WVEMS
Western Virginia Emergency Medical Services Council, Inc.

Protocols 2021

Universal

Medical

Trauma

(21) Critical Care

(21) updated

WVEMS Protocols 2021

v210915

Welcome to the WVEMS Protocols **2021**

- 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 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 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 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 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 routine things when appropriate, like:

- SpO_2, EKG, $EtCO_2$, glucometer, phlebotomy, etc.
- Regular layperson **first aid** treatments like splinting & band-aids.
- Note: protocols may also include reminders (like "12-Lead").

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 is 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 are included. This text is not comprehensive.

- Medications may appear as **brand name**® or **generic**.

Reviewed: Feb 2021

WVEMS Protocols 2021

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

Editors: Drs. Ekey, LePera, and Stanley

GET IT ON Google Play

Download on the App Store

pdf

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**)

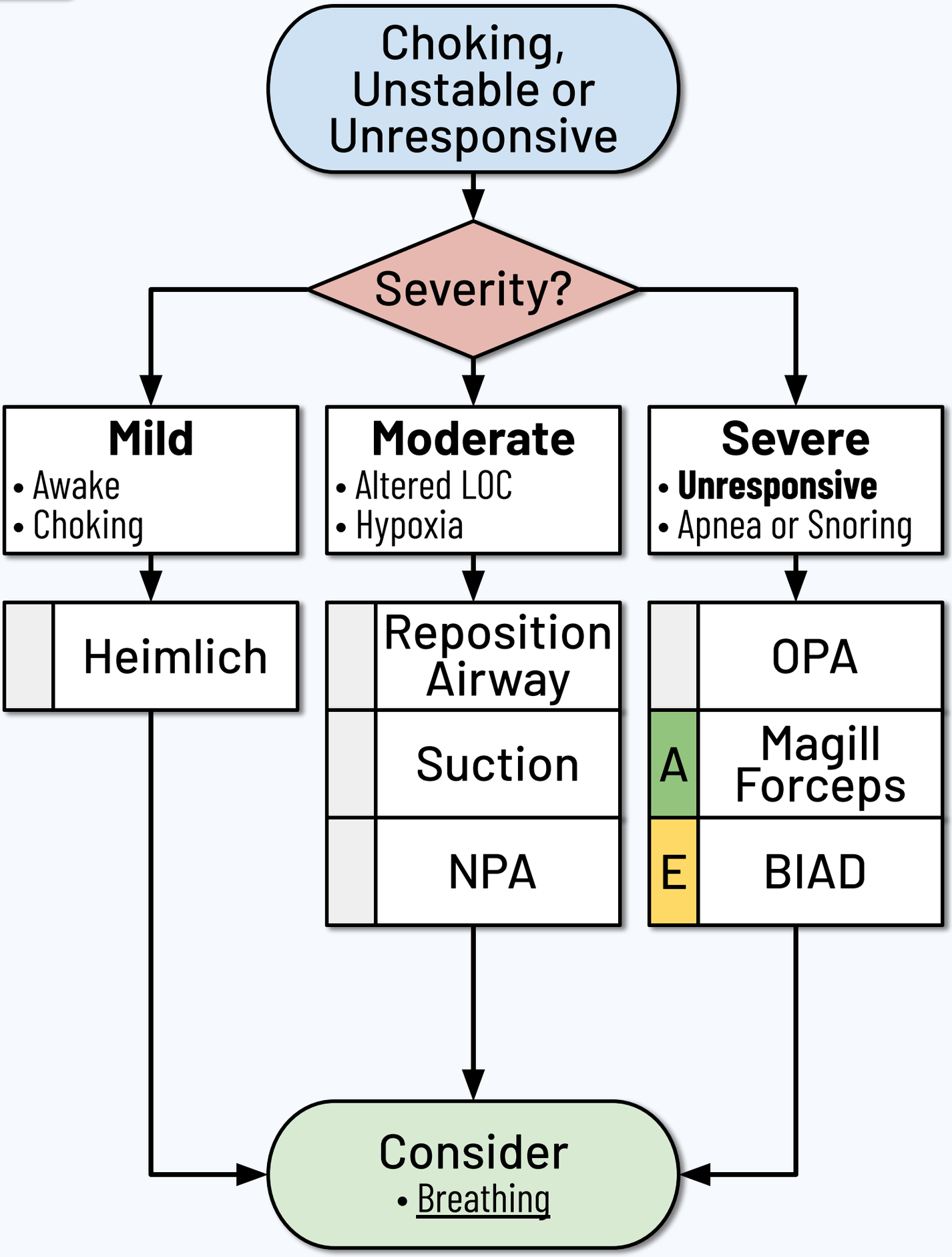
	EMR
E	EMT
A	AEMT

Advanced Life Support (**ALS**)

I	Intermediate
P	Paramedic
P	Critical Care Paramedic

Reviewed: Jul 2021

Airway



NEMSIS: 9914001, 9914003, 9914005
Reviewed: Dec 2020

AKA: Choking, Suction, Oral Airway, BIAD

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 inappropropriate size.
- Use several techniques to confirm airway:
  - Physical Exam: lung sounds, skin color, tube condensation, etc.
  - Vitals: rising SpO_2, good $EtCO_2$ (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

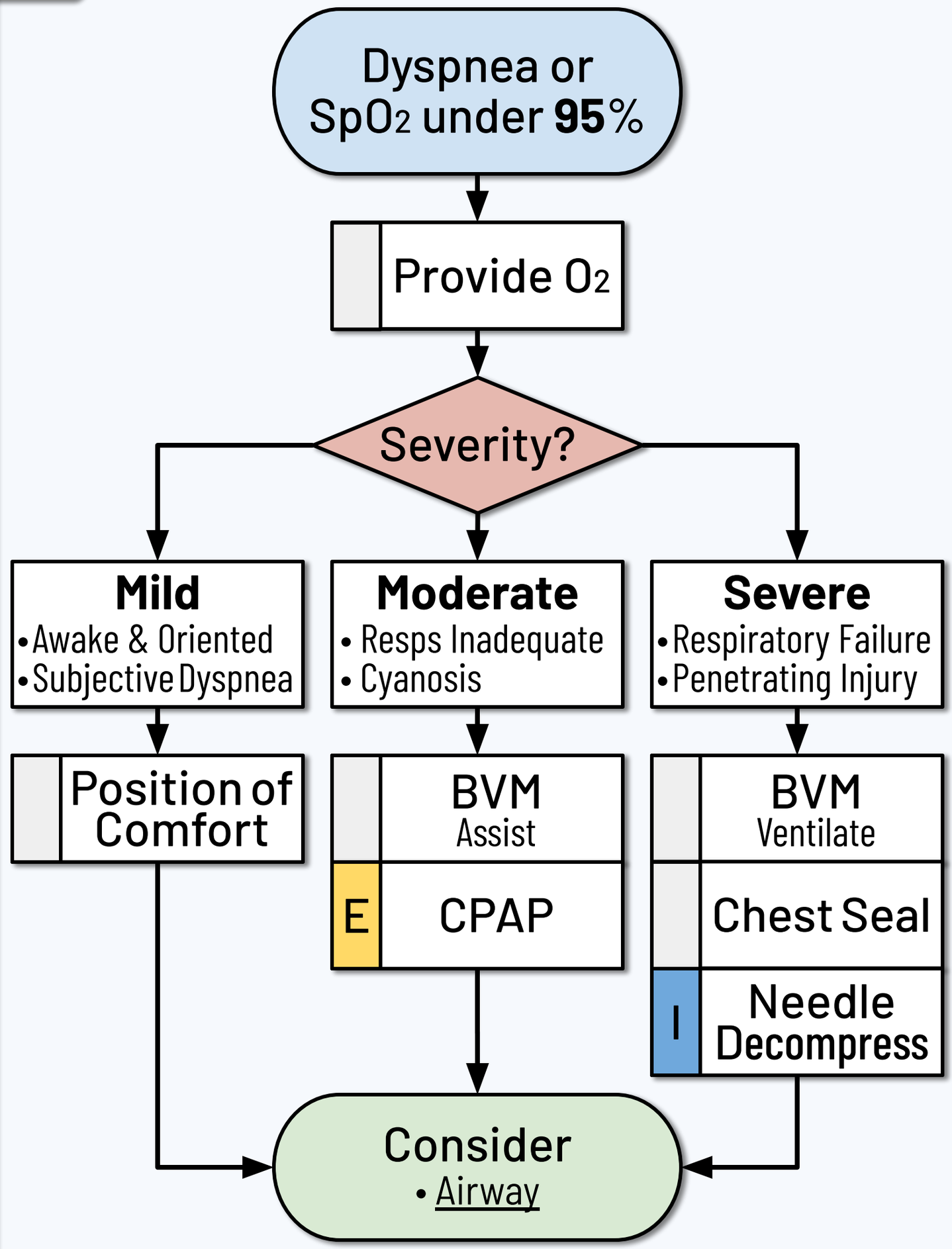
- Suspect an airway obstruction. Use back blows if indicated.
- Do not use blind finger sweeps.

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

Reviewed: Dec 2020 NEMSIS: 9914001, 9914003, 9914005

Breathing



NEMSIS: 9914001
Reviewed: Apr 2021

AKA: Hypoxia, Oxygenation, O_2, Pneumothorax (PTX), PE

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 $EtCO_2$ 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 O_2 at appropriate doses. Titrate for effect.
  - Nasal Cannula (NC): 1 - 6 L/min
  - Non-Rebreather (NRB): 10 - 15 L/min
- Consider **reducing** supplemental O_2 if SpO_2 rises above 98%.
  - Hyperoxia can make some conditions worse, **especially COPD**.
  - Target SpO_2 of 88-92% for adults with isolated **COPD**.
- If SpO_2 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

NEMSIS: 9914001
Reviewed: Apr 2012

Circulation / Shock

Systolic Under (Or **MAP**)
- Adult (13+): **90** mmHg (65 mmHg)
- Child (1-12): **70** mmHg (50 mmHg)
- Infant (< 1): **60** mmHg (40 mmHg)

Severity?

Mild
- Adequate Perfusion
- No Symptoms

A	Saline Lock
E	12-Lead

Moderate
- Adequate Perfusion
- Tachy or Dizzy

A	**NS Bolus**
E	12-Lead

Severe
- **Poor Perfusion**
- Altered LOC

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

Consider
- Tachycardia, Bradycardia
- Bleeding, Altered LOC

Adult Doses

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

NEMSIS: 9914127
Reviewed: Apr 2021

AKA: Hypotension

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.
- Mean Arterial Pressure (**MAP**) is a better indicator when available.

