femur or hip fx.

- If Major Intervention
- Or Major Mechanism
- Call a **TRAUMA Alert**



Notes

- **Lacerations** benefit from repair within the first few hours.
- **Mechanism** is an important indicator of injury severity.
- Consider Open Fracture if appropriate and cleared for Critical Care.

Pediatrics

- Consider **Child Abuse** for injuries that do not match the history.

References

- Medscape Fracture Care: <https://emedicine.medscape.com/article/1270717> [Ver: 3/20]
- Medscape Vascular Trauma: <https://emedicine.medscape.com/article/462752> [Ver: 11/19]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 29, 30



Extremity Entrapment

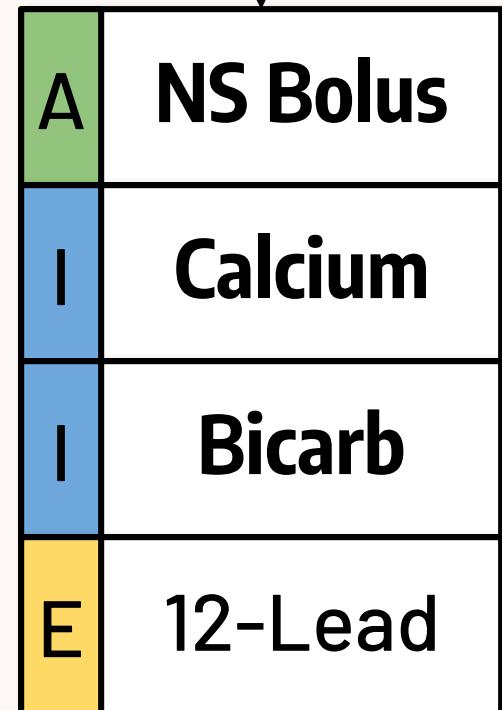
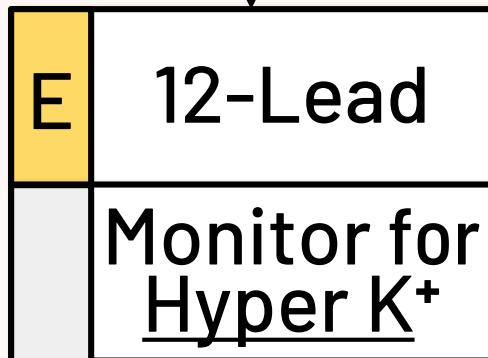
Severity?

Minor

- Rapidly Extricated
- Distal Injury

Major

- Prolonged Crush
- Proximal Injury



Consider

- Bleeding, Shock
- Major Trauma

NS Bolus: 1,000 mL	IV/IO	x2	Adult Doses
Calcium: 1 g	IV/IO	x1	
Bicarb: 50 mEq	IV/IO	x1	

Crush Injury Imperatives

- Aggressively treat major crush injury as soon as possible.
 - An initial 12-Lead is not necessary before treatment.
 - Do not wait for EKG changes to initiate treatment.
- Start treatment **during extrication** if safe and prudent.
 - May **delay extrication briefly** if treatment rapidly available.
- Remove distal jewelry if able.

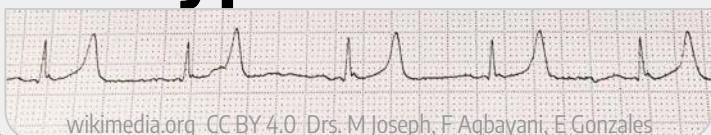
- If Major Intervention
- Or Major Mechanism
- Call a **TRAUMA Alert**



Medications

- **NS Bolus** (0.9% Saline): Aggressive fluids help dilute potassium.
 - Consider aggressive fluids even without Hypotension.
- **Calcium** (gluconate): **Avoid** with **Rocephin** or Digoxin® (fatal).
- **Bicarb** (Sodium Bicarbonate): Use for changes on EKG.
- Flush line well between **Calcium** and **Bicarb** (do **not mix**).

Hyper K⁺ EKG



K⁺ EKG Changes

- From minor to life threat:
 - Peaked T-waves
 - Long PRI / Loss of P-wave
 - Wide QRS (over 120 ms)
 - Slow V-Tach (**sine wave**)

Notes

- Meds are unnecessary for isolated crush injury of hands or feet.
- Trapped patients may become Hypothermic even in warm climate.

Pediatrics

- May exhibit symptoms quicker than adults.
- Use Peds Reference or other approved source for peds dosing.

References

- Medscape Rhabdo: <https://emedicine.medscape.com/article/1007814>
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 30

[Ver: 8/20]

Suspected Exposure

Severity?

Major Hypo
 • Stopped Shivering
 • Cyanosis

Minor

- Adequate Perfusion
- Normal LOC

Major Hyper
 • Confused
 • Hot Skin

Active Warming

Glucometer

E

12-Lead

A

NS Bolus

Passive Techniques

Splint
If Frostbite

Active Cooling

NS Bolus

A

Consider
 • Circulation (shock)
 • Medical Code

Active Warming

- Remove Wet Clothes
- Heat Packs (kit) to Groin / Pits
- Warmed IV Fluids

Active Cooling

- Fan and Misting
- Ice Packs to Groin / Armpits
- Chilled IV Fluids

NS Bolus: 1,000 mL

IV/IO x2

Adult

Cold / Heat Imperatives

- **Resuscitation** of major **hypothermia** is a special case:
 - Most important intervention is **active rewarming**.
 - Check carefully for pulse. If present, it will be **very** faint.
 - Only **defib once**. Only give **ACLS meds once**. Avoid pacing.
 - Call **Medical Control** before termination of resuscitation.
 - Resume normal Medical CODE above **86 °F (30 °C)**.
- **Confusion** is the hallmark of major **hyperthermic** emergencies.
 - Patients with a normal LOC respond well to passive cooling.
- **Hyperthermia** is **not** the same as Fever.
 - Meds for Fever **worsen hyperthermia** and are contraindicated.
- **Passive techniques** include clothing and environment changes.

Notes

- Special thermometers or core temp monitors may be helpful.
 - Major **hypothermia** is likely below: **86 °F (30 °C)**.
 - Major **hyperthermia** is likely above: **106 °F (41 °C)**.
- Excessive movement of **hypothermic** patients can cause V-Fib.
- Delay active rewarming if unable to maintain (prolonged evac).
- Drugs may also cause **hyperthermia**. The treatment is the same.
- Peds and the elderly will decompensate faster.
- Try to pad heat or ice packs. Do not place directly against the skin.

Pediatrics

- Use Peds Reference or other approved source for peds dosing.

References

- ACLS: <https://www.ahajournals.org/doi/10.1161/CIR.0000000000000916> [Ver: 2020]
- PALS: <https://www.ahajournals.org/doi/10.1161/CIR.0000000000000901> [Ver: 2020]
- Medscape Hypothermia: <https://emedicine.medscape.com/article/770542> [Ver: 10/19]
- Medscape Heat Stroke: <https://emedicine.medscape.com/article/166320> [Ver: 8/19]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 35



Heat, Chemical,
or Electric Injury

Stop the
Burning

Severity?

Minor

- Superficial
- Less than 5% BSA

Major

- Deep or Blistering
- Face or Genitals

Position of
Comfort

Burn
Dressing

A

NS Bolus

Ensure
Patient
DECON

Consider

- Breathing, Shock
- Pain, OD / Tox

Consider
Destination
Triage

NS Bolus: 1,000 mL

IV/IO

x2

Adult

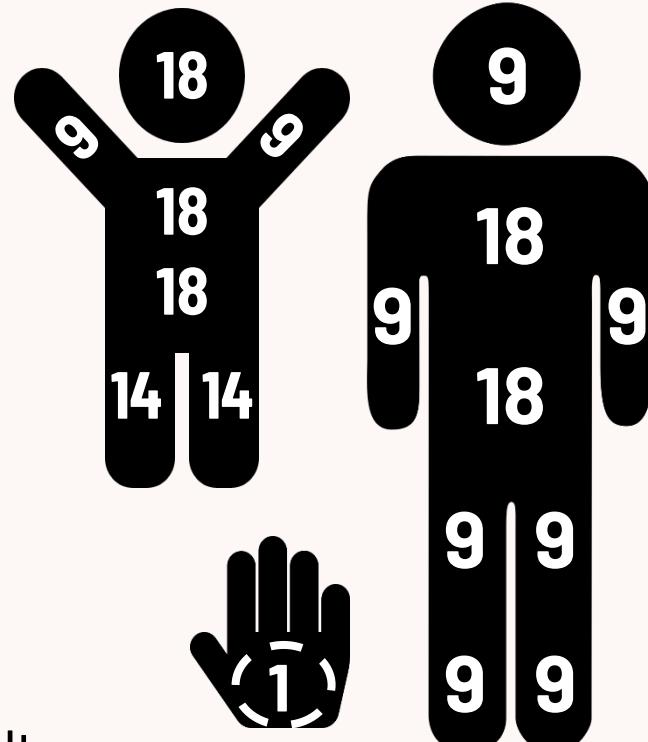
Burn Imperatives

- Monitor Airway closely with any facial, nasal or oral burns.
- Remove adjacent and distal jewelry if able.
- Be aggressive with fluids for **major burns**.
 - Be prepared for Hypothermia. Avoid ice.
- **ALS** should monitor EKG in electrical burns.

BSA percentage
(front and back)



- If Major Intervention
- Or Major Mechanism
- Call a **TRAUMA Alert**



Notes

- Rule of 9's can estimate BSA in adults.
 - Patient's palm (without fingers) is about 1% BSA.
 - Consider only partial and full thickness when calculating BSA.
- This protocol includes most exposures on **skin**.
 - For most **gas** exposures, refer to Inhalation.
 - For chemical **ingestions** or organophosphates, refer to OD / Tox.
- If substance is known, consider **Poison Control**: 800-222-1222.
- This does not include **radiation** exposure. Call **Medical Control**.

Pediatrics

- Use Peds Reference or other approved source for peds dosing.

References

- Medscape Burns: <https://emedicine.medscape.com/article/1278244>
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 30

[Ver: 9/19]



Toxic or Anoxic Gas Exposure

Remove from Harm

Assess for:
• Airway, Breathing
• Burns

Provide O₂



Consider
• Shock
• Bleeding

Inhalation Imperatives

- Monitor Airway closely with any facial, nasal or oral burns.
- Provide high flow oxygen for any carbon monoxide (CO) exposure.
 - Symptoms may include: headache, confusion, red skin, N/V.
 - SpO₂ may read **false normal**. (CO can fool the SpO₂ monitor.)
 - Oxygen is critical for **pregnant females** exposed to CO.
- Even non-toxic gases can produce Hypoxia and dyspnea.

Notes

- SpCO monitors are available and work like SpO₂ monitors.
 - Normal: less than 3% (may be up to 6% in heavy smokers)
 - Exposure: 3% - 10%
 - Toxic: above 10%
- This protocol includes most **gas** exposures.
 - For most **skin** exposures refer to Burns.
 - For chemical **ingestions** or organophosphates, refer to OD / Tox.
- If substance is known, consider **Poison Control**: 800-222-1222.

Pediatrics

- May exhibit symptoms quicker than adults.

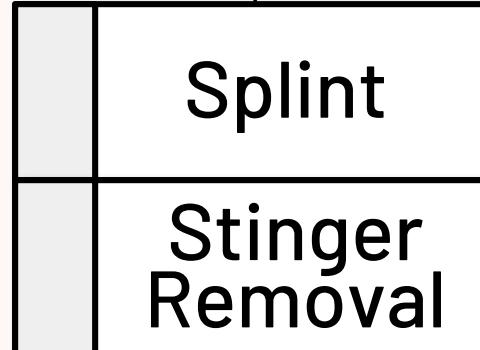
References

- ACLS: <https://www.ahajournals.org/doi/10.1161/CIR.0000000000000916> [Ver: 2020]
- PALS: <https://www.ahajournals.org/doi/10.1161/CIR.0000000000000901> [Ver: 2020]
- Medscape CO: <https://emedicine.medscape.com/article/2085044> [Ver: 11/19]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 25



Animal or Insect Trauma

Assess for:
• Allergic Reaction
• Bleeding



Consider
• Pain
• Underlying Injury

Sting / Bite Imperatives

- **Don't bring** animals, snakes or bugs with you to the ER.
- Remove distal jewelry if able.
- Venous tourniquets and wound suction are not indicated.
- Serious or deep bites (especially human and cat) need antibiotics.
- Inquire about the **rabies status** of any domestic animal.
- Consider ice for animal bites and insect stings.
 - Avoid ice for snake bites.

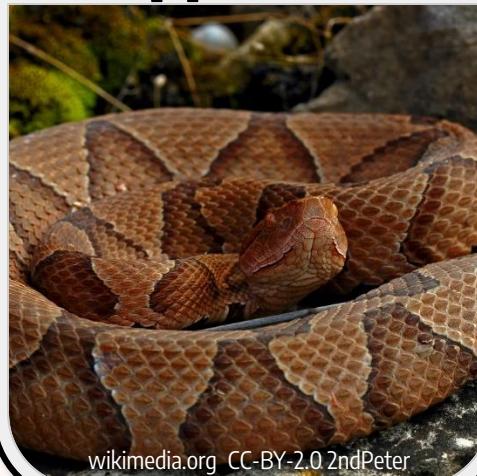
Notes

- Police can assist with animal control.
- Tick bites do not usually require EMS intervention.
- This protocol does not apply to **marine** stings or bites.
- Venomous **bites in VA**: Rattlesnake, Copperhead, Black Widow
- Use caution around all dangerous animals.
 - Do not risk provider safety to catch or photograph.