Pediatrics

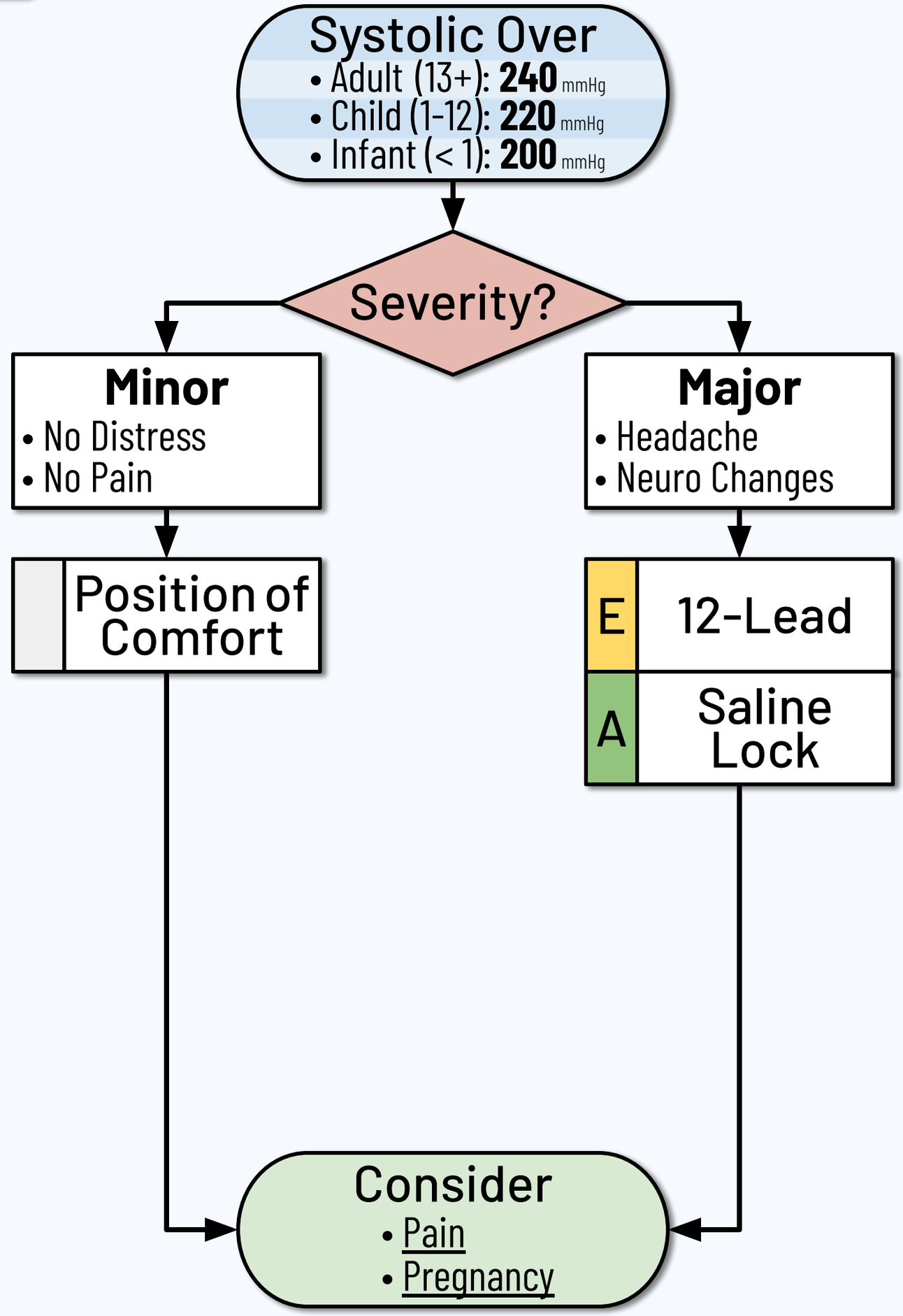
- The majority of peds decompensation is airway related.
- Fluids are important for hypotension. Pressors are a last resort.
- Use Peds Reference or other approved source for peds dosing.

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

NEMSIS: 9914127
Reviewed: Apr 2021

Hypertension



NEMSIS: 9914123
Reviewed: Aug 2020

AKA: HTN, Elevated BP, Malignant Hypertension

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

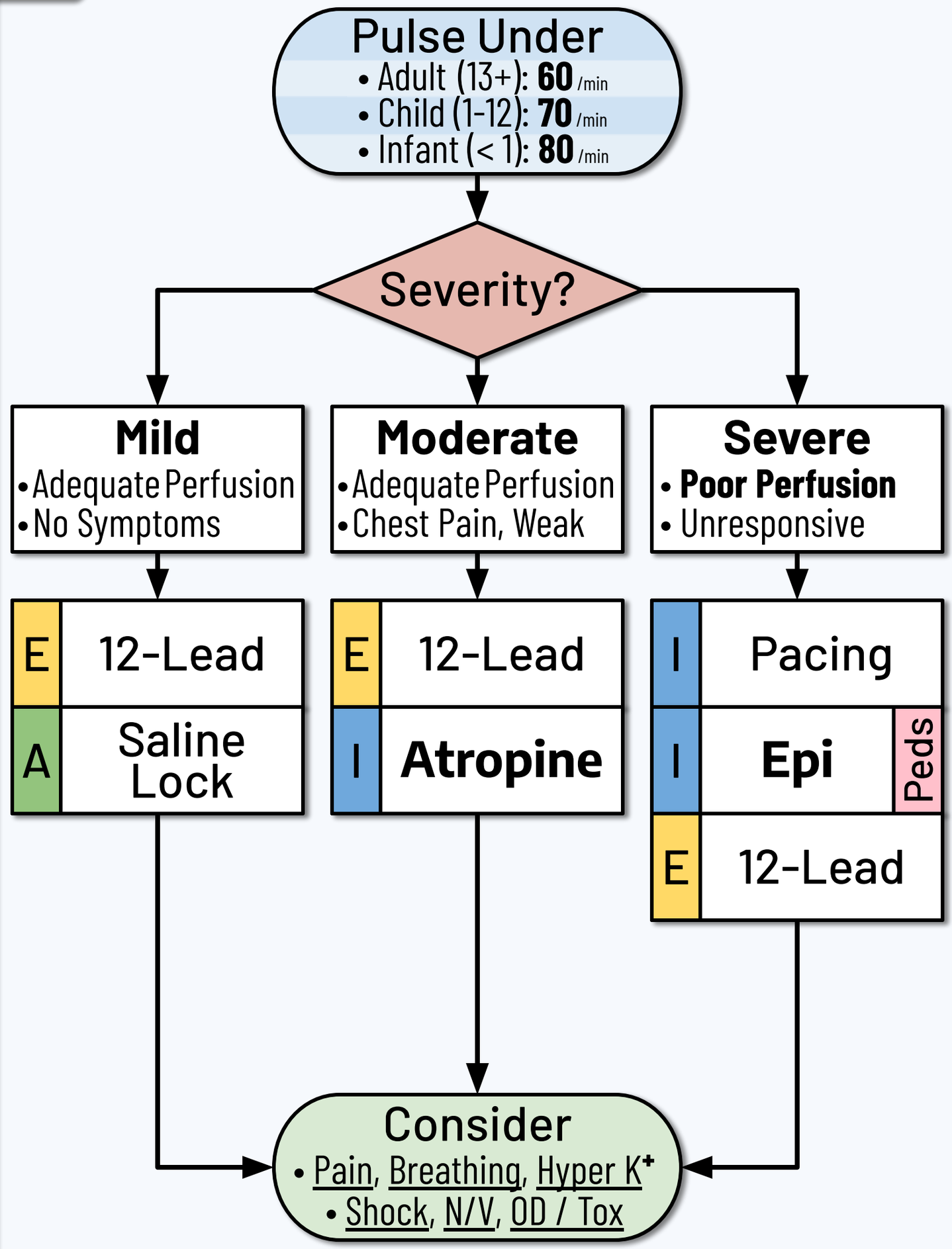
- Malignant HTN is unlikely in peds. Consider other causes.

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

NEMSIS: 9914123
Reviewed: Aug 2020

Bradycardia



Atropine: 1 mg	IV/IO	Q 5 min x3	Adult
Epi: Use Peds Reference	IV/IO	Q 5 min	Peds

NEMSIS: 9914115
Reviewed: Apr 2021

AKA: Slow Heart Rate, Heart Block

Bradycardia Imperatives

- Slow, wide complex bradycardia may be due to Hyperkalemia.
- Consider Overdose if appropriate (many meds cause brady).
- I May try **pacer magnet** to improve rate. Do **not** use on AICD.

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.

Notes

- Pacing: Start at **80 bpm / 80 mA**. Escalate mA as needed.
  - Alternate: follow manufacturer's or OMD's dosing guideline.
  - Treat Pain and/or Agitation from pacing as soon as appropriate.

Pediatrics

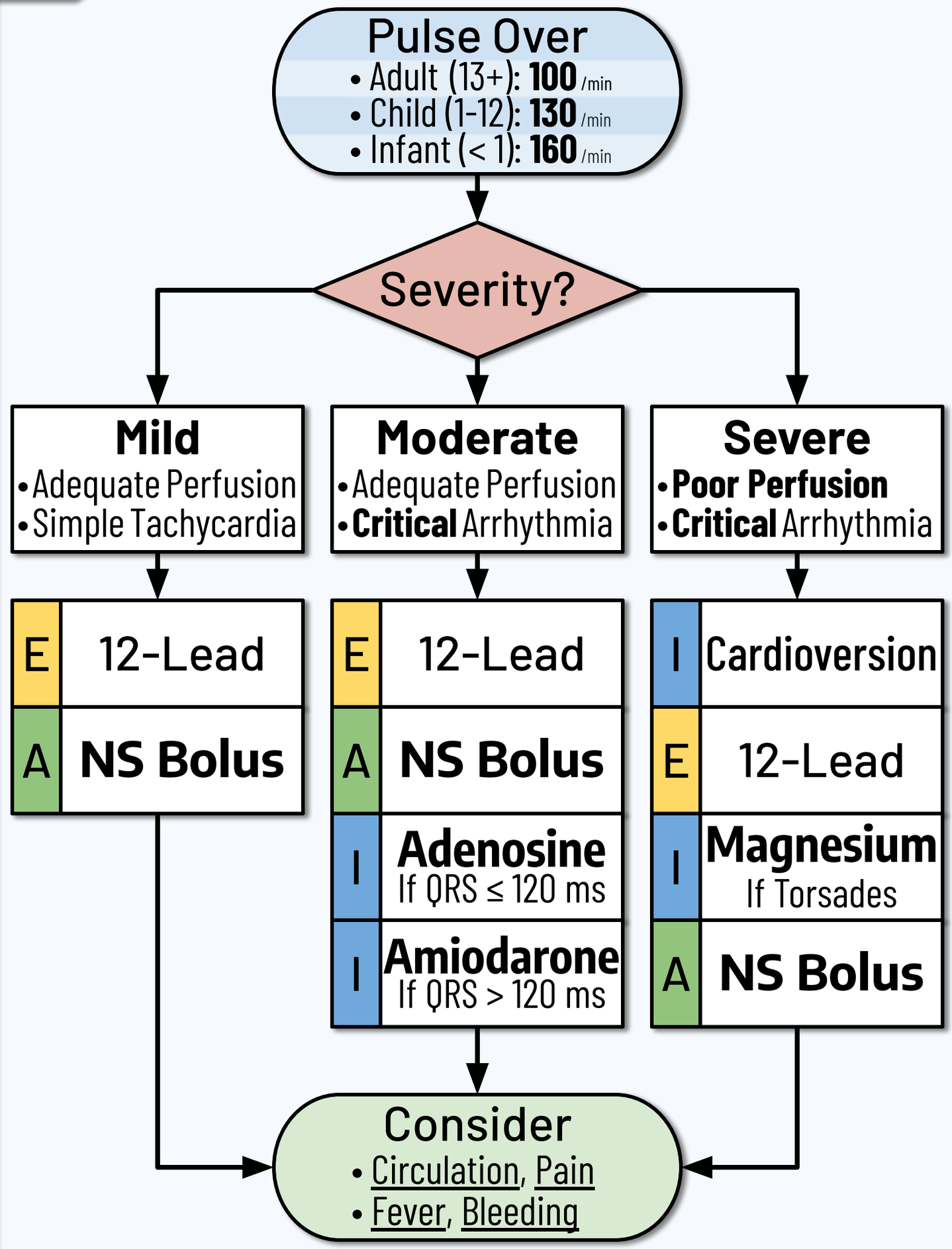
- Refer to Neonate for any peds **under 1 month** (< 31 days) old.
- Frequently a Breathing problem: don't forget O_2.
- Even a **single pill** of some meds can cause severe bradycardia.
  - Consider opiate, Ca^{2+} or ß-blocker Overdose.
- Consider effects of maternal medication in breast milk.
- Use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

NEMSIS: 9914115
Reviewed: Apr 2021

Tachycardia



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 grams	IV/IO	x1

Adult Doses

NEMSIS: 9914147, 9914151, 9914199
Reviewed: Aug 2020

AKA: Sinus Tach, SVT, A-Fib, RVR, A-Flutter, V-Tach

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

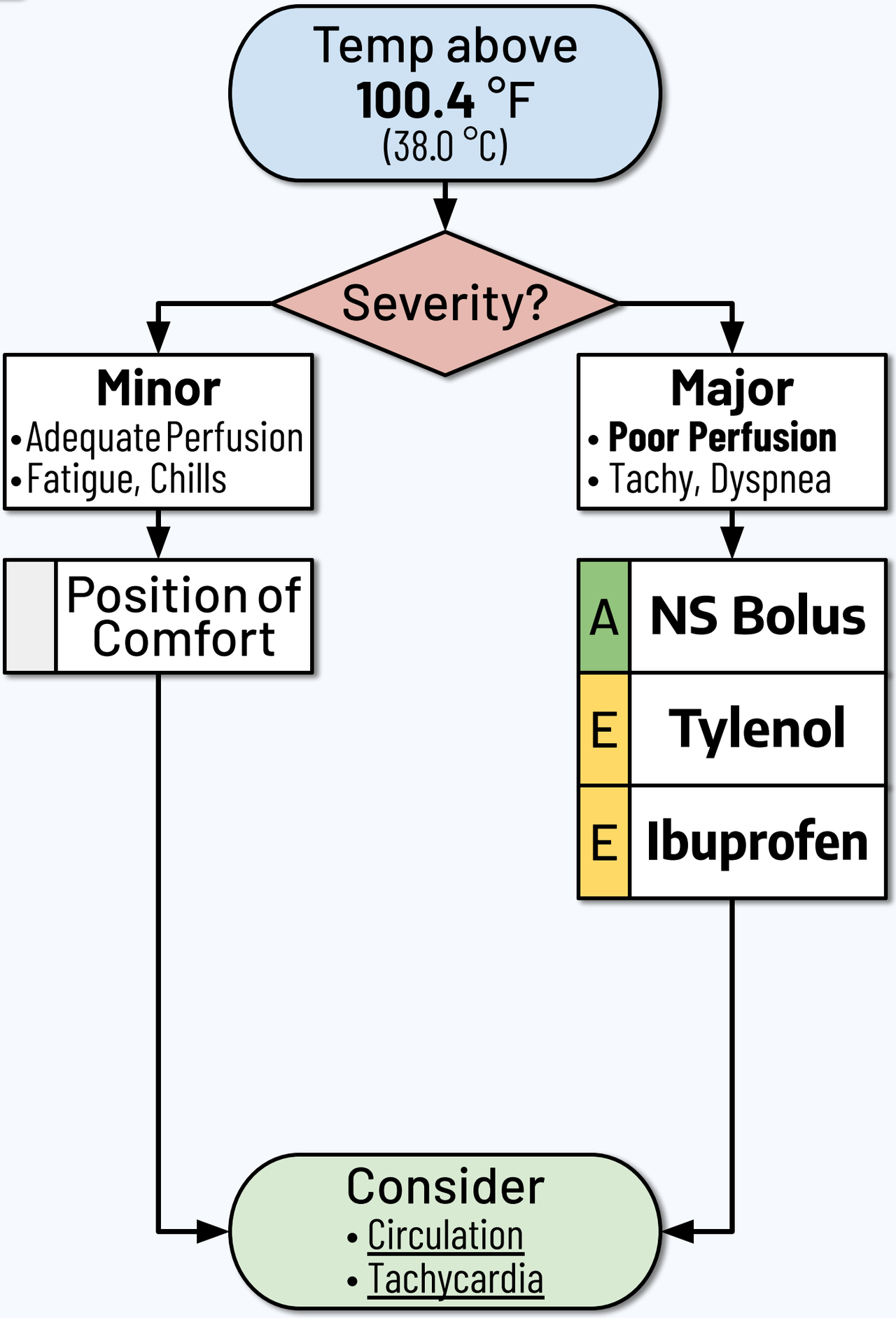
- Use Peds Reference or other approved source for peds dosing.

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

Reviewed: Aug 2020 NEMSIS: 9914147, 9914151, 9914199

Fever



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

Adult Doses

NEMSIS: 9914061, 9914129
Reviewed: Apr 2021

AKA: Toxic Infection, Flu, Flu-like Illness, Cellulitis, UTI

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

NEMSIS: 9914061, 9914129
Reviewed: Apr 2021

Hyperkalemia

Suspected or Confirmed K^+ Over **5.5** mEq/L

- E — 12-Lead
- E — **Albuterol**

Severity?

Minor
- Few EKG Changes
- 6.9 mEq/L or Less

- A — Saline Lock

Major
- **Overt** EKG Changes
- 7.0 mEq/L and Over

- A — **NS Bolus**
- I — **Calcium**
- I — **Bicarb**

Consider
- Bradycardia
- Medical CODE

Adult Doses

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

NEMSIS: 9914089
Reviewed: May 2021

AKA: Renal Failure, High K^+, Elevated Potassium

Hyperkalemia Imperatives

- Be aggressive with treatment if there are any EKG changes.
  - Elevated potassium can be critical. **Don't delay transport**.

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**)

Medications

- **Albuterol** (Ventolin®): May give without an EKG if hyperkalemic.
  - Give **four** (4x) standard nebulizer treatments back-to-back.
- **NS Bolus** (0.9% Saline): Aggressive fluids help dilute potassium.
  - Consider aggressive fluids even without Hypotension.
  - Avoid aggressive/prophylactic fluids for **dialysis** patients.
- **Calcium** (Chloride): **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 any **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

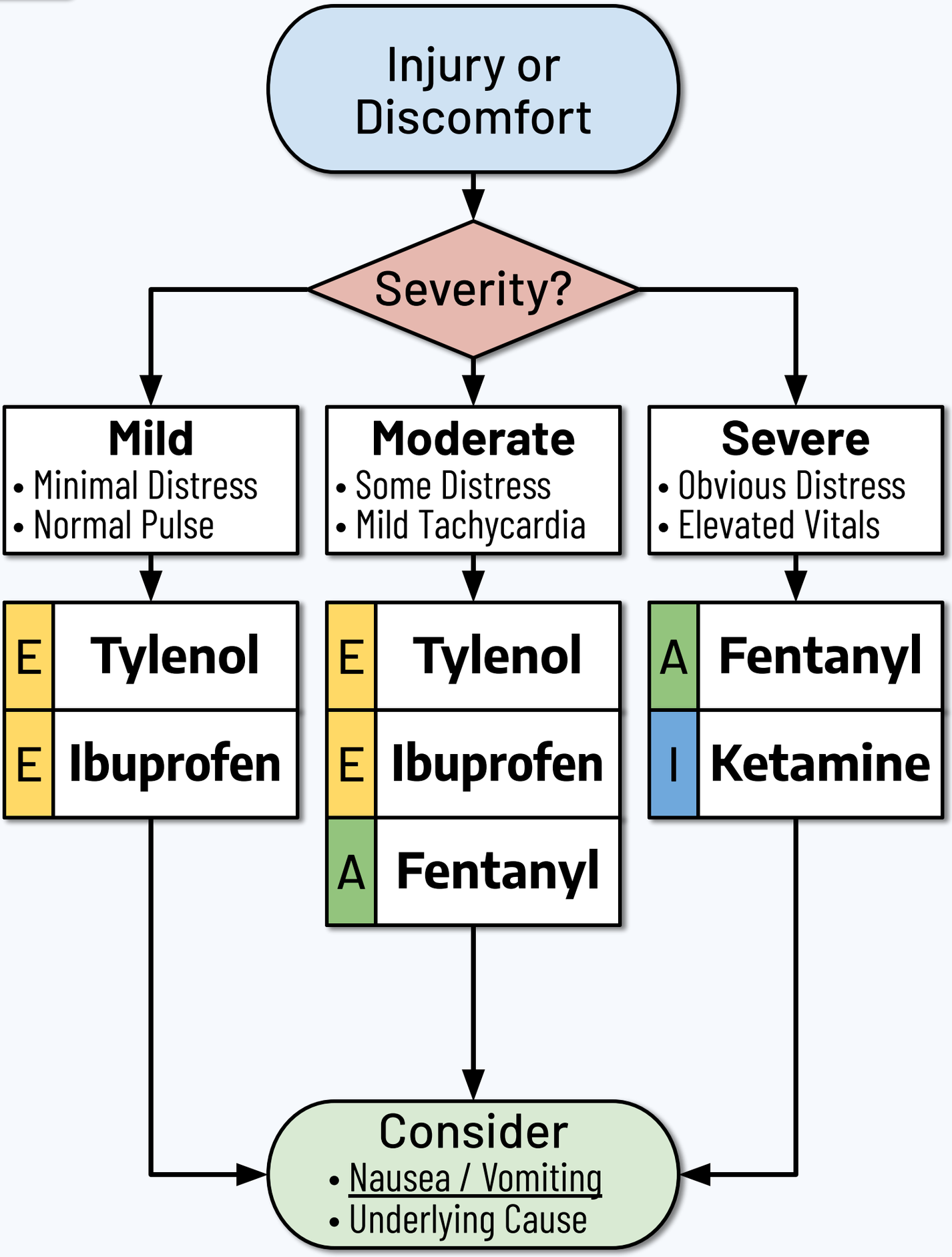
- Use Peds Reference or other approved source for peds dosing.