Rattlesnake



Copperhead



Black Widow

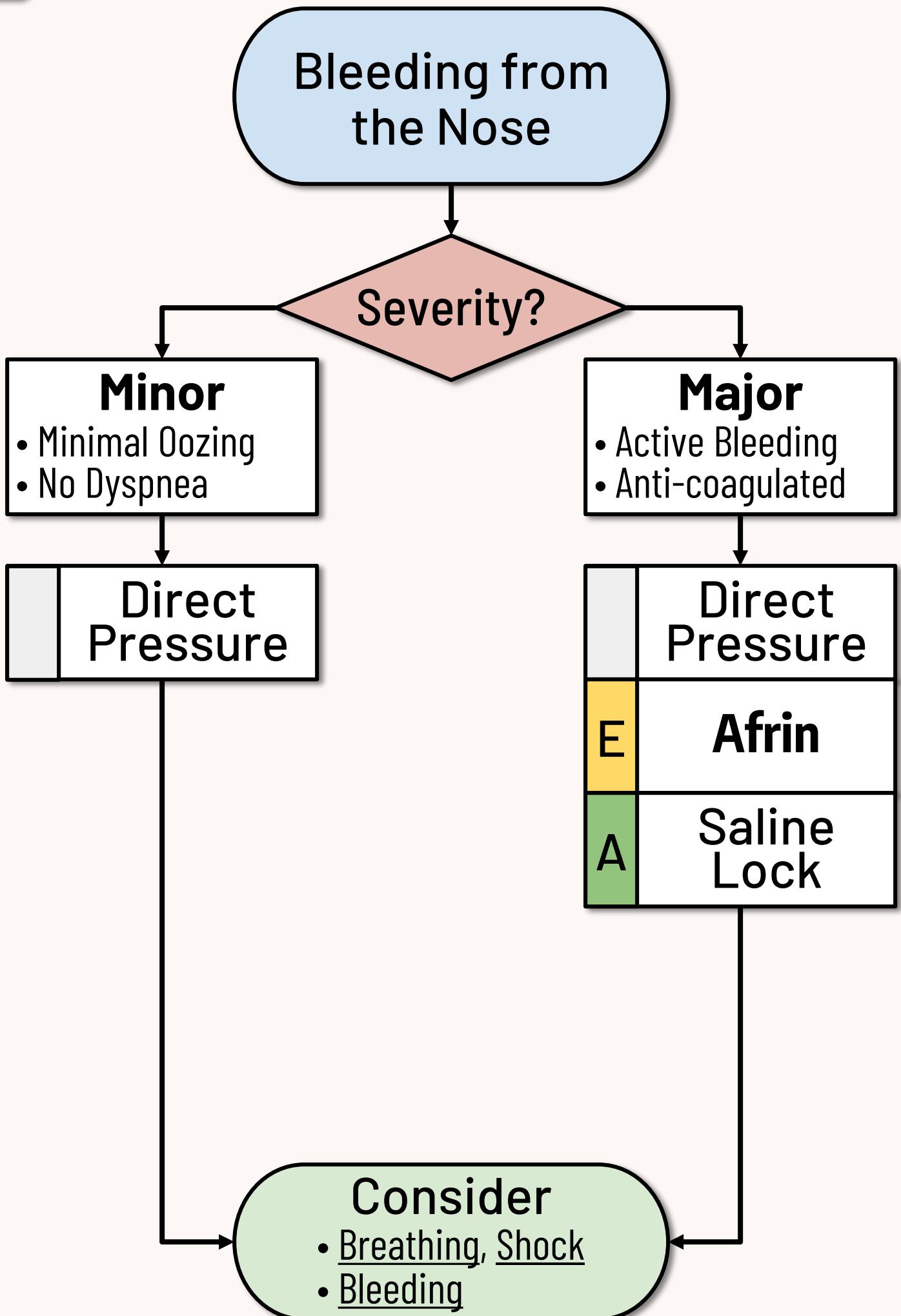


Pediatrics

- Watch for first time Anaphylaxis.

References

- Medscape Snakebite: <https://emedicine.medscape.com/article/168828> [Ver: 5/20]
- Medscape Widow Spider: <https://emedicine.medscape.com/article/772196> [Ver: 5/20]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 35



Afrin: 1 spray

IN

Q 5 min x3

Adult

Epistaxis Imperatives

- Have the patient lean forward slightly.
- Have patient squeeze the soft part of their nose together firmly.

Medications

- **Afrin® (Oxymetazoline)**: contraindicated with cardiac chest pain

Notes

- It is very difficult to quantify the amount of blood loss.
- Check pharynx for possible **posterior bleeding**.
- Not all nose bleeds are traumatic. The treatment is the same.
- Ask about anti-coagulation medications such as:
 - Aspirin
 - Coumadin® (warfarin)
 - Plavix® (clopidogrel)
 - Xarelto® (rivaroxaban)
 - Effient® (prasugrel)
 - Pradaxa® (dabigatran)
 - Brilinta® (ticagrelor)
 - Lovenox® (enoxaparin)

Pediatrics

- Nose bleeds are usually from minor trauma (nose picking).
- Use Peds Reference or other approved source for peds dosing.

References

- Medscape Epistaxis: <https://emedicine.medscape.com/article/764719>
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 29

Can't Oxygenate
Can't Ventilate

P	Induce	Adult
P	Paralyze	Adult

Attempt

Primary

- Have suction ready
- Max 3 attempts

Backup

- BIAD may work better after meds

Rescue

- Be prepared for bleeding

P	Intubate	Adult
---	-----------------	-------

P	BIAD
---	-------------

P	Bougie Cric	Adult
P	Needle Cric	Peds

Consider
 • Airway
 • Breathing

Etomidate: 0.3 mg/kg IV/IO x1

Ketamine: 2 mg/kg IV/IO x1

Rocuronium: 1 mg/kg IV/IO x1

Succinylcholine: 1 mg/kg IV/IO x1

Adult
Doses

RSI Mandatory Prerequisites

- Within the last twelve (12) months:
 - Pass a critical care, simulation based, in-service training.
 - Pass **fifteen (15) high fidelity** or human airway experiences.
- Within the last three (3) months:
 - Pass **three (3) standard** (or high fidelity) airway experiences.
- At least three (3) years experience as an active ALS provider.
- Ongoing **physician quality review** of all training & live attempts.

Imperatives

- **Two (2) RSI Medics** must be on scene and work together.
 - **Switch providers** after two (2) failed attempts.
 - Most experienced provider must attempt complex airways first.
- **Monitor EKG, SpO₂ and EtCO₂** with waveform. Try to maintain:
 - EtCO₂ of **35-40 mmHg** (ROSC: 40-50 mmHg; Increased ICP: 30-35 mmHg)
- **Preoxygenate** and predict airway difficulty as much as possible.
 - Consider **pretreatment** if hypotension or bradycardia are likely.

Medications

- **Etomidate** (Amidate[®]), **Ketamine** (Ketalar[®]): Use only one.
 - Beware (uncommon) laryngospasm with **Ketamine**.
- **Rocuronium** (Zemuron[®]): Onset - 1 min; Duration - 30 min
 - Non-depolarizing, minimal effect on potassium
- **Succinylcholine** (Anectine[®]): Onset - 30sec; Duration - 5 min
 - Depolarizing, use caution with hyperkalemia, myopathies, burns

Pediatrics

- Pediatric prehospital advanced airway is highly specialized.
- A simple **BIAD is appropriate** for most peds resuscitation.

References

- ACLS: <https://www.ahajournals.org/doi/10.1161/CIR.0000000000000916> [Ver: 2020]
- PALS: <https://www.ahajournals.org/doi/10.1161/CIR.0000000000000901> [Ver: 2020]
- NAEMSP Position Statement: <http://doi.org/10.1080/10903120500541506> [Ver: 2009]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 10

Secured Airway

Technique?

Versed & Fent

- Adequate Perfusion
- Short Transport

Propofol Drip

- Adequate Perfusion
- IV Pump Available

Ketamine Push

- Poor Perfusion
- Poor Access

P

Versed

P

Fentanyl

P

Propofol

P

Ketamine

Consider

- Airway
- Breathing

Fentanyl: 0.5-1 mcg/kg

IV/I/O Q 30 min PRN

Adult
Doses

Versed: 10-50 mcg/kg

IV/I/O Q 30 min PRN

Ketamine: 0.5-2 mg/kg

IM,IV/I/O Q 30 min PRN

Propofol: 10-50 mcg/kg/min

IV/I/O Titrated Drip

Sedation Mandatory Prerequisites

- Within the last twelve (12) months:
 - Pass a critical care in-service training

Imperatives

- Monitor patients **closely**. Sedation is a delicate balance.
 - Use clinical sense and vital signs **including SpO₂ and EtCO₂**.
 - Be ready to assist with Suction and Airway.
- Risks are increased if multiple sedation techniques are combined.

Medications

- **Fentanyl** (Sublimaze[®]), **Versed** (Midazolam[®]): Use together.
 - One without the other is unlikely to produce adequate sedation.
- **Ketamine** (Ketalar[®]): Useful for peds and asthmatics.
 - Double dose for IM (watch concentration: max 3 mL per IM inj.)
 - Consider pretreating peds for hypersalivation with **Atropine**.

Atropine: 0.01 mg/kg (max 0.5 mg) IV/IO x1 Peds

- **Propofol** (Diprivan[®]): Start gtt near 25 mcg/kg/min.
 - May start higher if young & healthy, or lower if elderly or frail.
 - Titrate 5-10 mcg/kg/min **no faster** than every 5 minutes.
 - **Use only** with an IV pump and accurate patient weight.

Pediatrics

- Use Peds Reference or other approved source for peds dosing.

References

- Medscape Sedation: <https://emedicine.medscape.com/article/809993> [Ver: 5/19]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 27

Significant
Hyperglycemia
(> 400 mg/dL)

Suspect If:
• Deep / Rapid Resps.
• Fruity Odor

P	NS Bolus	
P	Insulin	
P	Bicarb If pH < 7.1	Adult

Consider
• Diabetic

NS Bolus: 1,000 mL IV/IO Q 5 min x2

Adult
Doses

Insulin: 10 units IM, IV/IO x1

Bicarb: 50 mEq IV/IO x1

DKA / HHS Mandatory Prerequisites

- Within the last twelve (12) months:
 - Pass a critical care in-service training

Imperatives

- Acidosis from DKA can be profound - pH under 7.1 is dangerous.
- You may note several clues of DKA on history and physical:
 - "**Fruity**" smell (ketones) in the pt's breath
 - Deep, hard, and fast breathing (**Kussmaul's** respirations)
 - Report of **thirst** and **urinary frequency** for several days

Medications

- **Insulin** (regular, Humulin R[®]): Watch for rebound hypoglycemia.
 - Drug must be kept at an appropriate temperature.
- **Bicarb** (Sodium Bicarbonate): not recommended for pH over 7.1
 - Avoid if you do not have a way (i-STAT) to check blood pH.

Notes

- DKA may be precipitated by infection or other stressors.
- HHS (HHNK) is technically a non-ketotic hyperglycemic state.
 - **NS Bolus** and **Insulin** remain appropriate.
 - Acidosis and the traditional "fruity" smell are less likely.

Pediatrics

- DKA is a common initial presentation of diabetes in teens.
- Use Peds Reference or other approved source for peds dosing.

References

- Medscape DKA: <https://emedicine.medscape.com/article/118361> [Ver: 5/19]
- Medscape HHS: <https://emedicine.medscape.com/article/1914705> [Ver: 1/19]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 22

Bony Deformity
w/ Break in Skin

Suspect If:
• Visible Bone
• Laceration over fx.

P Rocephin

Consider
• Pain
• Extremity Injury

Rocephin: 1,000 mg IM, IV/IO x1

Adult

Open Fracture Mandatory Prerequisites

- Within the last twelve (12) months:
 - Pass a critical care in-service training



Imperatives

- Ensure an **appropriate trauma exam** and standard treatment.
 - Abx (antibiotics) are the last priority.
- An open fracture is also referred to as a "compound" fracture.
- Abx are appropriate for any overtly (grossly) contaminated wound.