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

NEMSIS: 9914089
Reviewed: May 2021

Pain



Tylenol: 500 mg	PO	Q 15 min x2
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 15 min x2

Adult Doses

NEMSIS: 9914051, 9914071
Reviewed: Jun 2021

AKA: Backache, Toothache, Migraine, Fibromyalgia

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.
  - For IV use: dilute in 100 mL NS and **give slowly over 10 min**

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

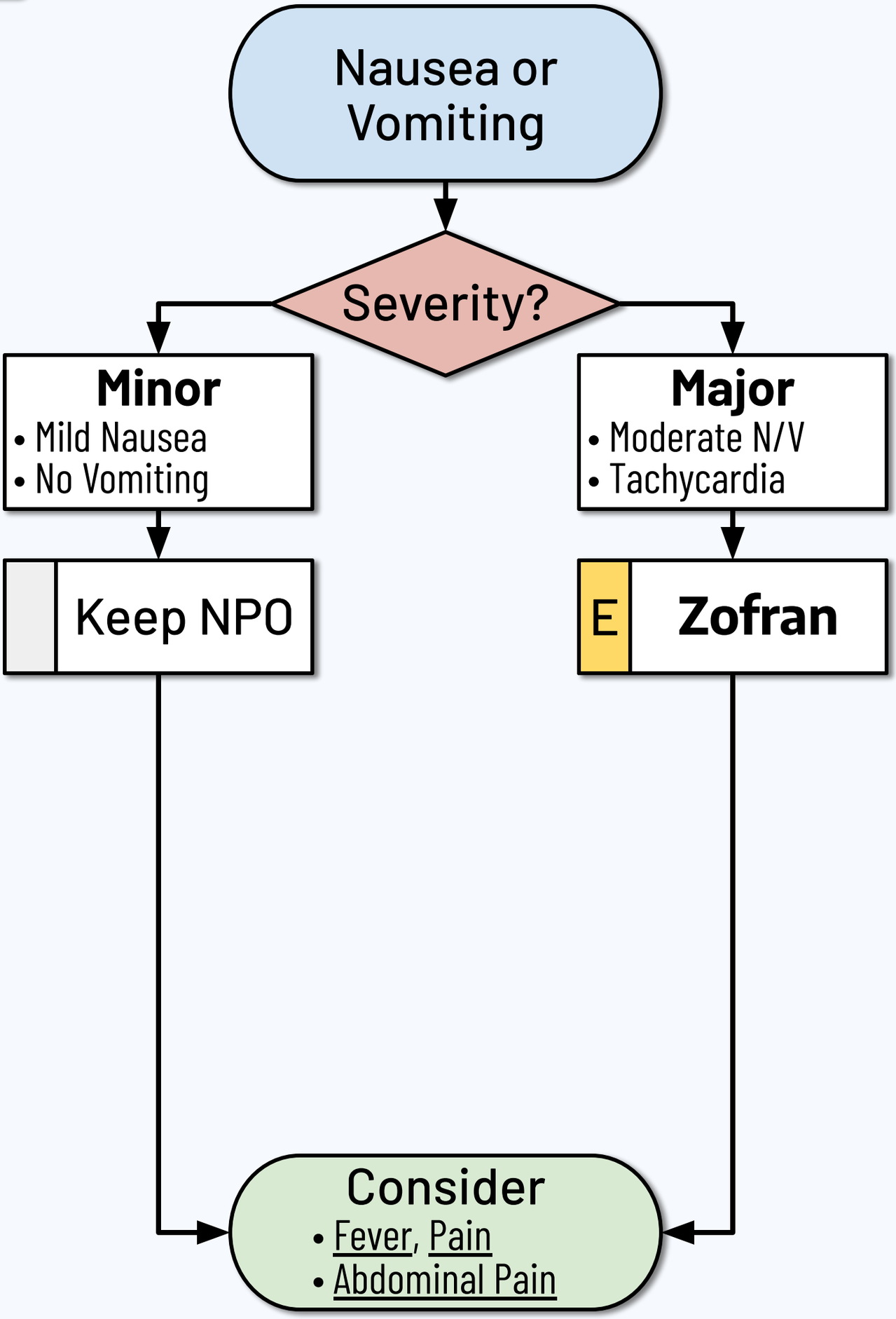
- Breaking tablets in half is appropriate. Do not break capsules.
- Withhold medications if unable to provide accurate dose.
- Use Peds Reference or other approved source for peds dosing.

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

NEMSIS: 9914051, 9914071
Reviewed: Jun 2021

Nausea / Vomiting



Zofran: 4 mg	IM/IN, IV/IO, PO	Q 5 min x2	Adult

NEMSIS: 9914131
Reviewed: Jun 2021

AKA: Emesis, Hyperemesis, Cyclic Vomiting

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 and fluids. (Oral meds are OK.)
  - 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.
  - E May only give PO - use **Orally Disintegrating Tabs** (ODTs).

Notes

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

Pediatrics

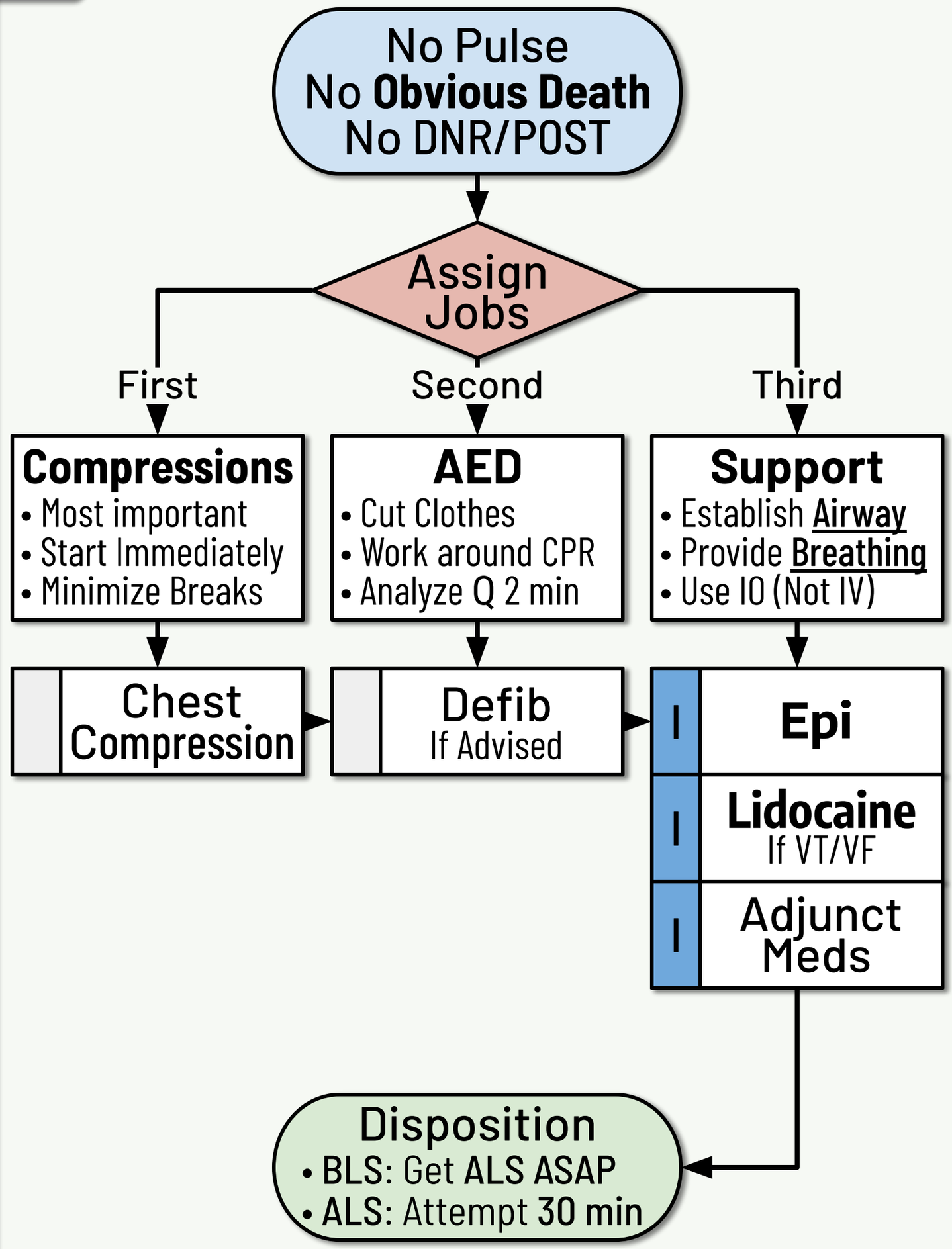
- Use Peds Reference or other approved source for peds dosing.

References

- Medscape Vomiting: https://emedicine.medscape.com/article/933135 [Ver: 10/18]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 7, 29

Reviewed: Jun 2021 NEMSIS: 9914131

Medical CODE



Epi: 1 mg	IO Q 5 min	Adult
Lidocaine: 1st **100** mg → 2nd **50** mg	IO Q 5 min x2	
Epi: 0.01 mg/kg	IO Q 5 min	Peds
Lidocaine: 1st **1** mg/kg → 2nd **0.5** mg/kg	IO Q 5 min x2	

NEMSIS: 9914011, 9914015, 9914017, 9914055
Reviewed: Feb 2021

AKA: Cardiac Arrest, CPR, VT/VF, PEA, Asystole

CODE Imperatives

- Start compressions in place.
  - Transport ASAP if **ROSC**, or **peds**, or **pregnant**, or any Special Case.
- **BLS**: Get ALS ASAP. Transport 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/ETT: **Continuous**

Medications

- **Lidocaine**: Adult doses OK for any patient 50-100 kg (**110-220** lbs)
  Otherwise: 1st 1 mg/kg → 2nd 0.5 mg/kg

Obvious Death

- Pooling Lividity or
- Rigor Mortis or
- Body Decomposition

- 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** gram	IO x1	Persistent VT/VF
I	**Magnesium: 2** grams	IO x1	Torsades

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

Notes

- Use caution with **compressions** and **defib** in a moving vehicle.
- **$EtCO_2$** can help identify ROSC and guide termination decision.
- A well run CODE should operate like a **pit crew**. Focus on your job.

Pediatrics

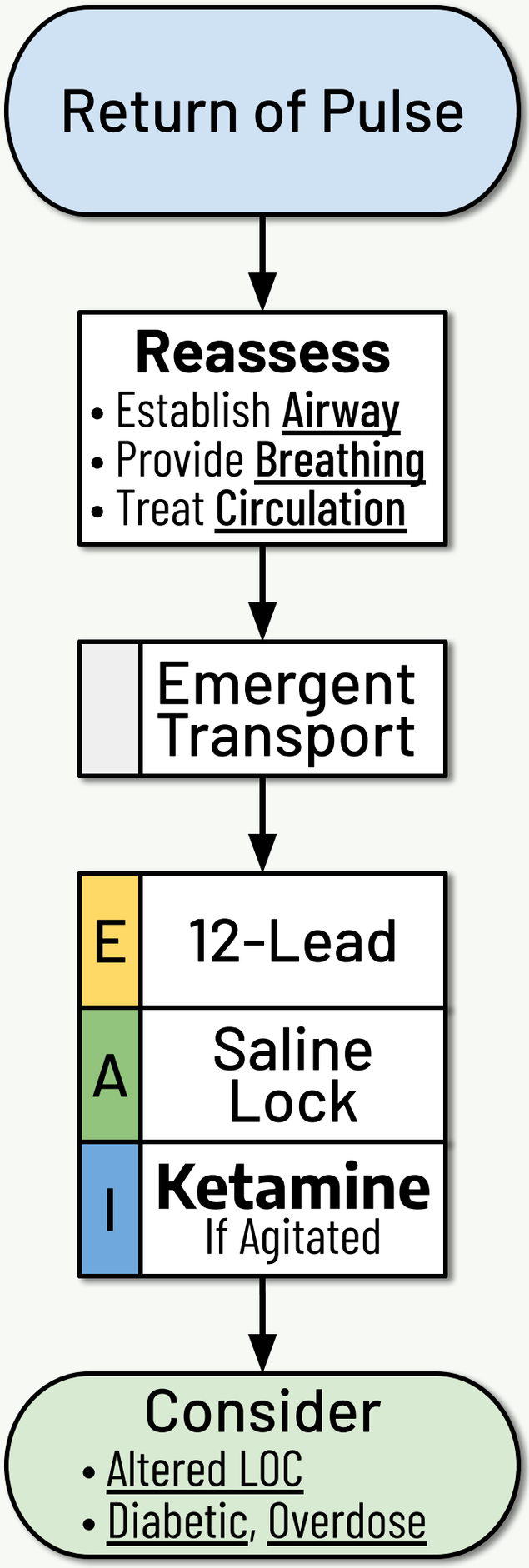
- Use 15:2 compression ratio for dual rescuer BLS resuscitation.
- Refer to Neonate for any peds **under 1 month** (< 31 days) old.
- Use Peds Reference or other approved source for peds dosing.

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

NEMSIS: 9914011, 9914015, 9914017, 9914055
Reviewed: Feb 2021

Medical ROSC



Ketamine: 20 mg	IV/IO	Q 5 min x2	Adult

NEMSIS: 9914019
Reviewed: Jun 2021

AKA: Return of Pulse, Post-Resuscitation Care

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

- $EtCO_2$ can help identify ROSC.
- Therapeutic hypothermia is **not included** in this protocol.
  - This is also known as targeted temperature management.

Pediatrics

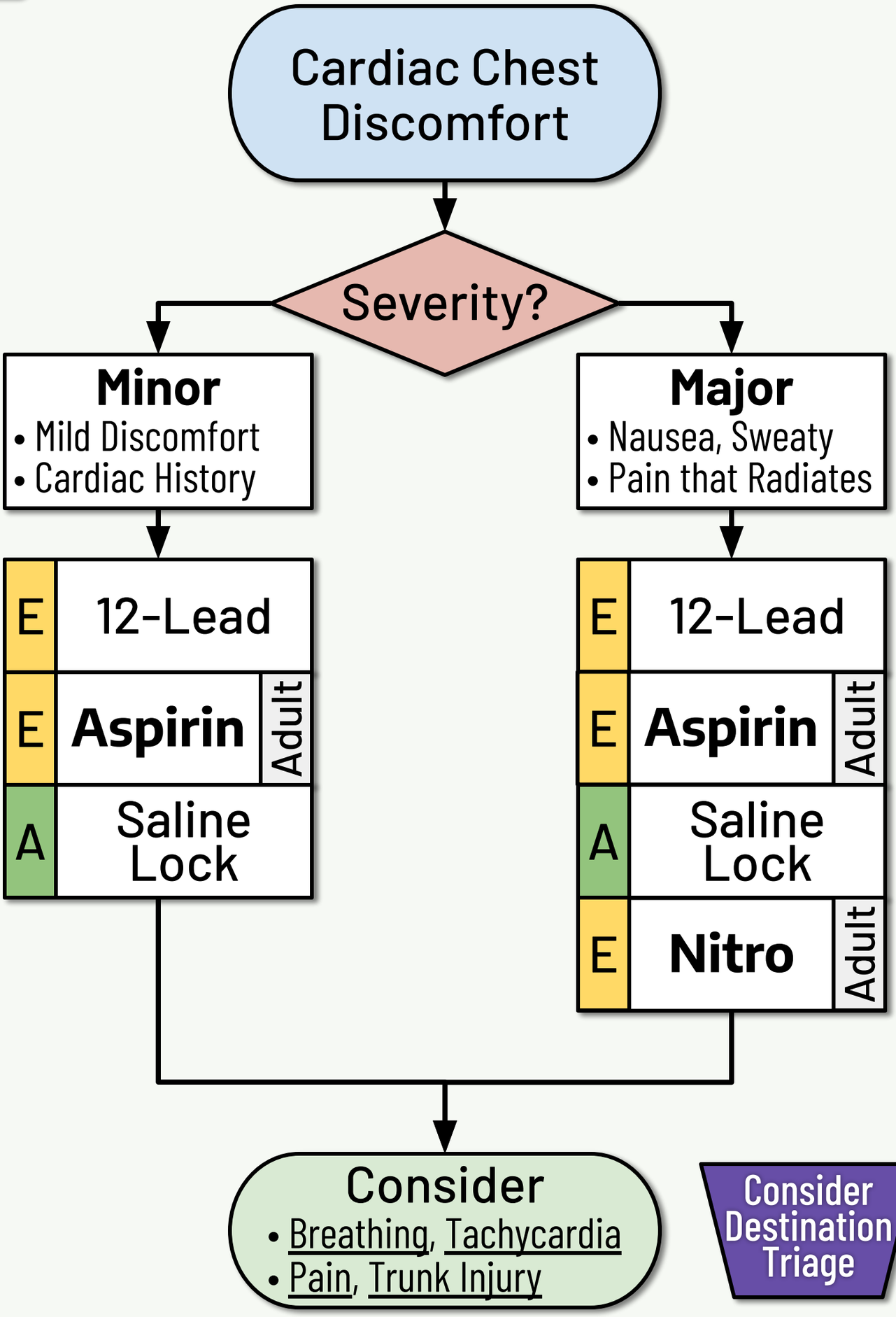
- Arrhythmias are common after ROSC, but are usually self-limited.
- Use Peds Reference or other approved source for peds dosing.

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

NEMSIS: 9914019
Reviewed: Jun 2021

Chest Pain



Aspirin:	**4x 81** mg	PO	x1
Nitro:	**0.4** mg	SL	Q 5 min x3

Adult Doses

NEMSIS: 9914117, 9914143
Reviewed: Jun 2021

AKA: Heart Attack, Acute MI, Cardiac, Chest Discomfort

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.
- For all patients with an identified **STEMI**: place **defib pads** on.
  - Also expose and shave groin during transport if time allows.

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.
  - Contraindicated if SBP under 110 mmHg **without IV/IO** access.

- If you see a STEMI
- Or EKG says ****AMI****
- Call a **HEART Alert**

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

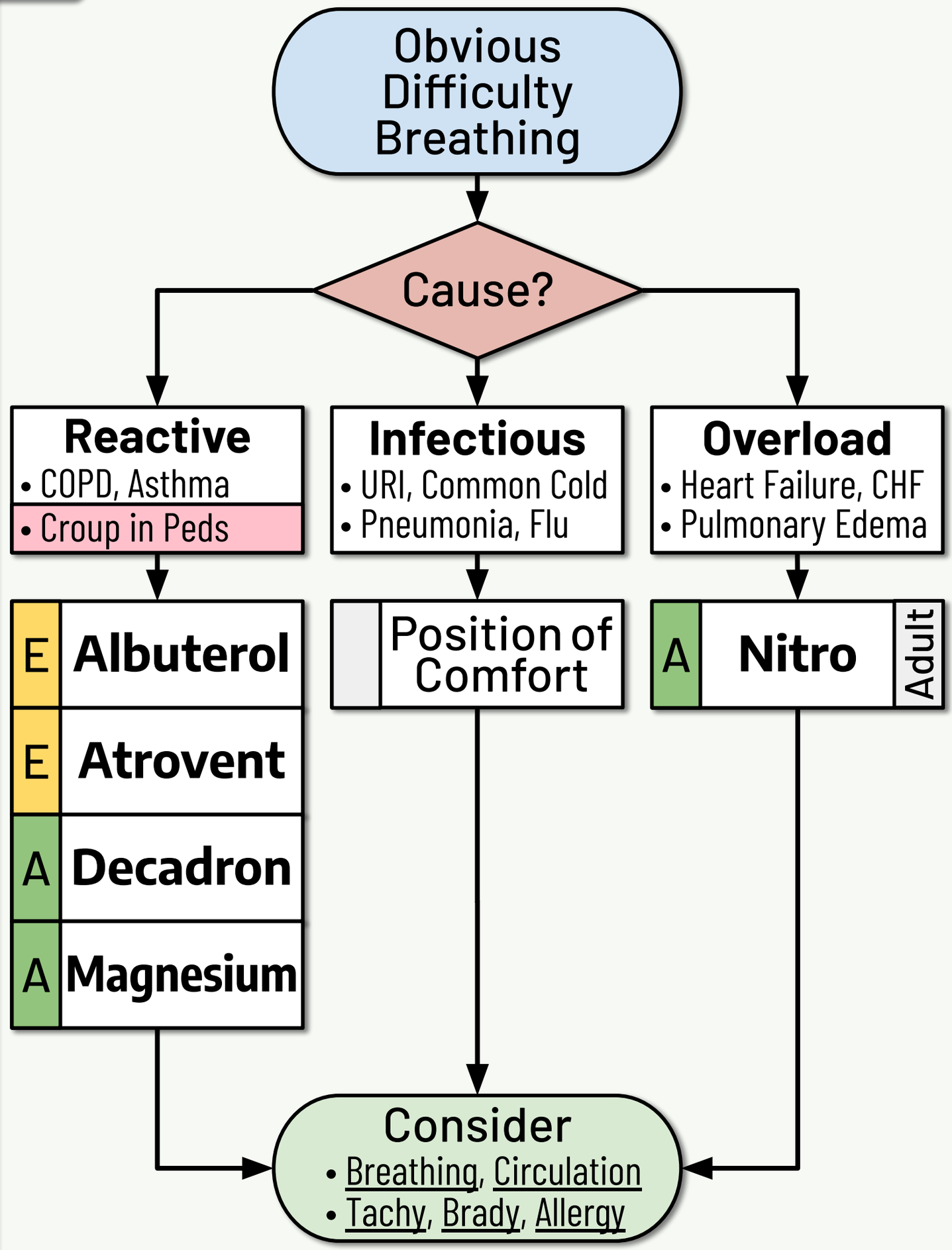
- Cardiac chest pain is unlikely in peds. Consider other causes.
- **Aspirin** and **Nitro** are contraindicated in peds chest pain.