Medications

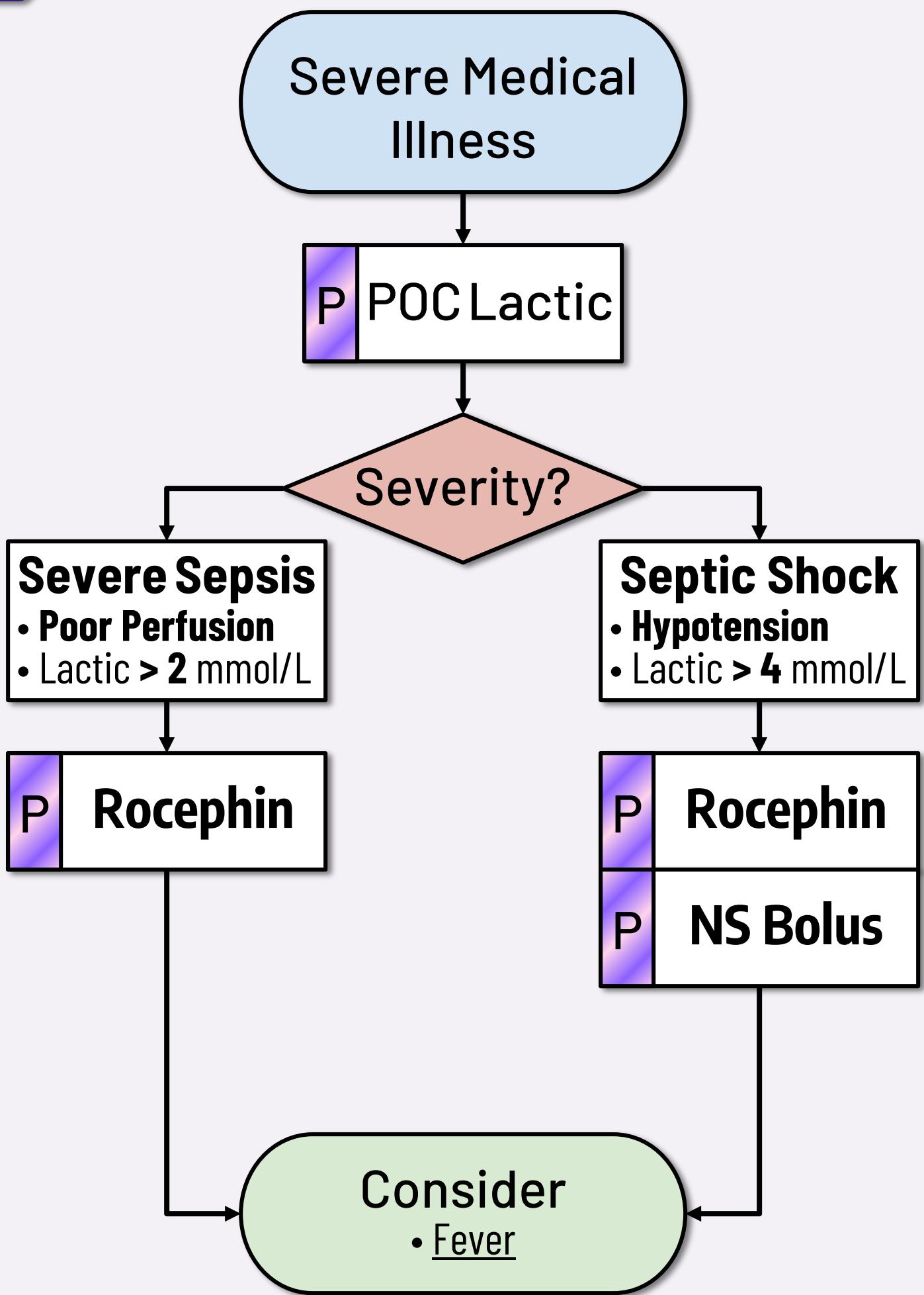
- **Rocephin®** (Ceftriaxone): appropriate for all open fractures
 - Avoid if pt allergic to Keflex, PCN or other cephalosporins.
 - Reconstitute with **NS** for IV, and **Lidocaine** for IM.
 - **Do not** use with **Calcium** - potentially fatal.

Pediatrics

- Use Peds Reference or other approved source for peds dosing.

References

- Medscape Open Fracture: <https://emedicine.medscape.com/article/1269242> [Ver: 5/20]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 32



Rocephin: 1,000 mg	IM, IV/IO	x1
---------------------------	-----------	----

NS Bolus: 30 mL/kg	IV/IO	x1
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Adult Doses

Sepsis Mandatory Prerequisites

- Within the last twelve (12) months:
 - Pass a critical care in-service training

- Acute major illness
- And lactic **above 2**
- Call a **SEPSIS Alert**



Poor Perfusion

- Suspect if **several** of these:
 - **Altered Mental Status**
 - Skin Pale, Cool, Diaphoretic
 - Tachycardia, Hypotension
 - Dyspnea, Tachypnea

Imperatives

- Consider drawing blood cultures (if able) before **Rocephin**.
- May provide fluids for septic shock even before hypotension.
 - Make sure to record and **tell ED staff the total volume** given.
- Advance to pressors if hypotension persists after fluid bolus.

Medications

- **Rocephin®** (Ceftriaxone): appropriate for all sepsis
 - Avoid if pt allergic to Keflex, PCN or other cephalosporins.
 - Reconstitute with **NS** for IV, and **Lidocaine** for IM.
 - **Do not** use with **Calcium** - potentially fatal.

Pediatrics

- Use Peds Reference or other approved source for peds dosing.

References

- Surviving Sepsis Campaign: International Guidelines 4th Ed. [Ver:2016]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 24

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Obstetrics

Deliver Baby

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Manage OB Complication

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• Policies

1. Prepare glucometer and test strip.
2. Identify and clean site.
 - The patient may have a preference.
3. Pierce skin with lancet to obtain blood sample.
 - May alternatively obtain blood from an IV attempt.
4. Place blood in/on reagent strip per manufacturer's instructions.

Glucometer

1. Enter patient info into monitor.
 2. Prepare chest and place electrodes.
 3. Instruct pt to lay still. Press button on monitor to acquire 12-lead.
 4. Acquire EKG while **not moving**. Try to **minimize artifact**.
 5. Transmit EKG to ED. Contact receiving hospital to confirm.
- BLS: May read machine interpretation. ALS: May interpret directly.

E 12-Lead

1. Investigate for good site.
 - AC and wrist are common sites.
 - Try to avoid legs, forehead and jugular unless necessary.
 - Advance rapidly to **I0 in emergencies**. Start with I0 in a CODE.
 2. Clean site well. Apply a venous tourniquet.
 3. Perform venipuncture with appropriate size cath.
 4. Confirm placement with flash of blood. (Draw labs if available.)
 5. Attach lock and flush with saline. Secure well with tape.
- NOTE: It is almost always inappropriate for EMS to access an established indwelling central line (such as **dialysis** or **PICC line**). EMS may consider using established lines in a CODE only.

A Saline Lock

1. Help patient **cough if able**.

2. Attempt thrusts only if choking:

- Adult: Abdominal thrusts (Use chest thrusts if obese/preg.)
- Child: Abdominal thrusts
- Infant: 5 back blows then 5 chest thrusts

3. Keep going until choking relieved or pt becomes unresponsive.

- **Begin CPR** if unresponsive.

4. Remove any foreign bodies from mouth before ventilation.

- Do not perform blind finger sweeps.

Heimlich

1. Awake pts may suction themselves.

2. Prepare suction device with tip:

- Oropharynx: **hard tip** (Yankauer)
- **E** BIAD/ETT/trach/stoma: **flexible cath** (French).

3. Insert tip with suction off and/or vent hole uncovered.

- May use 2-3 mL saline to loosen secretions.

4. Cover vent hole and apply suction as tip is withdrawn.

Suction

1. Confirm patient is unresponsive.

2. Visualize posterior pharynx.

- May utilize laryngoscope. (Average adults use Mac #3.)

3. Use Magill Forceps to remove any identified foreign bodies.

- Consider using **suction**.

4. Secure Airway with BIAD if needed.

A

Magill Forceps

1. Prepare appropriately sized BVM.
 - Connect to high-flow **oxygen**.
 - Extend O₂ reservoir if equipped.
2. Maintain adequate mask seal. **Dual rescuers is preferred.**
 - Single Rescuer: Use E - C clamp technique.
 - Dual Rescuers: Use two handed technique.
3. Ventilate with slow deliberate squeezing of bag.
 - Assist with natural rate if adequate.
 - Provide additional breaths if natural rate is inadequate.

BVM

1. Explain procedure to pt.
 - Consider an NPA.
 2. Start the flow of oxygen to the mask. Set PEEP at 7.5 cm H₂O.
 3. Place the mask over patient's nose and mouth.
 4. Ensure adequate seal by adjusting placement and straps.
 5. Provide encouragement. Monitor closely for complications.
 - **Remove promptly if vomiting or unresponsive.**
- BLS: Maintain PEEP at 7.5 cm H₂O. ALS: May titrate PEEP.

E

CPAP

	Chest Compression
--	----------------------

1. Confirm no pulse and not breathing.
2. Place hands on chest:
 - Adult: Two hands with fingers interlaced over center of chest
 - Child: One hand over center of chest
 - Infant: Two hands circling chest using thumbs
3. Push hard and fast. Compress about $\frac{1}{3}$ the depth of the chest.
4. **Minimize interruption.** Compressions are the most important.
5. Switch personnel every 2 min or sooner if needed.

NOTE: Consider placing a mechanical device after the first 2 min.

	Defib
--	-------

1. Cut clothes to expose chest.
 - Consider shaving excessive hair.
 - Remove any medication patches. Wipe off residue.
2. Apply defibrillator pads. Avoid implanted devices or catheters.
3. When indicated, stop compressions and analyze cardiac rhythm.
 - BLS: Use AED "analyze" function. ALS: May interpret directly.
4. If shock indicated: charge defibrillator while continuing CPR.
 - Follow manufacturer's or OMD's dosing guideline.
 - Use Peds Reference or other approved source for peds dosing.
5. **Assertively state "CLEAR!"** Visually confirm everyone is clear.
6. Defibrillate by pressing the **SHOCK** button.
 - Restart compressions immediately.

ALS: Consider **dual sequential** defibrillation for persistent VT/VF:

- Attach two separate defibrillators. Do not overlap pads.
- Defibrillate **at the same** time using both machines.

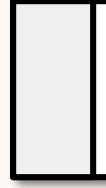
A	IO
---	----

1. Prepare IO device and select site.
 - Consider pre-treating for Pain.
2. Insert IO following manufacturer's recommended procedure.
3. Secure well with bulky dressing or other device.
4. Consider admin of Lidocaine to adults for local discomfort.

Lidocaine: 10 mg	IO	Q 5 min x3 PRN Pain	Adult
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5. Consider using a pressure bag to increase fluid rates if needed.

1. Measure appropriate NPA size:
 - Tip of nose to angle of jaw
2. Apply water-soluble lube to NPA.
3. Insert NPA into nare with bevel toward septum.
 - Start on larger nare. Rotate slowly if resistance is felt.
4. If unsuccessful: try more lube, smaller size and / or other side.
 - Minor **nose bleeding is common.**

 NPA

1. Measure appropriate OPA size:
 - Corner of mouth to angle of jaw
2. Insert OPA into mouth slowly. May use tongue blade to assist.
 - Insert with tip to **nose for adults** and tip to **toes for ped.**
3. Rotate into place. Remove promptly if any gagging.

 OPA

1. Measure appropriate tube depth:
 - Tip of nose to the stomach
2. Only place a prehospital OG-tube with an **appropriate airway**.
3. Lubricate the OG-tube.
4. Place into airway device per manufacturer's recommendation.
5. Advance the tube gently until the appropriate depth is reached.
6. Confirm placement and then secure the tube.
 - Inject air. Listen for bubbles in the stomach.
 - Attempt to aspirate gastric contents.
7. Continue to decompress the stomach of air and / or food.
 - Use low suction or manually aspirate with large tip syringe.

 E

OG-Tube

E

BIAD

1. Prepare appropriately sized device:
 - Apply water-soluble lube.
 - Average adults use an **iGel #4 (green)**, or a **King #4 (red)**.
2. Pull jaw and tongue forward, or use jaw thrust.
3. Insert BIAD into pharynx slightly rotated to either side.
 - Rotate back to mid-line while advancing.
 - Rock BIAD gently to seat in airway.
4. **If balloon(s) present:** inflate per manufacturer's instruction.
5. **If dual lumen:** attempt alternate port if poor ventilation.
6. Confirm placement. Secure well with tape or other device.
 - Use auscultation, capnometry, EtCO₂ and SpO₂ if available.
7. If BIAD fails, **try again with a different size.**
 - Most common failure of a BIAD is inappropriate size.

I

Needle Decompress

1. Identify side and clean best site:
 - 2nd intercostal mid-clavicular
 - Backup site: 4th intercostal mid-axillary
2. Insert large (12- or 14- gauge) IV needle into the skin at 90°
 - Preferably use a needle specifically made for decompression.
 - Go just over the top of the rib to minimize bleeding.
3. Advance until a "pop" is felt and / or you hear a hiss of air.
 - Hold needle in place, **advance cath only** the rest of the way.
4. Remove the needle, leaving the plastic cath in place.
5. Cover the cath with a chest seal.
6. Vent chest seal or **repeat decompression** if dyspnea returns.

 Wound Care

1. Apply **direct pressure** for bleeding.
 - Consider tourniquet or packing.
2. If bleeding is easily controlled, irrigate contaminated wounds.
 - Consider pre-treatment of Pain.
3. Cover wounds with sterile gauze and apply appropriate dressing.
 - Monitor and **document distal pulse**, movement and sensation.
4. Cover burns with sterile burn dressing.
5. Apply a chest seal (occlusive) to any neck or trunk penetration.