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

NEMSIS: 9914117, 9914143
Reviewed: Jun 2021

Dyspnea



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

Adult Doses

NEMSIS: 9914137, 9914139, 9914197, 9914221, 9914223
Reviewed: Aug 2020

AKA: SOB, Wheezing, Asthma, COPD, CHF, Resp. Distress

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

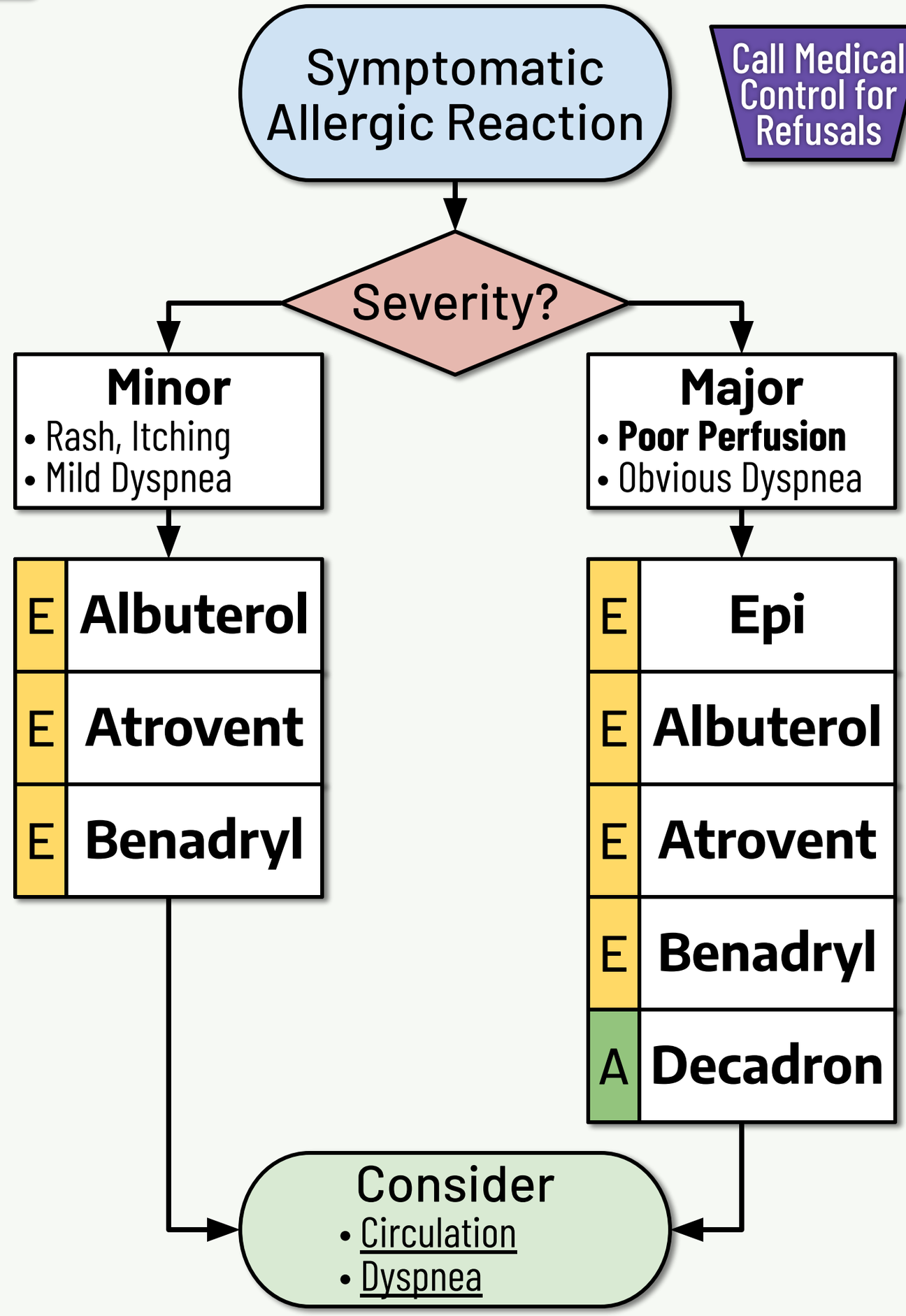
- Defer aggressive evaluation if any concern for **epiglottitis**.
  - Agitation can make it much worse.
  - Epiglottitis is unlikely in fully vaccinated patients.
- **Croup** is an infection that is best treated like a reactive cause.
- Use Peds Reference or other approved source for peds dosing.

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

NEMSIS: 9914137, 9914139, 9914197, 9914221, 9914223
Reviewed: Aug 2020

Allergic Reaction



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

NEMSIS: 9914111
Reviewed: Oct 2020

AKA: Rash, Hives, Itching, Anaphylaxis

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

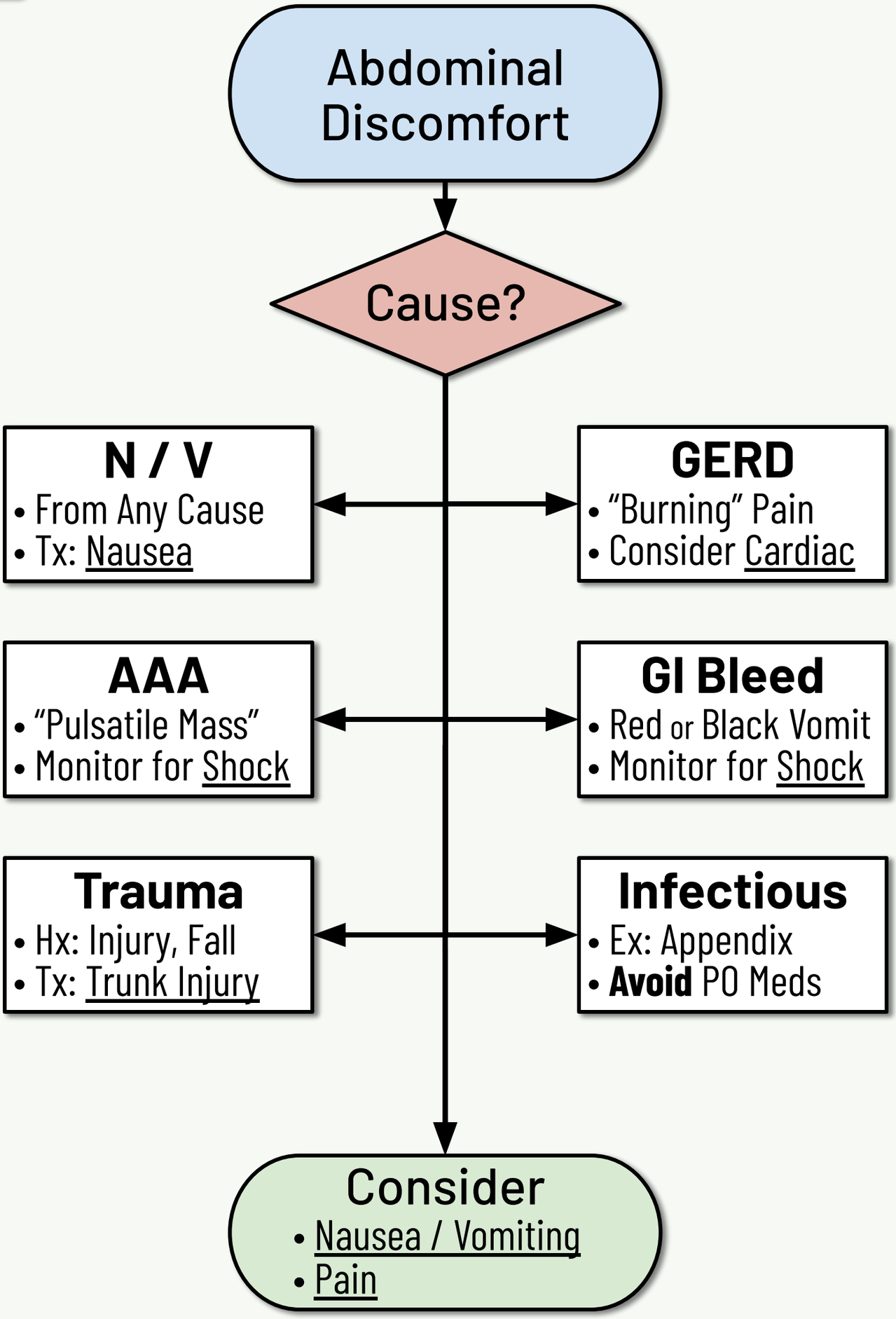
- Use Peds Reference or other approved source for peds dosing.

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

NEMSIS: 9914111
Reviewed: Oct 2020

Abdominal Pain



NEMSIS: 9914109
Reviewed: Jun 2021

AKA: Stomach (Belly) Pain, Heartburn, GERD, Acid Reflux

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

Reviewed: Jun 2021 NEMSIS: 9914109

Altered LOC / Syncope

Confused or Unresponsive
(but breathing)

	Glucometer
E	12-Lead
A	Saline Lock

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

NEMSIS: 9914113, 9914149
Reviewed: Jun 2021

AKA: Fainting, Collapse, Unresponsive "but breathing"

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

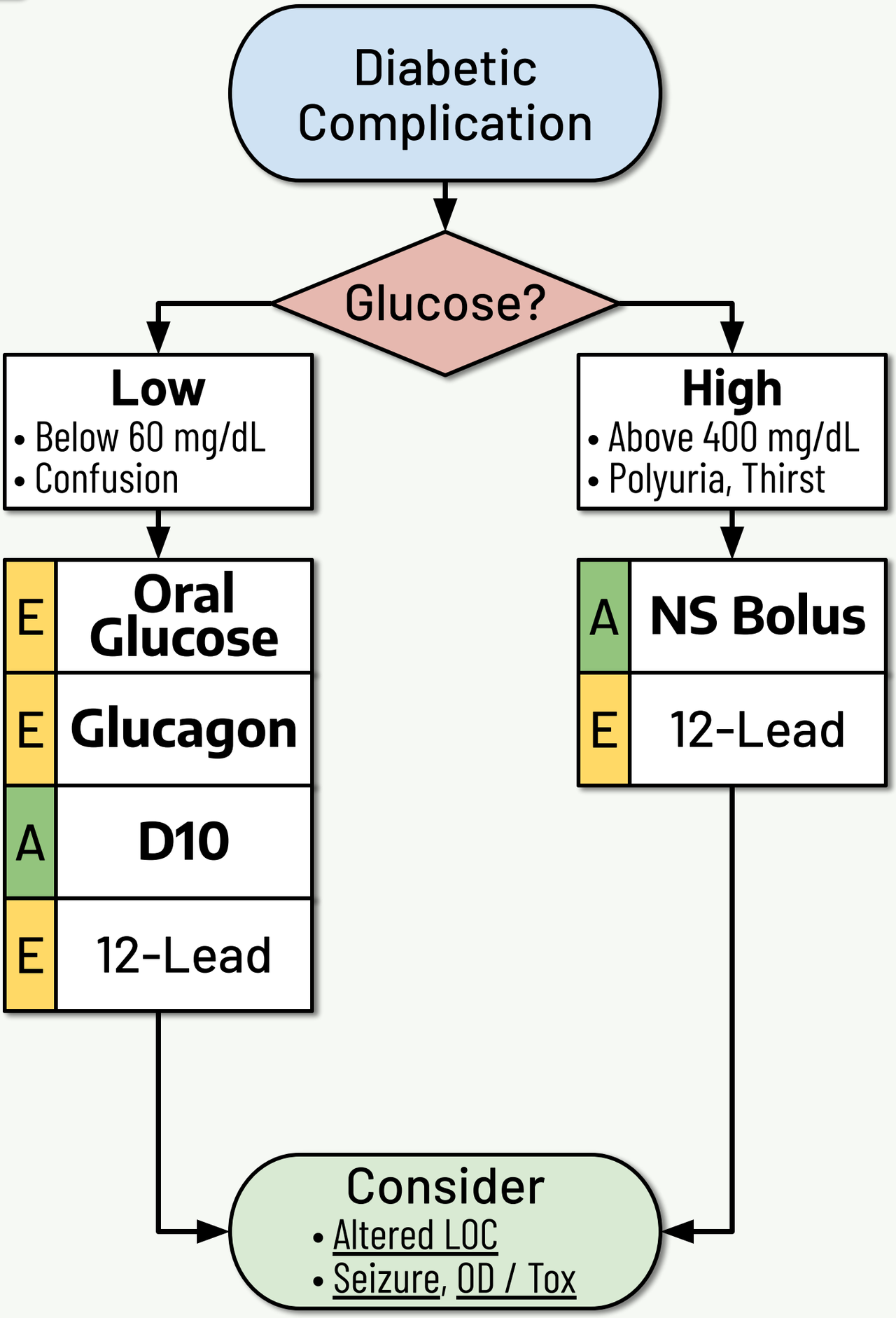
- Most causes of transient syncope are benign.
- Prolonged altered LOC indicates potentially serious pathology.
- Syncope **during exertion** can be a true cardiac emergency.

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

NEMSIS: 9914113, 9914149
Reviewed: Jun 2021

Diabetic



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

Adult Doses

NEMSIS: 9914121, 9914125
Reviewed: Oct 2020

AKA: Hypo/Hyperglycemia, Blood Sugar, Blood Glucose

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 15™): 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

NEMSIS: 9914121, 9914125
Reviewed: Oct 2020

Overdose / Tox

Ensure Provider SAFETY

Symptomatic Toxic Exposure or Overdose

Call Medical Control for Refusals

Severity?

Minor
- Adequate Perfusion
- Minor Symptoms

Major
- **Poor Perfusion**
- Toxic Effects

A — Saline Lock

I — Administer Antidote

E — 12-Lead

A — Saline Lock

Ensure Patient DECON

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

Adult Antidote Doses

	Toxin		
	Opiates	**Narcan: 0.4-4** mg	IM/IN, IV/IO
I	ß-blocker	**Glucagon: 1** mg	IM/IN
I	Organophos	**Atropine: 2** mg	IM, IV/IO
I	Ca-blocker	**Calcium: 1** g over 10 min	IV/IO
I	Tricyclic	**Bicarb: 50** mEq	IV/IO

NEMSIS: 9914043, 9914135, 9914215, 9914217, 9914219, 99104225
Reviewed: May 2021

AKA: Poisoning, Ingestion, Intoxicated (Drunk)

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** (Chloride): **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™** (Atropine/2-PAM): May use if MCI / nerve agent
- [I] **Cyanokit®** (Cyanide antidote): May use kit if indicated

Notes

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

Pediatrics

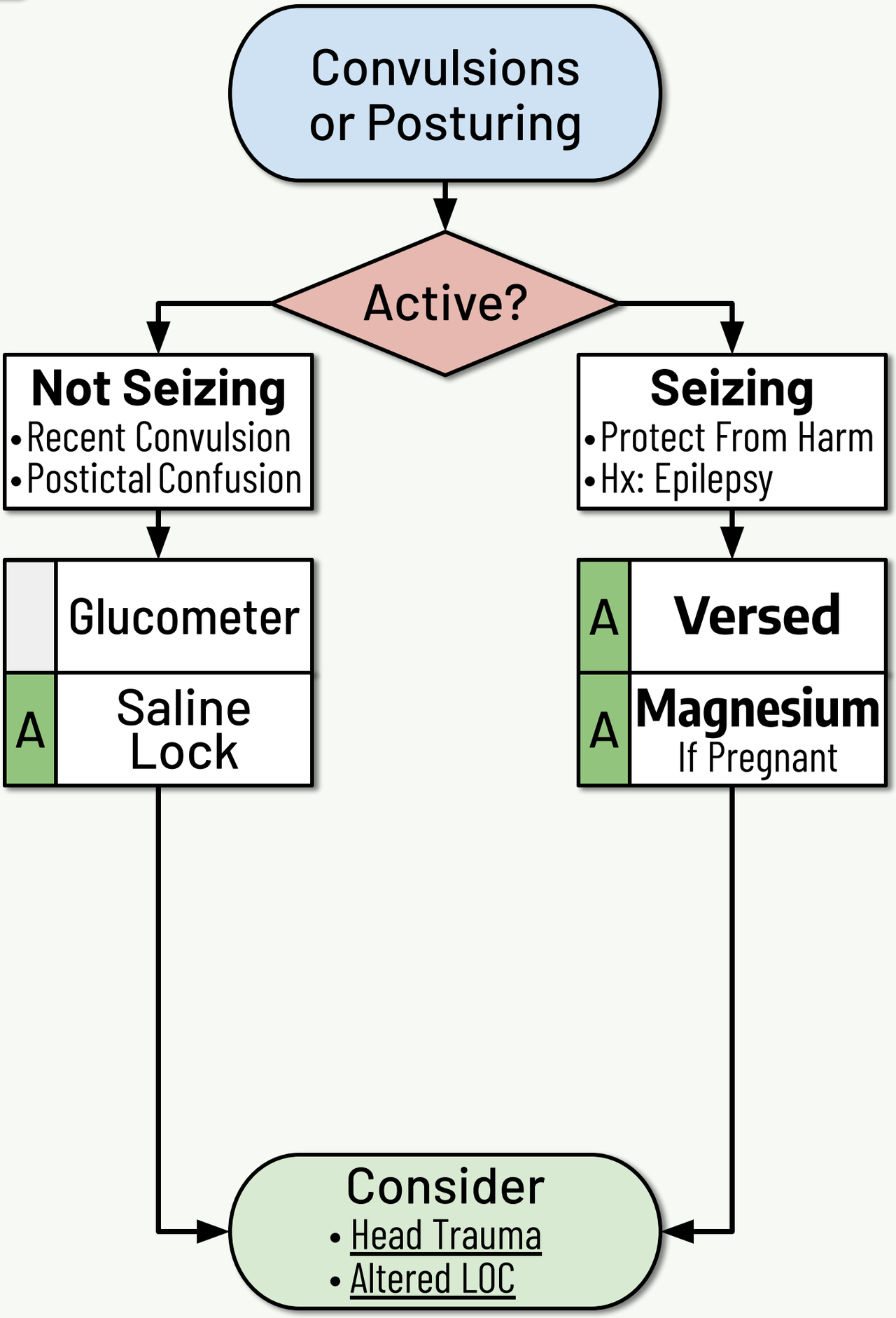
- Just a **single pill** of some adult meds can cause major symptoms.
  - Be prepared to treat Shock if overdose is suspected.
  - Ingested **cigarettes or vape fluid** (nicotine) can be **fatal**.
- Use Peds Reference or other approved source for peds dosing.

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

NEMSIS: 9914043, 9914135, 9914215, 9914217, 9914219, 99104225
Reviewed: May 2021

Seizure



Versed:	**2.5** mg	IV/IO, IM/IN	Q 2 min x4	Adult Doses
Magnesium:	**2** grams	IV/IO	x1	

NEMSIS: 9914141, 9914157
Reviewed: Jun 2021

AKA: Epilepsy, Eclampsia, Febrile Seizure, Withdrawal

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.
- **Use caution with needles** - increased risk of provider injury.

Medications

- **Versed**® (Midazolam): Only appropriate for active convulsions.
  - May double when admin IM/IN to limit risk (5 mg IM Q 5 min x2)
- **Magnesium** (sulfate): May cause Hypotension and Dyspnea.
  - Only 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

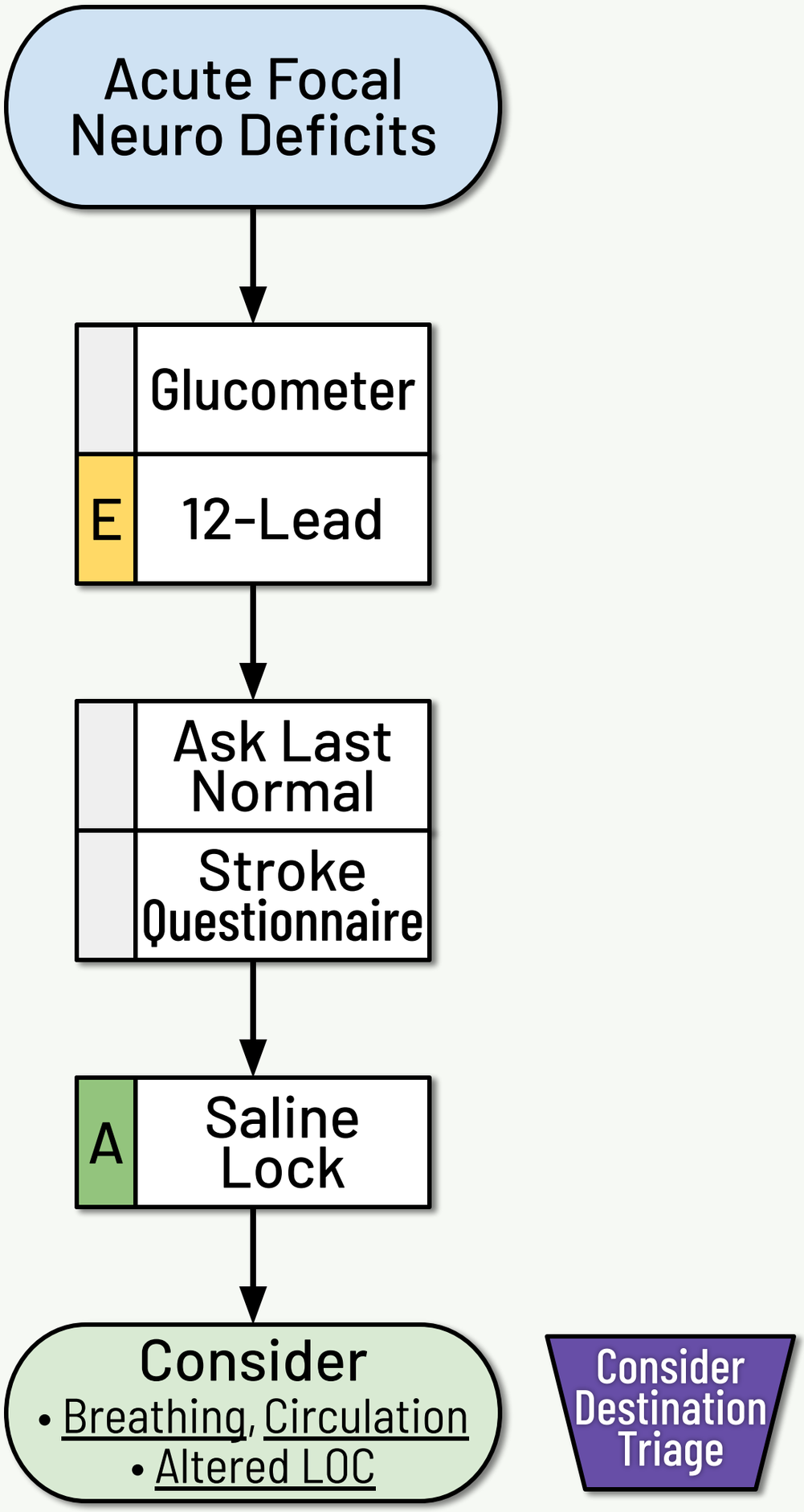
- Peds under 5 y/o may have a seizure caused by Fever.
  - It is usually self limiting and does not require intervention.
  - Consider medication if longer than 5 min or seizure reoccurs.
  - Aggressively treat any peds seizure not associated with Fever.
- Use Peds Reference or other approved source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

References

- Medscape Seizure: https://emedicine.medscape.com/article/1184846 [Ver: 10/20]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 22

NEMSIS: 9914141, 9914157
Reviewed: Jun 2021

Stroke



NEMSIS: 9914145
Reviewed: Oct 2017

AKA: CVA, TIA, Mini Stroke

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

- **F**acial Droop?
- **A**rm Drift?
- **S**lurred Speech?
- **T**ime Last Normal?

Stroke VAN

- **V**ision: Partial / Total Loss?
- **A**phasia: Trouble Speaking?
- **N**eglect: 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

Reviewed: Jan 2021 NEMSIS: 9914145

Psychiatric

Ensure Provider SAFETY

Overt Psychosis or SI / HI

Call Medical Control for Refusals

Severity?