 Tourniquet

1. Apply **direct pressure** for bleeding.
 - Confirm massive limb bleeding.
2. Apply tourniquet proximal to bleed per manufacturer instruction.
3. **Tighten** until bleeding is controlled. **Secure windlass** in place.
 - Consider placing second tourniquet if bleeding continues.
 - Consider treatment of Pain.
4. **Record time** on tourniquet or directly on the patient's skin.

 Wound Packing

1. Apply **direct pressure** for bleeding.
 - If stable, consider simple wound care.
 - If massive bleeding from a limb, consider a tourniquet.
 - Do not pack skull or chest wounds. Do not pack natural orifices.
2. If bleeding continues, **wipe** gross blood and clot out of wound.
3. Insert packing inch by inch as deep as possible into wound.
 - Avoid rapidly stuffing a large wad. **Pack deep** and deliberately.
 - Insert as much packing into the wound as possible.
4. Re-apply **direct pressure** on top of packing.
 - Consider treatment of Pain.

	SMR with C-collar
--	----------------------

1. Provide **manual** cervical SMR.
2. Prepare appropriately sized **c-collar**.
 - Apply c-collar while maintaining manual cervical SMR.
3. **Use adjuncts** to minimize all spinal motion while transferring.
 - Such as: backboard, scoop stretcher, vacuum mattress, etc.
4. Once on the cot, **adjuncts may be removed** if appropriate.
 - Prolonged transport on a **backboard is potentially harmful**.
 - Awake, compliant patients can be safely secured with seat belts.
 - Up to 30° of head elevation may be used to maintain an airway.
5. Manual cervical SMR may be released if the patient will hold still.
 - Otherwise: secure the head to an appropriate adjunct.

NOTE: Some patients (due to size, age or anatomy) will not be appropriate for standard equipment. Never force a patient into a non-neutral position. Use alternate techniques or manual SMR.

	Splint
--	--------

1. Provide manual immobilization.
 2. Remove or cut clothing if able.
 3. Check and **document distal pulse**, movement and sensation.
 4. Select appropriate splint and secure above and below injury.
 5. Recheck and **document distal pulse**, movement and sensation.
 - Reapply or remove splint if any decline in distal function.
- NOTE:** Consider traction splint for isolated femur fracture.

E	Reduce Deformity
---	---------------------

1. Confirm **no pulse distal to injury**.
2. Explain procedure to patient.
 - Consider pre-treating for Pain if time and condition allow.
3. Manually reduce injury and splint in anatomic neutral position.
4. Recheck and **document distal pulse**, movement and sensation.

	Stinger Removal
--	--------------------

1. Inspect wound for stinger.
2. If visualized, scrape stinger away.
 - Use tool with firm edge, like a credit card.

I

Pacing

1. Place defib pads and 12-Lead.
 - Consider pre-treating for Pain.
2. Place monitor in "pacing" mode.
 - Select initial rate of **80 bpm** for adults.
 - Use Peds Reference or other approved source for peds rate.
 - Select initial energy of **80 mA** for all patients.
 - Alternate: follow manufacturer's or OMD's dosing guideline.
3. Slowly increase mA output until electrical capture is noted.
 - Note pacer spikes on EKG screen.
4. Once electrical capture is noted, check for mechanical capture.
 - Pulse should correspond to electrical activity on EKG screen.
5. Continue to increase mA output if no mechanical capture.
6. Maintain a balance between pt comfort and medical necessity.
 - Treat Pain aggressively if patient condition allows.
 - Consider reducing energy if appropriate.

I

Cardioversion

1. Place defib pads and 12-Lead.
 - Consider pre-treating for Pain.
2. Enable **SYNC** mode and charge to **50 J** for adults.
 - Alternate: use manufacturer's or OMD's dosing guideline.
 - Use Peds Reference or other approved source for peds dosing.
3. **Assertively state "CLEAR!"** Visually confirm everyone is clear.
4. Cardiovert by pressing **and holding** the **SHOCK** button.
 - There may be a noticeable delay before energy is delivered.
5. Reassess patient and rhythm. Escalate and repeat as needed.
 - Follow manufacturer's or OMD's escalation guideline.
 - Use Peds Reference or other approved source for peds dosing.

E

Deliver Baby

1. **Expose patient.** Have a chaperone.
 - Visually inspect vaginal area.
2. Identify presenting part. Prioritize **transport if not crowning.**
 - If any problems, manage complications and transport ASAP.
3. **Deliver Head.** Suction mouth, then nose with bulb suction.
4. **Check for cord around neck.** Slip over head if found.
5. **Deliver shoulders.** Deliver top shoulder first.
 - May flex mom's legs to chest to assist.
 - May press on mom's lower abdomen to assist.
7. Deliver body. Caution: **neonates are slippery.**
8. **Clamp and cut cord.**
 - Clamp about 2 in. away from the baby. Cut between clamps.
9. Manage Neonate. (Stimulate, warm, clean, dry.)
10. Massage mother's lower abdomen (fundal massage).
 - This should help stop postpartum bleeding.
11. Prepare for delivery of the placenta. Do not pull on the cord.
 - Take the placenta to the hospital with mom and baby.

E

Manage OB Complication

1. **Prioritize emergent transport.**
2. **Tell mom: Do Not Push.**
2. Continue standard care. Treat: Breathing, Pain, etc.
 - EMS can do very little for: preemies, twins, or breech birth.
3. Try to help during transport.
 - Failed Delivery / Shoulder Dystocia: transport knees to chest
 - Prolapsed Cord: fingers in vagina to remove pressure on cord
 - Breech: support presenting part, do not pull on part

1. Confirm all alternatives have failed.
2. Prepare supplies and **suction**.

3. **Locate cricothyroid** membrane. **Clean skin** if time allows.
 - Visualize spot under thyroid cartilage and above tracheal rings.

4a. **Needle:** Use small syringe with saline.
 - Attach 10-12g needle & cath. Insert at 90°.
 - Pull suction. Advance slowly till bubbles.
 - Angle down. Advance cath. Remove needle.
 - Use Transtracheal Jet Insufflation device.

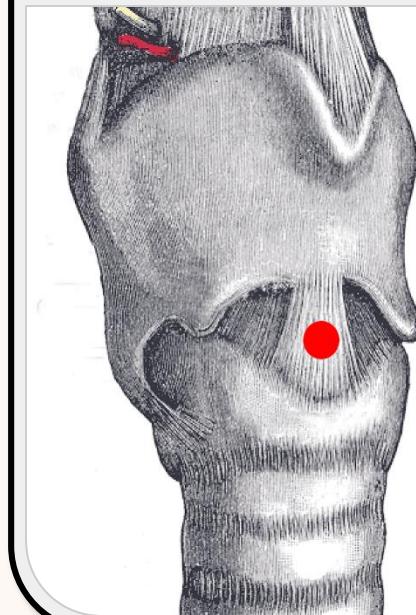
4b. **Bougie:** Expect blood, this is a tactile skill.
 - Make large **vertical incision** through skin.
 - Find the cricothyroid membrane w/ finger.
 - Stab **horizontal incision**, bubbles are good.
 - **Insert a bougie**, then a **trach** over bougie.
 (Or #6 ETT: advance 1-2 cm past balloon.)
 - **Inflate balloon** taught. Remove bougie.

5. **Confirm** placement. **Secure** w/ tape/device.
 - Use auscultation, clinical response, skin color, SpO₂ and/or EtCO₂.

P

Cric

Cricothyroid Membrane


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1. Press button to **turn on** handheld.
2. Press: i-STAT Cartridge.
3. Use number keys to enter the Operator ID and Patient ID.
4. **Scan the barcode** cartridge lot number and remove from pouch.
6. Use a pipette to dispense sample up to the **fill mark**.
9. **Fold the snap closure** over the sample well until it clicks.
10. Push the **cartridge into the handheld** port until it clicks.
11. **Wait** for test to complete. Review results and discard cartridge.

P

i-STAT
Labs

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- Drug Box

Page 104 - Abuse

- Patient Abuse and Neglect
- Infant Abandonment

Page 105 - Bystanders, Physicians

- Verification of On Scene Personnel
- Physician Orders

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- Withholding Resuscitation
- Termination Resuscitation

Page 107 - LVADs

- Left Ventricular Assist Devices

Page 108 - Standbys, Police

- EMS Standbys
- Scene Rehab
- Law Enforcement Assistance

Page 109 - Refusals

- Patient Refusals
- Who is a Patient

Page 110 - Destination

- Destination Triage Plan: STEMI, CVA, Trauma

Page 111 - Deceased, MCI

- Deceased Subjects
- Mass Casualty

Drug Box

- Agencies participating in the regional drug box exchange program shall follow the procedures below regarding the use and exchange of boxes at regional hospitals.
- EMS provider breaks seal and places seal in top tray of drug box. There will be a new/unused GREEN seal in both the box, and another in the narcotics box, and must be saved for resealing the opened box(es) after use.
- EMS provider documents medications used on the patient care report and the WVEMS/BREMS Regional Pharmacy Administration Record Physician Order Form. A physician's signature shall be obtained when a provider obtains online orders for medications (including DEA number in any and all cases where online orders for narcotics are used). Boxes will be returned to the Emergency Department, if the signature of the physician or nurse is not legible and/or there is not a DEA number when needed and the regional council will be notified. Enter the RESEAL serial number(s) on the WVEMS/BREMS Regional Pharmacy Administration Record Physician Order Form. Except under extenuating circumstances the drug box should only be used on one patient and exchanged after use.
- EMS provider and E.D. nurse, physician, pharmacist or pharmacy technician and/or other person as authorized, check used box to account for narcotics. Both assure that all trash and used needles have been removed from the box. The old seal should be left in the box and forwarded to the pharmacy. The nurse, physician, or authorized person will sign the appropriate space indicating that all narcotics have been accounted for. After everything is accounted for, the AIC shall take the green reseal(s) provided in the drug box/narcotics box, and seal the box(es).
- E.D. nurse, physician, pharmacist or pharmacy technician or authorized person issues a new box to the EMS provider, both complete the "Drug Box Exchange Log". The seal on the new box is not to be broken until needed on the scene of an emergency. Boxes on which seals have been broken must be returned to the E.D. or Pharmacy for exchange. If the facility requires a copy of a PPCR or patient reporting printout with an explanation of why the seal was broken this must accompany the box.
- Pharmacy will fill the box in accordance with the contents used from the box schematic. The pharmacy checks the box to assure all contents are present and in-date. The box is sealed with a numbered seal provided by the EMS Council. A hospital sticker indicating the date of the first drug to expire is to be placed on the outside of the box.
- If a box is returned to the pharmacy with dirty needles or excessive litter and debris, the box will be held out of service and the EMS Council notified. The Council will in turn notify the agency and/or personnel responsible and they will be required to report to the hospital to correct the situation. Repeated occurrences by the same provider/agency may result in suspension or revocation of drug box privileges.
- Refilled boxes are returned to the E.D. or stored in the pharmacy for distribution. Each hospital is responsible to assure that the boxes are properly secured against tampering while at the hospital.
- If an EMS provider opens a box and finds one or more medications missing he/she shall document such on the PPCR or patient reporting software and the EMS provider shall notify the EMS Council in writing of the discrepancy; noting the box number and seal number in the report. If the missing drug is a narcotic refer to item # 11. As long as the missing medication is not a narcotic, the box may be returned to service by the hospital pharmacy after restocking the box.
- No item for item exchange may be made in the E.D. The box must be returned to the pharmacy to be checked, restocked, and resealed.
- When narcotics are used on a call, the ALS technician will bring the unused portion to the E.D. The nurse, physician, or authorized person checking the box will record the amount remaining on the patient care report and the WVEMS/BREMS Regional Pharmacy Administration Record Physician Order Form, and sign his/her name. The authorized person signing and the ALS technician will then properly dispose and accounting for the narcotic according to hospital policy.
- In the event that medications are missing are missing from the box the following steps must be followed:
 - A. If the seal is found to be broken during a routine drug inspection:
 1. Avoid handling the box.
 2. Contact local law enforcement. (NARCOTICS ONLY)
 3. Contact the agency Chief or Captain
 4. Contact the Western Virginia EMS Council
 5. Complete and file a drug diversion form with the Office of EMS (see: [12 VAC 5-31-520, D of the Virginia EMS Rules and Regs](#))
 6. Have drug box inspection forms ready for police, EMS Council, and Office of EMS personnel.
 - B. If the seal is on the box and medications are missing while performing patient care or after arriving at the hospital:
 1. Continue patient care, you may continue to utilize the contents of the box.
 2. If the medication needed is not present consider requesting another unit to meet en route, DO NOT DELAY TRANSPORT.
 3. Upon arrival at the hospital notify the E.D. Nursing Supervisor of the problem.
 4. Follow the procedures listed in 11-A.
 5. The box must be secured in the hospital and may be released only after being notified by the EMS Council.
 - C. In all cases you will be asked to write a report stating the events surrounding the incident. It should include the box number, seal number, witnesses and a description of what occurred.
 - D. Depending on the individual circumstances, the Operational Medical Director of the agency or the Regional Medical Director may suspend the agency's authorization to administer drugs in the pre-hospital setting pending the outcome of a formal investigation by law enforcement or the Office of EMS, and may require implementation of additional security measures at the agency's expense.

Patient Abuse and Neglect

- Abuse in this policy is considered any physical, sexual and / or mental injury of any child, domestic partner, senior citizen, or incapacitated adult by another person through action or neglect. Abuse may be at the hand of a partner, parent, caregiver, spouse, neighbor, or adult child of the patient. The recognition, appropriate reporting, and referral of abuse is a critical step to improving patient safety, providing quality health care, and preventing further abuse. This also ensures EMS compliance as **Mandatory Reporters** under the Code of Virginia.
- Be aware of the potential for abuse in all patients. In any case where abuse is suspected, first protect the patient and the EMS team from harm. Collect as much information as possible and preserve physical evidence if able. Signs of abuse may include:
 - **Physical:** injuries that are inconsistent with the reported mechanism, injuries in different stages of healing, defensive injuries (e.g. to forearms), or injuries during pregnancy
 - **Psychological:** excessive passivity, compliant / fearful behavior, excessive aggression, violent tendencies, excessive crying, behavioral disorders, substance abuse, or med non-compliance
 - **Neglect:** inappropriate level of clothing for weather, inadequate hygiene, inattentive caregiver, or malnutrition
- Immediately report any suspicious findings to both the receiving hospital (if transported) and social services:
 - For **children** contact Child Protective Services at (800) 552-7096.
 - For **adults** contact Adult Protective Services at (888) 832-3858.
 - For **domestic violence** offer police intervention and provide the patient with the National Hotline, 1-800-799-SAFE.

Infant Abandonment

- The Code of Virginia (§18.2-371.1 B.2) **allows** a new parent to **surrender their newborn** to a hospital or EMS agency under certain circumstances. EMS providers should accept without hesitation, assess, and transport any infant surrendered to them.

Verification of On Scene Personnel

- The delivery of prehospital care at the scene of an emergency is the responsibility of the **responding EMS resources**. Occasionally, bystanders may be crucial to providing or assisting with treatment. Bystanders can be considered when the immediate needs outweigh the EMS resources available, or if a bystander can provide a unique resource. EMS should never authorize or perform any intervention outside their scope **or comfort level**.
- Bystanders may have a unique understanding of a specialized **medical device or condition**. EMS should consider the advice of patients or bystanders, such as caretakers managing a vent at home, or a patient with an LVAD, etc. EMS must call **Medical Control** for any orders to deviate from routine EMS care.
- **BLS procedures** are frequently taught as a component of common first aid. Appropriate bystanders may assist with common first aid when EMS resources are insufficient. EMS must direct bystanders and maintain overall responsibility.
- **ALS interventions** are only appropriate by responding ALS resources. A formal mutual aid agreement or authorization by **Medical Control** must exist prior to delivery of ALS interventions. EMS has no authority to enable non-EMS medical personnel (RN, NP, PA, CRNA, RT, etc.) to perform ALS interventions.

Physician Orders

- Physicians represent a unique resource. EMS may follow written or verbal orders from a patient's established physician. EMS may also follow **appropriate** verbal orders from a physician bystander on scene. EMS should only consider orders outside these protocols **if the physician bystander accompanies EMS** to the hospital. Call **Medical Control** if there is any conflict.

Withholding Resuscitation

- Resuscitation is not appropriate if efforts are futile or against the patient's explicit wishes. **Withhold resuscitation if any signs of obvious death, mortal injury, or if the patient has a DNR / POST.**
- EMS should attempt to validate any DNR / POST with family or health care workers. Begin resuscitation and call **Medical Control** if there is any question. EMS may stop resuscitation once verified.

Termination of Resuscitation

- Transportation during resuscitation is not optimal and exposes EMS crews to significant risk. This policy balances the risk of emergent transport against the benefit of prolonged resuscitation.
- **Prioritize transport for any special case.** If attempting resuscitation, these special cases may benefit from resources not available in the field. Prioritize compressions and AED and transport ASAP.
- **ALS** should resuscitate on scene for non-special cases. Call **Medical Control** if no ROSC **within 30 min.**
- BLS should try to turn over care to ALS (or the hospital) within 15 min. **Prioritize transport if a hospital is within 15 min.** Extended BLS resuscitation beyond 15 min may still be successful if the arrest is witnessed by EMS or if any shock is ever advised by the AED. **Prioritize transport for any witnessed or shocked arrest regardless of time to the hospital.** Call **Medical Control** if not witnessed, and not shocked, and no ALS after 15 min.

Special Cases

- Suspected Traumatic Cause
- Pediatric or Pregnant Patients
- Hypothermia or Drowning
- Lightning or Electric Shock
- Overdose or Poisoning

ALS Termination

- Not a **Special Case**
- No ROSC **within 30 min**

BLS Termination

- Not a **Special Case**
- Not witnessed by EMS
- Never shocked by AED
- No ALS **within 15 min**
- No ROSC **within 15 min**

LVAD (left ventricular assist device)

- LVAD patients can quickly become very complicated.
 - Their life literally depends on an external pump they wear.
 - **When in doubt, follow regular protocols.**
- All LVAD patients will have an assigned "**LVAD center**".
 - The patient should have the emergency phone number.
 - EMS may try to **contact the LVAD center** with any problems.
 - Call **Medical Control** to verify any recommendations.
- Diagnosing LVAD problems is complex.
 - **Do not unplug anything.**
 - Consider the advice of the patient and any trained bystanders.
 - Some LVADs may provide voice prompts for troubleshooting.
 - Call **Medical Control** to verify any recommendations.
- Patients who are alive and well **may not have a palpable pulse**.
 - It may be impossible to palpate or auscultate a blood pressure.
 - Do not start CPR on patients who are obviously alive and well.
- An LVAD makes diagnosis of cardiac arrest difficult.
 - Look for other signs of life and listen for the LVAD pump noise.
 - Chest compressions may harm an LVAD.
 - Consider the advice of trained bystanders or the LVAD center.
 - Call **Medical Control ASAP for any unconscious LVAD patient.**
- **Bring all LVAD supplies** and information to the ED with you.
 - Bring batteries and cords.
 - Bring paperwork and contact information.
- Consider destination triage in consultation with **Medical Control**.

EMS Standbys

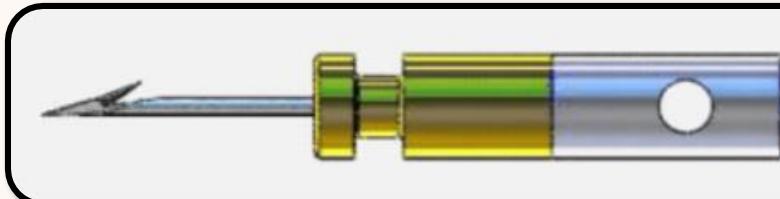
- EMS may be utilized to standby at a scene without a specific pt.
- EMS should complete a full report for any patients or treatments.
 - Consider simple interventions such as PO pain meds and ice.
 - Document a refusal if any patient declines transport.

Scene Rehab

- EMS may provide rehab for **large scenes** like structure fires, etc.
 - This may include abbreviated screening and / or treatment.
 - Rehab is **only applicable to fellow responders**.
- EMS should coordinate all activity with incident command.
- Standard rehab includes a specific area dedicated to **medical ops**.
 - Rehab generally involves checking vital signs and simple exam.
 - Provide PO fluids and food. Monitor until back to baseline.
 - An abbreviated record may be substituted for a full report.
 - Incident command will dictate who may return after rehab.

Law Enforcement Assistance

- EMS may also be called to evaluate a patient in custody.
 - Always offer transport. EMS can never recommend a refusal.
 - EMS can provide treatment, but cannot "clear" a patient.
 - Officers may elect to decline transport, but should sign a refusal.
 - Officers should accompany any patient in custody.
 - Call **Medical Control** if there is any conflict.
- EMS may remove CEW (**Taser™**) probes as part of wound care.
 - EMS should document a full report.
 - Officers may sign a refusal for a person under their arrest.
 - Probes are small straight barbs. Stretch skin tight and pull out.
 - The **barb is in-line with the score mark** on the probe.



← **Score Line**

Patient Refusals

- Refusals represent a unique medical risk. EMS should complete a formal refusal with **at least one witness signature** for any patient who declines any intervention and / or transport.
- EMS should encourage treatment and transport for every patient.
 - EMS may not refuse transport if requested.
- All patients who wish to refuse must be **eligible** to make their own decisions. Eligible patients include:
 - Legal Adults (18 y/o and older)
 - Minors (< 18 y/o) who are married, divorced or emancipated
- The Code of Virginia (§54.1-2969 G) allows **pregnant minors** to direct treatment **only relating to the delivery of their baby**.
- The responsible party (parent, guardian, etc.) may refuse for a patient who is not eligible to refuse on their own.
- All patients or guardians who wish to refuse must also demonstrate **capacity**. This requires them to be awake, oriented, and able to demonstrate understanding of the potential risks associated with their refusal.
 - Patients with altered LOC lack capacity and cannot refuse.
 - Suicidal patients lack capacity and cannot refuse.
- Call **Medical Control** and enlist police help for any patient who attempts to refuse, but should not be allowed to do so.

Who is a Patient?

- Any person for whom EMS is specifically summoned should be considered a patient. Every patient should have a full report completed with a transport or a refusal documented.
- Not every person on scene of an emergency needs to be considered a patient. EMS is not obligated to document a refusal for a person who declines EMS assessment, **and** is acting normally without obvious distress, **and** for whom EMS was not specifically summoned.
 - A refusal should be documented if there is any doubt.

Destination Triage Plan

- Some specific conditions benefit from prehospital triage to a more appropriate destination. Consider increasing transport time **no more than 30 minutes** to reach a more capable facility if any of the following emergency conditions are identified.
- The decision to pass a less capable facility and therefore increase transport time should include consideration of **air transport**, the stability of the patient and system resources at the time. Call **Medical Control** if there is any doubt or conflict.



Acute STEMI with chest pain

- Patients should have an appropriate presentation (chest pain, etc) and an EKG identified as *** **ACUTE MI** *** by automated analysis.
- **ALS**: may manually identify EKG changes of 1 mm or more of ST segment elevation in 2 or more anatomically contiguous leads.
- Appropriate WVEMS cardiac hospitals (with emergent PCI) include:
 - Carilion **Roanoke** Memorial and Lewis Gale Hospital **Salem**
 - **Danville** Regional and Lewis Gale Hospital **Montgomery**

Acute (large vessel) CVA

- Patients should have a definite **time last normal under 6 hrs** and at least one positive finding on a **Cincinnati Stroke** (FAST) exam.
- Patients **must** also have a positive finding on a **VAN** exam.
- Appropriate WVEMS stroke hospitals (PSC or CSC) include:
 - Carilion **Roanoke** Memorial and Lewis Gale Hospital **Salem**

Major or Unstable Trauma

- Patients should meet trauma triage guidelines with **major injury** and / or **major mechanism**.
- Appropriate WVEMS trauma hospitals (Level I or II) include:
 - Carilion **Roanoke** Memorial

Deceased Subjects

- EMS may occasionally encounter a deceased subject.
 - Maintain respect for the deceased and their family.
 - Always **involve the police**. Always **write a full report**.
- If resuscitation was not attempted:
 - Consider all deceased subjects as a potential **crime scene**.
 - Limit EMS ingress/egress and coordinate with the police.
 - Police may request EMS to confirm death.
- If resuscitation was attempted and subsequently terminated:
 - **Medical Control** should already be involved.
 - Do not remove any pads, leads, invasive lines or tubes.
 - EMS may disconnect hardware such as EKG wires and BVM.
 - Defer to the direction of the police or Medical Examiner.
- In some situations the police may release the body.
 - EMS should not transport the deceased to the ED.
 - EMS may offer courtesy transport to a funeral home.
 - EMS may remove lines, tubes, etc if the body is released.
 - Courtesy transport is not required. Defer to agency policy.
 - Inform Medical Control of any courtesy transports.
- **EMS may confirm death** in several ways including:
 - Lack of pulse, respirations or response.
 - Asystole in at least two cardiac leads with gain at max.
 - **Obvious Death** or **Mortal Injury**.

Mass Casualty

- **Call for more help. Begin a standardized MCI triage system.**
 - Several systems are described, such as START and JumpSTART.
- Do the most good for the most people until adequate help arrives.
 - Consider utilizing any available resources, such as bystanders.
 - Prioritize life-saving interventions.
 - Triage and prioritizing care during an MCI is not abandonment.

Adenosine**Adenocard®****Use**

- Tx: SVT
- Adults: **12 mg** IV/IO
- Peds: 0.1 - 0.2 mg/kg

Caution

- PMH: COPD, asthma
- PMH: WPW, bradycardia, AV block
- PMH: Theophylline, Digoxin®
- May cause: palpitations
- **Preg C:** safety not established

Notes

- Give **rapid IV push** followed by **rapid saline flush**.
- Protocols: Tachycardia
- Antiarrhythmic: Class V - Onset: seconds - Duration: 10 s
- <https://reference.medscape.com/drug/342295>

**Afrin®****Oxymetazoline****Use**

- Tx: Nosebleeds
- Adults: **1 spray** IN
- Peds: 6 y/o and above only

Caution

- PMH: CAD, HTN
- May cause: HA, nose discomfort
- **Preg C:** safety not established

Notes

- Protocol: Epistaxis
- Adrenergic: α -agonist - Onset: seconds - Duration: 6 hr
- <https://reference.medscape.com/drug/343408>



Albuterol

Ventolin®

Use

- Tx: Wheezing, Hyperkalemia
- Adults: **2.5 mg** neb
- Peds: 0.15 mg/kg neb

Caution

- PMH: antiretroviral therapy
- PMH: hypokalemia
- May cause: tremor, anxiety
- **Preg C:** safety not established

Notes

- Protocols: Dyspnea, Allergic Reaction
- Quadruple (4x) dose for Hyperkalemia
- Adrenergic: β -agonist - Onset: 30 min - Duration: 2 hr
- <https://reference.medscape.com/drug/343426>

**Amiodarone**

Pacerone®

Use

- Tx: V-Tach / V-Fib
- Adults: **300, then 150 mg** IV/IO
- Also: 150 mg gtt over 10 min
- Peds: 5mg /kg

Caution

- PMH: antiretroviral therapy
- PMH: bradycardia
- May cause: bradycardia, HA
- May cause: hypotension, dizzy
- **Preg D:** known risk

**Notes**

- Protocols: Tachycardia, Medical CODE
- Antiarrhythmic: Class III - Onset: mins - Duration: hours
- <https://reference.medscape.com/drug/342296>

Aspirin

Baby ASA

Use

- Tx: Angina
- Adults: **81 mg** x4 PO (chew)
- Peds: <do not use>

Caution

- PMH: GI bleeding, low platelets
- May cause: GERD, bleeding
- **Preg D:** known risks

Notes

- Protocols: Chest Pain
- Antiplatelet (and NSAID) - Onset: 5 min - Duration: 4 hrs
- <https://reference.medscape.com/drug/343279>



Atropine

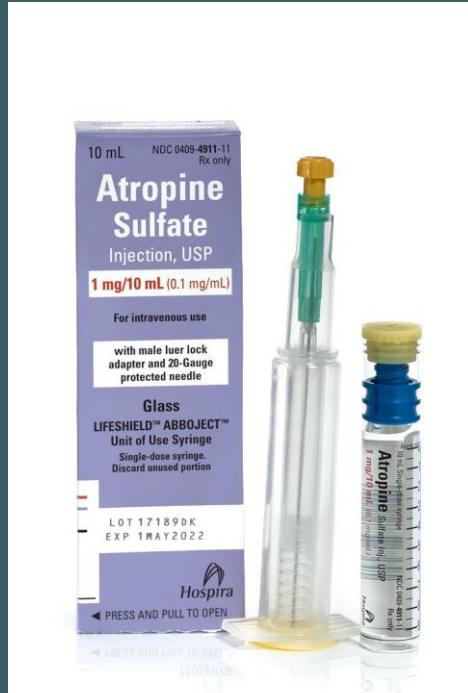
AtroPen®

Use

- Tx: Brady, Organophosphate OD
- Adults: **0.5 mg** IV/IO (brady)
- Peds: 0.02 mcg/kg

Caution

- PMH: Glaucoma, AV block
- May cause: palpitations
- May cause: dry mouth, HA
- **Preg C:** safety not established



Notes

- **Organophosphate OD** may require massive doses.
- Protocols: Bradycardia, Overdose / Tox
- Anticholinergic - Onset: seconds - Duration: minutes
- <https://reference.medscape.com/drug/343093>

Atrovent®**Ipratropium Bromide****Use**

- Tx: Wheezing
- Adults: **0.5 mg** neb
- Peds: 0.25 mg if <6 y/o (<20 kg)

Caution

- PMH: glaucoma
- May cause: HA, cough
- **Preg B:** likely safe

**Notes**

- Protocols: Dyspnea, Allergic Reaction
- Anticholinergic - Onset: 15 minutes - Duration: 3 hours
- <https://reference.medscape.com/drug/343416>

Benadryl®**Diphenhydramine****Use**

- Tx: Allergic Reactions
- Adults: **25 mg** IM, IV/IO, PO
- Peds: 1 mg/kg

Caution

- PMH: glaucoma, elderly
- May cause: **sedation**, delirium
- May cause: dry mouth
- **Preg B:** likely safe

**Notes**

- Protocols: Allergic Reaction
- Antihistamine - Onset: 15 min - Duration: 4 hours
- <https://reference.medscape.com/drug/343392>

Bicarb

Sodium Bicarbonate

Use

- Tx: Acidosis, Arrhythmia
- Adults: **50 mEq** IV/IO
- Peds: 1 mEq/kg

Caution

- **Beware extravasation**
- Do not mix: **Calcium**
- May cause: alkalosis, CHF
- May cause: hypokalemia
- **Preg C:** safety not established

Notes

- Protocols: Hyperkalemia, Medical CODE, OD/Tox, Crush Inj
- Critical Care: DKA / HHS
- Electrolyte: alkali - Onset: 15 minutes - Duration: 1 hour
- <https://reference.medscape.com/drug/342305>



Calcium

Use

- Tx: Hyperkalemia, Ca-blocker OD
- Adults: **1 g** IV/IO
- Peds: 20 mg/kg

Caution

- Do not mix: **Rocephin®**, **Digoxin®**
- Do not mix: **Bicarbonate**
- May cause: brady, N/V, HA
- May cause: arrhythmia
- **Preg C:** safety not established

Notes

- Protocols: Hyperkalemia, Medical CODE, OD/Tox, Crush Inj
- Electrolyte: cofactor - Onset: minutes - Duration: hours
- <https://reference.medscape.com/drug/344434>

Calcium Gluconate



D10

Dextrose 10%

Use

- Tx: Hypoglycemia
- Adults: **100 mL** IV/IO
- Peds: 5 mL/kg

Caution

- **Beware extravasation**
- May cause: edema
- May cause: hyperglycemia
- **Preg C:** safety not established

Notes

- Protocols: [Diabetic](#)
- Glucose Monosaccharide - Onset: mins - Duration: 40 min
- <https://reference.medscape.com/drug/342705>



Decadron®

Dexamethasone

Use

- Tx: Inflammation
- Adults: **8 mg** IM, IV/IO, PO
- Peds: 0.5 mg/kg

Caution

- PMH: antivirals, anticoagulants
- PMH: **diabetics**, birth control
- May cause: hyperglycemia
- May cause: delirium
- **Preg C:** safety not established



Notes

- Protocols: [Dyspnea, Allergic Reaction](#)
- Steroid: glucocorticoid - Onset: minutes - Duration: hours
- <https://reference.medscape.com/drug/342741>

Dopamine

Use

- Tx: Shock, Hypotension
 - Adults: **5 mcg/kg/min** IV/IO
 - Peds: 5 mcg/kg/min
 - Titrate rate (up to 4x) to effect

Caution

- PMH: tachycardia
 - PMH: antidepressants
 - May cause: arrhythmia
 - May cause: HA, N/V
 - **Preg C:** safety not established

Notes

- Protocols: Circulation / Shock
 - Catecholamine - Onset: 5 minutes - Duration: 10 minutes
 - <https://reference.medscape.com/drug/342435>

Intropin®



Epi

Epinephrine, EpiPen®

Use

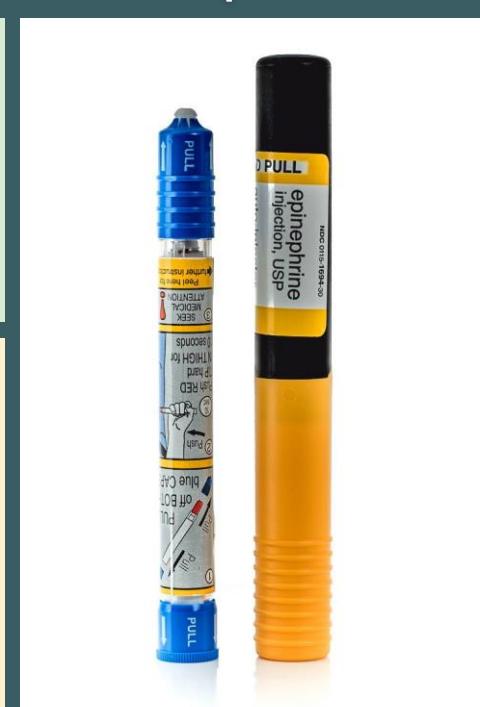
- Tx: Brady, Arrest, Anaphylaxis
 - Adults: **1 mg** IV/IO (CODE)
 - Peds: 0.01 mg/kg (CODE)
 - Lower doses for brady, allergy

Caution

- PMH: CAD, HTN
 - May cause: **palpitations**
 - May cause: anxiety, arrhythmia
 - May cause: HTN, flushing
 - **Preg C:** safety not established

Notes

- Protocols: Brady, CODE, Allergy, Neonate
 - See also: **Epi Drip** for Circulation / Shock
 - Adrenergic: α , β agonist - Onset: 1 min - Duration: 4 hrs
 - <https://reference.medscape.com/drug/342437>



Epi Drip**Epinephrine, Adrenalin****Use**

- Tx: Hypotension, Shock
- Adults: **1 gtt/sec macro** drip set
- Peds: 1 gtt/sec micro drip set
- Mix 1 mg Epi in 1 L NS: 1 mcg/mL

Caution

- PMH: CAD, HTN
- May cause: **palpitations**
- May cause: anxiety, arrhythmia
- May cause: HTN, flushing
- **Preg C:** safety not established

Notes

- Protocols: Circulation / Shock
- See also: **Epi** for Brady, CODE, Allergy, Neonate
- Adrenergic: α , β agonist - Onset: 1 min
- <https://reference.medscape.com/drug/342437>

**Etomidate****Amidate®****Use**

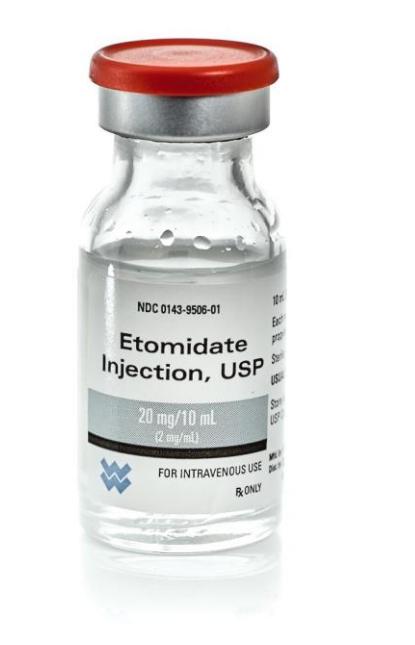
- Tx: RSI Induction
- Adults: **0.3 mg/kg** IV/IO
- Peds: 0.3 mg/kg (10+ y/o only)
- 0-9 y/o safety not established

Caution

- PMH: adrenal insufficiency
- May cause: **limb jerking**
- May cause: **eye twitching**
- **Preg C:** safety not established

Notes

- Protocols: Intubation / RSI
- Central Hypnotic - Onset: seconds - Duration: minutes
- <https://reference.medscape.com/drug/343098>



Fentanyl**Sublimaze®****Use**

- Tx: Acute Moderate / Severe Pain
- Adults: **50 mcg** IV/IO, IM/IN
- Peds: 0.5 - 2 mcg/kg

Caution

- PMH: MAOIs (antidepressants)
- May cause: **respiratory depression**
- May cause: **hypotension**
- May cause: delirium, N/V
- **Preg C:** safety not established

Notes

- Protocols: Pain
- Critical Care: Sedation
- Opioid: μ -agonist - Onset: seconds - Duration: 45 min
- <https://reference.medscape.com/drug/343311>

**Furosemide****Lasix®****Use**

- Tx: Congestive Heart Failure
- Adults: **20-80 mg** IV/IO
- Peds: <do not use>

Caution

- PMH: anuria, **sulfa allergy**
- May cause: hypokalemia
- **Preg C:** safety not established

Notes

- Protocols: <none>
- **Inject slowly** to reduce ototoxicity
- Loop diuretic - Onset: 5 minutes - Duration: 2 hours
- <https://reference.medscape.com/drug/342423>



Glucagon**Use**

- Tx: Hypoglycemia, β -blocker OD
- Adults: **1 mg** IM/IN
- Peds: 0.5 mg if <6 y/o (<20 kg)

Caution

- PMH: pheochromocytoma
- PMH: starvation, **Coumadin**
- May cause: nausea / vomiting
- Beware: **refractory hypoglycemia**
- **Preg B:** likely safe

Notes

- **β -blocker OD** may require multiple doses.
- Protocols: Diabetic, Overdose / Tox
- Hepatic glycogenolysis - Onset: 10 min - Duration: 30 min
- <https://reference.medscape.com/drug/342712>

Glucagen[®]**Glucose****Oral Glucose, Glutose 15™****Use**

- Tx: Hypoglycemia
- Adults: **15 g** PO
- Peds: 0.5 g/kg

Caution

- PMH: hyperglycemia
- May cause: hyperactivity
- **Preg A:** demonstrated safe

Notes

- Protocols: Diabetic
- Glucose Monosaccharide - Onset: mins - Duration: 40 min
- <https://reference.medscape.com/drug/342705>



Haldol®**Use**

- Tx: Severe Psychosis
- Adults: **5 mg** IM
- Peds: 0.075-0.15 mg/kg (6+ y/o)
- 0-5 y/o: safety not established

Caution

- PMH: antiarrhythmics (long QT)
- PMH: Parkinson's disease
- May cause: **hypotension, NMS**
- May cause: dystonia
- **Preg C:** safety not established

Notes

- Protocols: Psych
- Antipsychotic: dopa blocker - Onset: 10 m - Duration: 18 h
- <https://reference.medscape.com/drug/342974>

Haloperidol**Ibuprofen****Use**

- Tx: Fever, Pain
- Adults: **400 mg** PO
- Peds: 10 mg/kg

Caution

- PMH: recent CABG, CKD
- PMH: GI bleeding
- May cause: epigastric pain
- May cause: N/V, dizzy
- **Preg D:** known risks

Notes

- Protocols: Fever, Pain
- NSAID: cox inhibitor - Onset: 30 min - Duration: 4 hours
- <https://reference.medscape.com/drug/343289>

Advil®, Motrin®

Insulin (regular) Humulin R®, Novolin R®**Use**

- Tx: Hyperglycemia
- Adults: **0.1 units/kg** IV/IO
- Peds: 0.1 mg/kg

Caution

- PMH: hypokalemia
- May cause: hypoglycemia
- **Preg B:** likely safe

Notes

- Protocols: [DKA / HHS](#)
- Hormone - Onset: 30 minutes - Duration: hours
- <https://reference.medscape.com/drug/999007>

**Ketamine**

Ketalar®

Use

- Tx: Severe Pain, Discomfort
- Adults: **20 mg** IV/IO, IM/IN
- Peds: 0.25 - 0.5 mg/kg

Caution

- PMH: increased ICP, glaucoma
- May cause: **laryngospasm**
- May cause: **hypersalivation**
- **Preg N/A:** not categorized

**Notes**

- Protocols: [Pain](#), [Medical ROSC](#), [Trauma ROSC](#)
- Critical Care: Higher doses for [Intubation / RSI](#), [Sedation](#)
- Dissociative anesthetic - Onset: 30 s - Duration: minutes
- <https://reference.medscape.com/drug/343099>

Labetalol**Use**

- Tx: HTN, Tachycardia
- Adults: **10 mg** IV/IO
- Peds: 0.3 mg/kg

Caution

- PMH: reactive airway, CHF
- May cause: **hypotension**, N/V
- May cause: dizzy, tingling
- **Preg C:** safety not established

Notes

- Protocols: <none>
- β -blocker - Onset: 3 minutes - Duration: hours
- <https://reference.medscape.com/drug/342359>

Trandate[®]**Lidocaine****Use**

- Tx: Arrhythmia, (Pain from IO)
- Adults: **100 mg** IV/IO
- Peds: 1 mg/kg

Caution

- PMH: antiarrhythmics, AV block
- Do not mix: **Digoxin[®]**
- May cause: **hypotension**
- May cause: N/V, seizure
- **Preg B:** likely safe

Notes

- Protocols: Medical CODE, Trauma CODE, IO Procedure
- Antiarrhythmic: Class IB - Onset: 45 sec - Duration: 10 min
- <https://reference.medscape.com/drug/342302>

Xylocaine[®]

Magnesium**Magnesium Sulfate****Use**

- Tx: VT/VF, Dyspnea, Eclampsia
- Adults: **2 g** IV/IO
- Peds: 25 - 50 mg/kg

Caution

- PMH: DKA, AV block
- Do not mix: **Digoxin**[®]
- May cause: **hypotension**
- May cause: hypoxia, edema
- **Preg D:** known risks

Notes

- Protocols: Tachycardia, Medical CODE, Dyspnea, Seizure
- Consider diluting and **give over 10 min if non-emergent**
- Electrolyte - Onset: seconds - Duration: hours
- <https://reference.medscape.com/drug/344444>

**Narcan[®]****Use**

- Tx: Opiate OD
- Adults: **0.4 - 4 mg** IV/IO, IN
- Peds: 0.1 mg/kg

Caution

- May cause: **opiate withdrawal**
- May cause: N/V, Abdominal Pain
- **Preg C:** safety not established

Notes

- Protocols: Overdose / Tox
- Opioid (μ) antagonist - Onset: 2 min - Duration: 45 min
- <https://reference.medscape.com/drug/343741>

Naloxone

Nitro**Nitroglycerin, Nitrostat®****Use**

- Tx: Angina
- Adults: **0.4 mg** SL
- Peds: <do not use>

Caution

- PMH: erectile dysfunction meds
- PMH: ergot (pain/migraine) med
- May cause: **HA**, hypotension
- **Preg B:** likely safe

Notes

- Protocols: Chest Pain, Dyspnea
- Systemic vasodilator - Onset: 1 min - Duration: 30 min
- <https://reference.medscape.com/drug/342280>

**NS Bolus****0.9% Normal Saline****Use**

- Tx: Hypotension, Hypovolemia
- Adults: **1,000 mL** IV/IO
- Peds: 20 mL/kg

Caution

- PMH: CHF, CKD, HTN
- May cause: **hypervolemia**
- May cause: edema
- **Preg C:** safety not established

**Notes**

- Protocols: Shock, Tachy, Fever, HyperK⁺, Diabetic, Preg
- Protocols: Major Trauma / CODE, Crush, Cold/Heat, Burn
- Sterile H₂O & NaCl - Onset: seconds - Duration: varies
- <https://www.rxlist.com/normal-saline-drug.htm>

Propofol

Diprivan®

Use

- Tx: Sedation
- Adults: **0.1 mg/kg/min** IV/IO
- Peds: 0.1 mg/kg/min (3+ months)
- 0-2 months: safety unknown

Caution

- PMH: CKD, renal failure
- May cause: **hypotension**
- May cause: **apnea**
- **Preg B:** likely safe

Notes

- Protocols: Sedation
- Sedative/hypnotic: GABA - Onset: secs - Duration: mins
- <https://reference.medscape.com/drug/343100>



Rocephin®

Ceftriaxone

Use

- Tx: Infection
- Adults: **1,000 mg** IV/IO, IM
- Peds: 25 - 50 mg/kg

Caution

- **PCN / Cephalosporin Allergy**
- Do not mix: **Calcium** (fatal)
- May cause: allergic reaction
- **Preg B:** likely safe

Notes

- Protocols: Open Fracture, Sepsis
- **Reconstitute** w/ 3 mL of: saline for IV/IO, lidocaine for IM
- Antibiotic: 3rd Gen Ceph - Onset: minutes - Duration: hours
- <https://reference.medscape.com/drug/342510>



Rocuronium**Use**

- Tx: RSI Paralysis
- Adults: **1 mg/kg** IV/IO
- Peds: 0.6 mg/kg (3+ months old)
- 0-2 months: safety unknown

Caution

- PMH: liver failure, ascites
- **Beware** Malignant Hyperthermia
- May cause: paralysis, apnea
- **Preg B:** likely safe

Notes

- Protocols: Intubation / RSI
- Non-depolarizing - Onset: 1 minute - Duration: 30 minutes
- <https://reference.medscape.com/drug/343109>

Zemuron®

**Succinylcholine****Use**

- Tx: RSI Paralysis
- Adults: **1 mg/kg** IV/IO
- Peds: 2 mg/kg

Caution

- PMH: **hyperkalemia**, burns
- **Beware** Malignant Hyperthermia
- **Beware** Pediatric Myopathy
- May cause: paralysis, apnea
- **Preg C:** safety not established

Notes

- Protocols: Intubation / RSI
- Depolarizing - Onset: 30 seconds - Duration: 5 minutes
- <https://reference.medscape.com/drug/343102>

Anectine®



TXA

Tranexamic Acid

Use

- Tx: Bleeding
- Adults: **10 g** IV/IO
- Peds: 10 - 25 mg/kg

Caution

- PMH: seizure, **known DVT/PE**
- May cause: **hypotension**
- May cause: visual changes, N/V
- **Preg B:** likely safe

Notes

- Protocols: Bleeding
- Antifibrinolytic - Onset: minutes - Duration: 3 hours
- <https://reference.medscape.com/drug/342087>



Tylenol®

Acetaminophen

Use

- Tx: Fever, Pain
- Adults: **500 mg** PO
- Peds: 15 mg/kg

Caution

- PMH: liver failure / disease
- **Preg B:** likely safe

Notes

- Protocols: Fever, Pain
- Analgesic: antiprostaglandin - Onset: 1 hr - Duration: 4 hrs
- <https://reference.medscape.com/drug/343346>



Versed®

Use

- Tx: Seizure, Delirium
- Adults: **2.5 - 5 mg** IV/IO, IM/IN
- Peds: 50 - 75 mcg/kg

Caution

- PMH: antivirals, glaucoma
- May cause: **resp depression**
- May cause: hypotension
- **Preg D:** known risks

Notes

- Protocols: Seizure, Psych
- Critical Care: Sedation
- Benzo: GABA agonist - Onset: 3 minutes - Duration: 1 hour
- <https://reference.medscape.com/drug/342907>

Midazolam



Zofran®

Use

- Tx: Nausea, Vomiting
- Adults: **4 mg** IV/IO, IM/IN
- Peds: 0.1 mg/kg

Caution

- PMH: antidepressants, long QT
- May cause: HA, fatigue
- **Preg B:** likely safe

Ondansetron



Notes

- Protocols: Nausea / Vomiting
- 5-HT3 antagonist - Onset: seconds - Duration: hours
- <https://reference.medscape.com/drug/342052>

0 - 5 kg

0 - 12 lbs *

Normal Vitals P: 125 - 160 /min

R: 26 - 42 /min SBP: 66 - 102 mmHg

Resuscitation

Defib: 10 → 20 J

Epi (code): 0.04 mg

Lidocaine: 4 mg

Common

NS Bolus: 100 mL

Afrin: <do not use>

Albuterol: 0.625 mg

Atrovent: 0.25 mg

Benadryl: 5 mg

D10: 25 mL

Decadron: 2 mg

Epi (allergy): 0.04 mg

Epi (brady): 0.004 mg

Fentanyl: 5 mcg

Glucose: 3.25 g

Ibuprofen: 40 mg

Ketamine (pain): <do not use>

Narcan: 0.4 mg

Tylenol: 64 mg

TXA: 50 mg

Versed: 0.25 mg

Zofran: <do not use>

Misc

IV Cath: 24 g (yellow)

King Airway: #0 (clear)

iGel Airway: #1 (pink)

Pacing Rate: 135 /min

Cardioversion: 5 → 10 J

Less Common

Adenosine: 0.4 → 0.8 mg

Amiodarone: <do not use>

Atropine: 0.1 mg

Bicarbonate: 4 mEq

Calcium: 100 mg

Dopamine: 20 mcg/min

Glucagon: 0.5 mg

Haldol: <do not use>

Magnesium: 0.25 g

Etomidate: <do not use>

Insulin: 0.5 units

Ketamine (RSI): <do not use>

Propofol: <do not use>

Rocephin: 200 mg

Rocuronium: <do not use>

Succinylcholine: 10 mg

GRAY †**0 - 2 months** ‡

* Weight based dosing is best. † Broselow™ color is second best.

‡ Age range is least reliable. Use good judgement.

6 - 7 kg

13 - 16 lbs *

Normal Vitals

P: 115 - 155 /min

R: 24 - 38 /min

SBP: 68 - 104 mmHg

Resuscitation

Defib: 15 → 30 J

Epi (code): 0.06 mg

Lidocaine: 6 mg

Common

NS Bolus: 120 mL

Afrin: <do not use>

Albuterol: 0.625 mg

Atrovent: 0.25 mg

Benadryl: 5 mg

D10: 25 mL

Decadron: 3 mg

Epi (allergy): 0.06 mg

Epi (brady): 0.006 mg

Fentanyl: 10 mcg

Glucose: 3.25 g

Ibuprofen: 60 mg

Ketamine (pain): 1.5 mg

Narcan: 0.4 mg

Tylenol: 96 mg

TXA: 50 mg

Versed: 0.5 mg

Zofran: 0.5 mg

Misc

IV Cath: 24 g (yellow)

King Airway: #1 (white)

iGel Airway: #1.5 (blue)

Pacing Rate: 125 /min

Cardioversion: 7 → 15 J

Less Common

Adenosine: 0.6 → 1.2 mg

Amiodarone: 30 mg

Atropine: 0.1 mg

Bicarbonate: 6 mEq

Calcium: 150 mg

Dopamine: 30 mcg/min

Glucagon: 0.5 mg

Haldol: <do not use>

Magnesium: 0.25 g

Etomidate: <do not use>

Insulin: 0.5 units

Ketamine (RSI): 6 mg

Propofol: 0.5 mg/min

Rocephin: 300 mg

Rocuronium: 4 mg

Succinylcholine: 12.5 mg

PINK †**3 - 8 months ††**

* Weight based dosing is best. † Broselow™ color is second best.

†† Age range is least reliable. Use good judgement.

8 - 9 kg**17 - 20 lbs *****Normal Vitals**

P: 110 - 150 /min

R: 22 - 36 /min

SBP: 70 - 106 mmHg

Resuscitation

Defib: 15 → 30 J

Epi (code): 0.08 mg

Lidocaine: 8 mg

Common

NS Bolus: 160 mL

Afrin: <do not use>

Albuterol: 1.25 mg

Atrovent: 0.25 mg

Benadryl: 5 mg

D10: 25 mL

Decadron: 4 mg

Epi (allergy): 0.08 mg

Epi (brady): 0.008 mg

Fentanyl: 10 mcg

Glucose: 3.25 g

Ibuprofen: 80 mg

Ketamine (pain): 2 mg

Narcan: 0.8 mg

Tylenol: 128 mg

TXA: 50 mg

Versed: 0.5 mg

Zofran: 0.5 mg

Misc

IV Cath: 24 g (yellow)

King Airway: #1 (white)

iGel Airway: #1.5 (blue)

Pacing Rate: 120 /min

Cardioversion: 7 → 15 J

Less Common

Adenosine: 0.8 → 1.6 mg

Amiodarone: 40 mg

Atropine: 0.2 mg

Bicarbonate: 8 mEq

Calcium: 150 mg

Dopamine: 40 mcg/min

Glucagon: 0.5 mg

Haldol: <do not use>

Magnesium: 0.25 g

Etomidate: <do not use>

Insulin: 1 units

Ketamine (RSI): 8 mg

Propofol: 1 mg/min

Rocephin: 400 mg

Rocuronium: 5 mg

Succinylcholine: 15 mg

RED †**9 - 16 months** ‡‡

* Weight based dosing is best. † Broselow™ color is second best.

‡‡ Age range is least reliable. Use good judgement.

10 - 11 kg

21 - 25 lbs *

Normal Vitals

P: 105 - 145 /min

R: 22 - 34 /min

SBP: 72 - 108 mmHg

Resuscitation

Defib: 20 → 40 J

Epi (code): 0.1 mg

Lidocaine: 10 mg

Common

NS Bolus: 200 mL

Afrin: <do not use>

Albuterol: 1.25 mg

Atrovent: 0.25 mg

Benadryl: 10 mg

D10: 50 mL

Decadron: 5 mg

Epi (allergy): 0.1 mg

Epi (brady): 0.01 mg

Fentanyl: 10 mcg

Glucose: 7.5 g

Ibuprofen: 100 mg

Ketamine (pain): 2 mg

Narcan: 0.8 mg

Tylenol: 160 mg

TXA: 100 mg

Versed: 0.75 mg

Zofran: 1 mg

Misc

IV Cath: 22 g (blue)

King Airway: #1 (white)

iGel Airway: #1.5 (blue)

Pacing Rate: 115 /min

Cardioversion: 10 → 20 J

Less Common

Adenosine: 1 → 2 mg

Amiodarone: 50 mg

Atropine: 0.2 mg

Bicarbonate: 10 mEq

Calcium: 200 mg

Dopamine: 50 mcg/min

Glucagon: 0.5 mg

Haldol: <do not use>

Magnesium: 0.5 g

Etomidate: <do not use>

Insulin: 1 units

Ketamine (RSI): 8 mg

Propofol: 1 mg/min

Rocephin: 500 mg

Rocuronium: 6 mg

Succinylcholine: 20 mg

PURPLE †**17-23 months** ††

* Weight based dosing is best. † Broselow™ color is second best.

†† Age range is least reliable. Use good judgement.

12 - 14 kg

26 - 31 lbs *

Normal Vitals P: 100 - 140 /min

R: 20 - 30 /min

SBP: 74 - 110 mmHg

Resuscitation

Defib: 25 → 50 J
 Epi (code): 0.12 mg
 Lidocaine: 12 mg

Common

NS Bolus: 250 mL
 Afrin: <do not use>

Albuterol: 2.5 mg
 Atrovent: 0.25 mg
 Benadryl: 10 mg

D10: 50 mL
 Decadron: 6 mg

Epi (allergy): 0.12 mg
 Epi (brady): 0.012 mg

Fentanyl: 20 mcg
 Glucose: 7.5 g

Ibuprofen: 120 mg
 Ketamine (pain): 3 mg
 Narcan: 1.2 mg
 Tylenol: 192 mg
 TXA: 100 mg
 Versed: 1 mg
 Zofran: 1 mg

Misc

IV Cath: 22 g (blue)
 King Airway: #2 (green)
 iGel Airway: #2 (grey)
 Pacing Rate: 105 /min
 Cardioversion: 12 → 25 J

Less Common

Adenosine: 1.2 → 2.4 mg
 Amiodarone: 60 mg
 Atropine: 0.3 mg
 Bicarbonate: 12 mEq
 Calcium: 250 mg
 Dopamine: 60 mcg/min
 Glucagon: 0.5 mg
 Haldol: <do not use>
 Magnesium: 0.5 g

Etomidate: <do not use>
 Insulin: 1 units
 Ketamine (RSI): 12 mg
 Propofol: 1 mg/min
 Rocephin: 600 mg
 Rocuronium: 8 mg
 Succinylcholine: 25 mg

YELLOW †

2 - 3 years ‡‡

* Weight based dosing is best. † Broselow™ color is second best.

‡‡ Age range is least reliable. Use good judgement.

15 - 18 kg

32 - 40 lbs *

Normal Vitals P: 90 - 130 /min

R: 20 - 28 /min SBP: 76 - 112 mmHg

Resuscitation

Defib: 30 → 60 J
 Epi (code): 0.15 mg
 Lidocaine: 15 mg

Common

NS Bolus: 300 mL
 Afrin: <do not use>
 Albuterol: 2.5 mg
 Atrovent: 0.25 mg
 Benadryl: 15 mg
 D10: 50 mL
 Decadron: 8 mg
 Epi (allergy): 0.15 mg
 Epi (brady): 0.015 mg
 Fentanyl: 20 mcg
 Glucose: 7.5 g
 Ibuprofen: 160 mg
 Ketamine (pain): 4 mg
 Narcan: 1.6 mg
 Tylenol: 256 mg
 TXA: 100 mg
 Versed: 1.25 mg
 Zofran: 1 mg

Misc

IV Cath: 22 g (blue)
 King Airway: #2 (green)
 iGel Airway: #2 (grey)
 Pacing Rate: 100 /min
 Cardioversion: 15 → 30 J

Less Common

Adenosine: 1.5 → 3 mg
 Amiodarone: 60 mg
 Atropine: 0.3 mg
 Bicarbonate: 15 mEq
 Calcium: 300 mg
 Dopamine: 80 mcg/min
 Glucagon: 0.5 mg
 Haldol: <do not use>
 Magnesium: 0.5 g
 Etomidate: <do not use>
 Insulin: 1.5 units
 Ketamine (RSI): 16 mg
 Propofol: 1.5 mg/min
 Rocephin: 700 mg
 Rocuronium: 10 mg
 Succinylcholine: 30 mg

WHITE †**4 - 5 years** ‡

* Weight based dosing is best. † Broselow™ color is second best.

‡ Age range is least reliable. Use good judgement.

19 - 23 kg

41 - 51 lbs *

Normal Vitals

P: 85 - 125 /min

R: 18 - 26 /min

SBP: 80 - 114 mmHg

Resuscitation

Defib: 40 → 80 J

Epi (code): 0.2 mg

Lidocaine: 20 mg

Common

NS Bolus: 400 mL

Afrin: 1 spray

Albuterol: 2.5 mg

Atrovent: 0.5 mg

Benadryl: 20 mg

D10: 100 mL

Decadron: 8 mg

Epi (allergy): 0.15 mg

Epi (brady): 0.02 mg

Fentanyl: 30 mcg

Glucose: 15 g

Ibuprofen: 200 mg

Ketamine (pain): 5 mg

Narcan: 2 mg

Tylenol: 320 mg

TXA: 200 mg

Versed: 1.5 mg

Zofran: 2 mg

Misc

IV Cath: 20 g (pink)

King Airway: #2 (green)

iGel Airway: #2 (grey)

Pacing Rate: 95 /min

Cardioversion: 20 → 40 J

Less Common

Adenosine: 2 → 4 mg

Amiodarone: 100 mg

Atropine: 0.4 mg

Bicarbonate: 20 mEq

Calcium: 400 mg

Dopamine: 100 mcg/min

Glucagon: 1 mg

Haldol: 2 mg

Magnesium: 1 g

Etomidate: <do not use>

Insulin: 2 units

Ketamine (RSI): 20 mg

Propofol: 2 mg/min

Rocephin: 800 mg

Rocuronium: 12 mg

Succinylcholine: 40 mg

BLUE †**6 - 7 years** ‡‡

* Weight based dosing is best. † Broselow™ color is second best.

‡‡ Age range is least reliable. Use good judgement.

24 - 29 kg

52 - 64 lbs *

Normal Vitals

P: 75 - 115 /min

R: 18 - 24 /min

SBP: 82 - 118 mmHg

Resuscitation

Defib: 50 → 100 J
 Epi (code): 0.25 mg
 Lidocaine: 25 mg

Common

NS Bolus: 500 mL
 Afrin: 1 spray
 Albuterol: 2.5 mg
 Atrovent: 0.5 mg
 Benadryl: 25 mg
 D10: 100 mL
 Decadron: 8 mg
 Epi (allergy): 0.15 mg
 Epi (brady): 0.025 mg
 Fentanyl: 30 mcg
 Glucose: 15 g
 Ibuprofen: 260 mg
 Ketamine (pain): 6 mg
 Narcan: 2 mg
 Tylenol: 320 mg
 TXA: 200 mg
 Versed: 2 mg
 Zofran: 2 mg

Misc

IV Cath: 20 g (pink)
 King Airway: #2.5 (orange)
 iGel Airway: #2.5 (white)
 Pacing Rate: 85 /min
 Cardioversion: 25 → 50 J

Less Common

Adenosine: 2.5 → 5 mg
 Amiodarone: 125 mg
 Atropine: 0.5 mg
 Bicarbonate: 20 mEq
 Calcium: 400 mg
 Dopamine: 125 mcg/min
 Glucagon: 1 mg
 Haldol: 2.5 mg
 Magnesium: 1 g
 Etomidate: <do not use>
 Insulin: 2.5 units
 Ketamine (RSI): 24 mg
 Propofol: 2.5 mg/min
 Rocephin: 900 mg
 Rocuronium: 15 mg
 Succinylcholine: 50 mg

ORANGE †

8 - 9 years ‡‡

* Weight based dosing is best. † Broselow™ color is second best.

‡‡ Age range is least reliable. Use good judgement.

30 - 36 kg

65 - 80 lbs *

Normal Vitals

P: 70 - 115 /min

R: 16 - 22 /min

SBP: 86 - 122 mmHg

Resuscitation

Defib: 60 → 120 J

Epi (code): 0.3 mg

Lidocaine: 30 mg

Common

NS Bolus: 600 mL

Afrin: 1 spray

Albuterol: 2.5 mg

Atrovent: 0.5 mg

Benadryl: 25 mg

D10: 100 mL

Decadron: 8 mg

Epi (allergy): 0.3 mg

Epi (brady): 0.03 mg

Fentanyl: 40 mcg

Glucose: 15 g

Ibuprofen: 300 mg

Ketamine (pain): 8 mg

Narcan: 2 mg

Tylenol: 320 mg

TXA: 300 mg

Versed: 2.5 mg

Zofran: 2 mg

Misc

IV Cath: 18 g (green)

King Airway: #2.5 (orange)

iGel Airway: #2.5 (white)

Pacing Rate: 80 /min

Cardioversion: 30 → 60 J

Less Common

Adenosine: 3 → 6 mg

Amiodarone: 150 mg

Atropine: 0.5 mg

Bicarbonate: 30 mEq

Calcium: 600 mg

Dopamine: 150 mcg/min

Glucagon: 1 mg

Haldol: 2.5 mg

Magnesium: 1 g

Etomidate: 10 mg

Insulin: 3 units

Ketamine (RSI): 32 mg

Propofol: 3 mg/min

Rocephin: 1,000 mg

Rocuronium: 20 mg

Succinylcholine: 60 mg

GREEN †**10 - 12 years** ‡‡

* Weight based dosing is best. † Broselow™ color is second best.

‡‡ Age range is least reliable. Use good judgement.

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Physician Review

- Dr. C. Bernier
- Dr. B. Ekey
- Dr. K. Hinshaw
- Dr. D. Lander
- Dr. C. Lane
- Dr. A. LePera
- Dr. S. Osborne
- Dr. H. Rose-Inman
- Dr. E. Stanley

EMS Review

- Don Altice
- Chris Christensen
- Cathy Cockrell
- Gene Dalton
- Ashley Dye
- Mike Garnett
- Steve LePera
- Sarah Polan
- Tommy Pruitt
- Travis Pruitt
- Steve Spangler
- Joey Trigg
- Kari Whitney

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- Click & Pledge®

WVEMS Council

1944 Peters Creek Rd.
Roanoke, VA 24017

Phone: 540-562-3482

Web: <https://wvems.org>

Email: western@vaems.org