Mild
- Mostly Calm
- Mostly Agreeable

Position of Comfort

Moderate
- Moderate Agitation
- Will Listen to You

I **Versed**

Severe
- Delirious, Irrational
- Fighting, Agitated

Call Police

I **Versed**

I **Haldol**

Consider
- Circulation (shock)
- Altered LOC

Versed: **2.5** mg	IV/IO, IM/IN	Q 2 min x4	Adult Doses
Haldol: **5** mg	IM	x1	

NEMSIS: 9914053
Reviewed: Jun 2021

AKA: Restraint, Suicidal, Behavioral, Dementia, Delirium

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.
- **Use caution with needles** - increased risk of provider injury.

Medications

- **Versed**® (Midazolam): Use with caution with peds and elderly.
  - May double when admin IM/IN to limit risk (5 mg IM Q 5 min x2)
- **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.

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 [Ver: 8/19]
- Medscape Aggression: https://emedicine.medscape.com/article/288689 [Ver: 6/17]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 27

NEMSIS: 9914053
Reviewed: Jun 2021

Pregnancy / Delivery

Suspected or Known Pregnancy
(20 weeks & over)

Call Medical Control for Refusals

Delivery?

Not Imminent
- Vaginal Bleeding
- Labor, Contractions
- Miscarriage

	Left Lateral Recumbent
A	**NS Bolus**

Normal
- Adequate Perfusion
- Full Term (> 36 w)
- Head Presentation

E	Deliver Baby
	Manage Neonate
A	Saline Lock

Complicated
- Premature or Twins
- Breech or Cord
- Failed Delivery

	Don't Push
	Emergent Transport
E	Manage OB Complication
A	**NS Bolus**

Consider
- HTN, Circulation
- Seizure, Bleeding

NS Bolus: 1,000 mL	IV/IO	x1		Adult

NEMSIS: 9914155
Reviewed: Dec 2017

AKA: Contractions, Pre / Eclampsia, Postpartum care

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

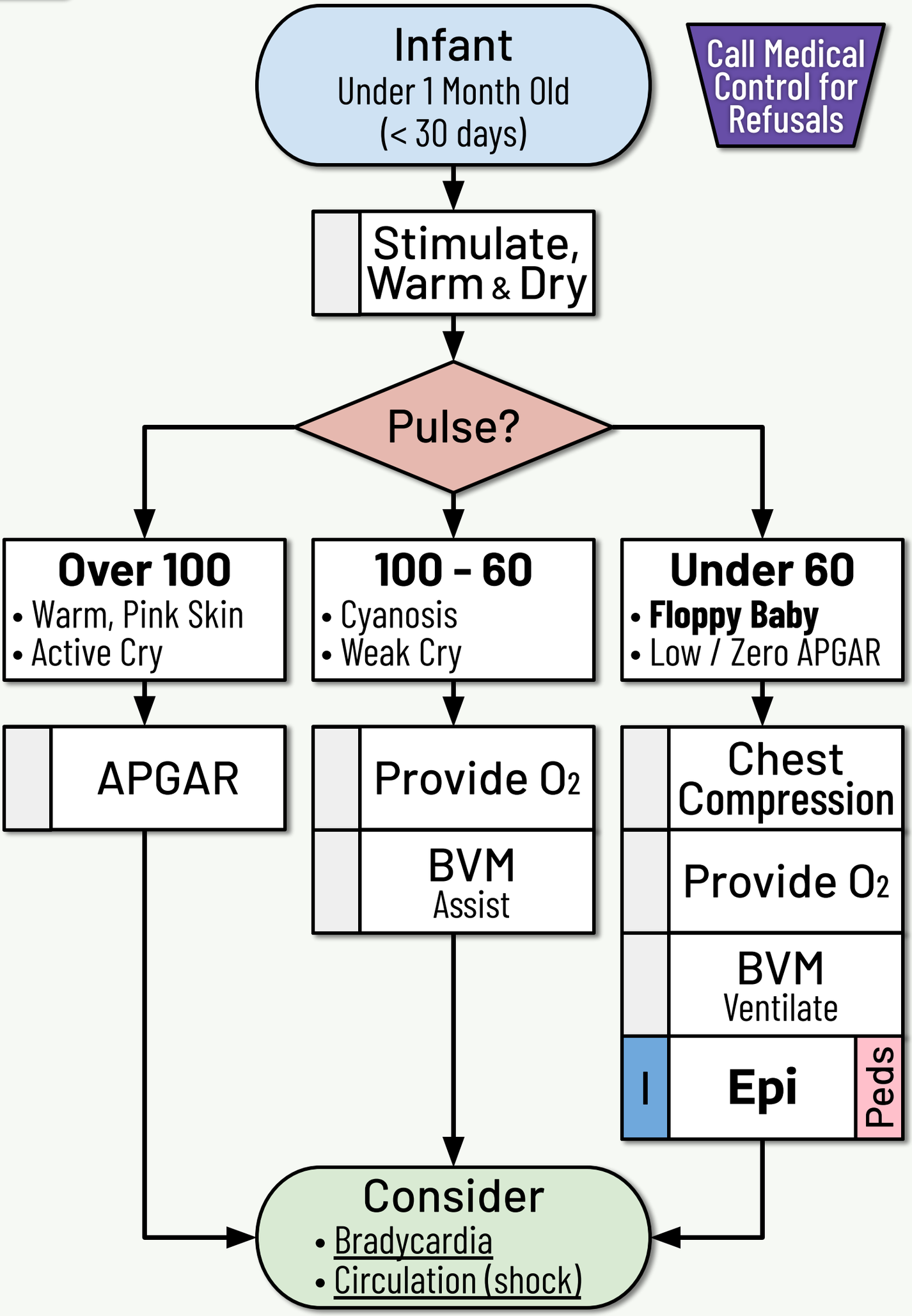
- Refer to Neonate for management of the newborn baby.

References

- Medscape Delivery: https://emedicine.medscape.com/article/260036 [Ver: 1/19]
- Medscape Eclampsia: https://emedicine.medscape.com/article/253960 [Ver: 4/19]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 36

NEMSIS: 9914155
Reviewed: Feb 2018

Neonate



Epi: 0.5 mL (of 1 mg per 10 mL) IV/IO Q 5 min | Peds

NEMSIS: 9914133, 9914163
Reviewed: Apr 2019

AKA: Newborn, Baby Resuscitation

Compressions

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

BVM Rate

- Neonate: **Q 2 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
• **A**ppearance	pink	blue	gray
• **P**ulse	100+	99-1	0
• **G**rimace	good	poor	none
• **A**ctivity	kicks	weak	limp
• **R**espiration	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

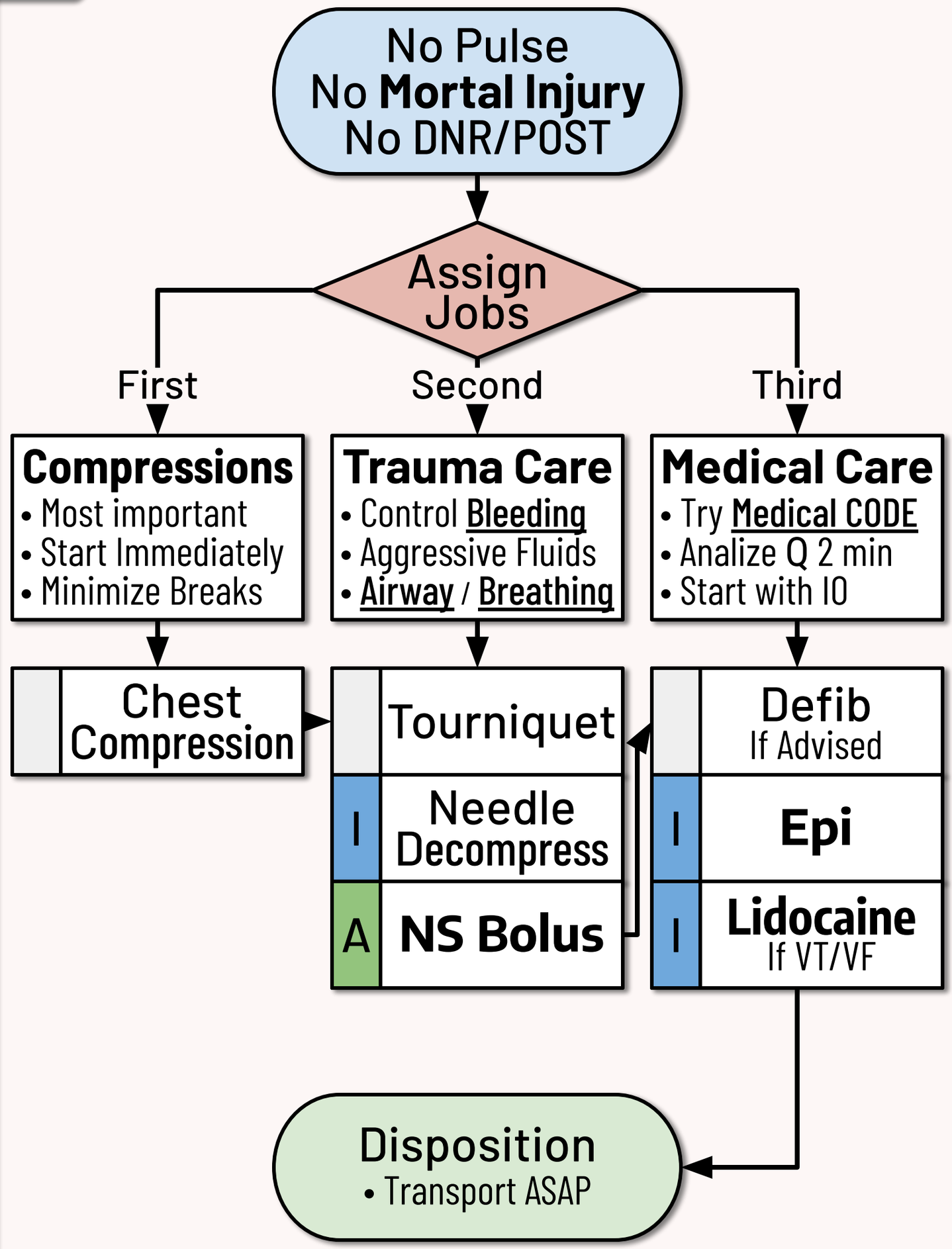
- This protocol is for infants under 1 month (< 30 days) old only.
- It does not apply to adults or older peds.

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

NEMSIS: 9914133, 9914163
Reviewed: Sep 2018

Trauma CODE



NS Bolus: **1,000** mL	IV/IO	x2	Adult Doses
Epi: **1** mg	IV/IO	Q 5 min	
Lidocaine: 1st **100** mg → 2nd **50** mg	IV/IO	Q 5 min x2	

NEMSIS: 9914087
Reviewed: Feb 2021

AKA: Traumatic Arrest

CODE Imperatives

- Place **Tourniquets** if needed.
  - Limiting blood loss 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/ETT: **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 is stable above **90** mmHg.
- **Lidocaine**: Adult doses OK for any pt 50-100 kg (**110-220** lbs)
  - **Otherwise** use: 1st 1 mg/kg → 2nd 0.5 mg/kg

Notes

- Use caution with **compressions** and **defib** in a moving vehicle.
- $EtCO_2$ can help identify ROSC and guide termination decision.
- A well run CODE should operate like a **pit crew**. Focus on your job.

Pediatrics

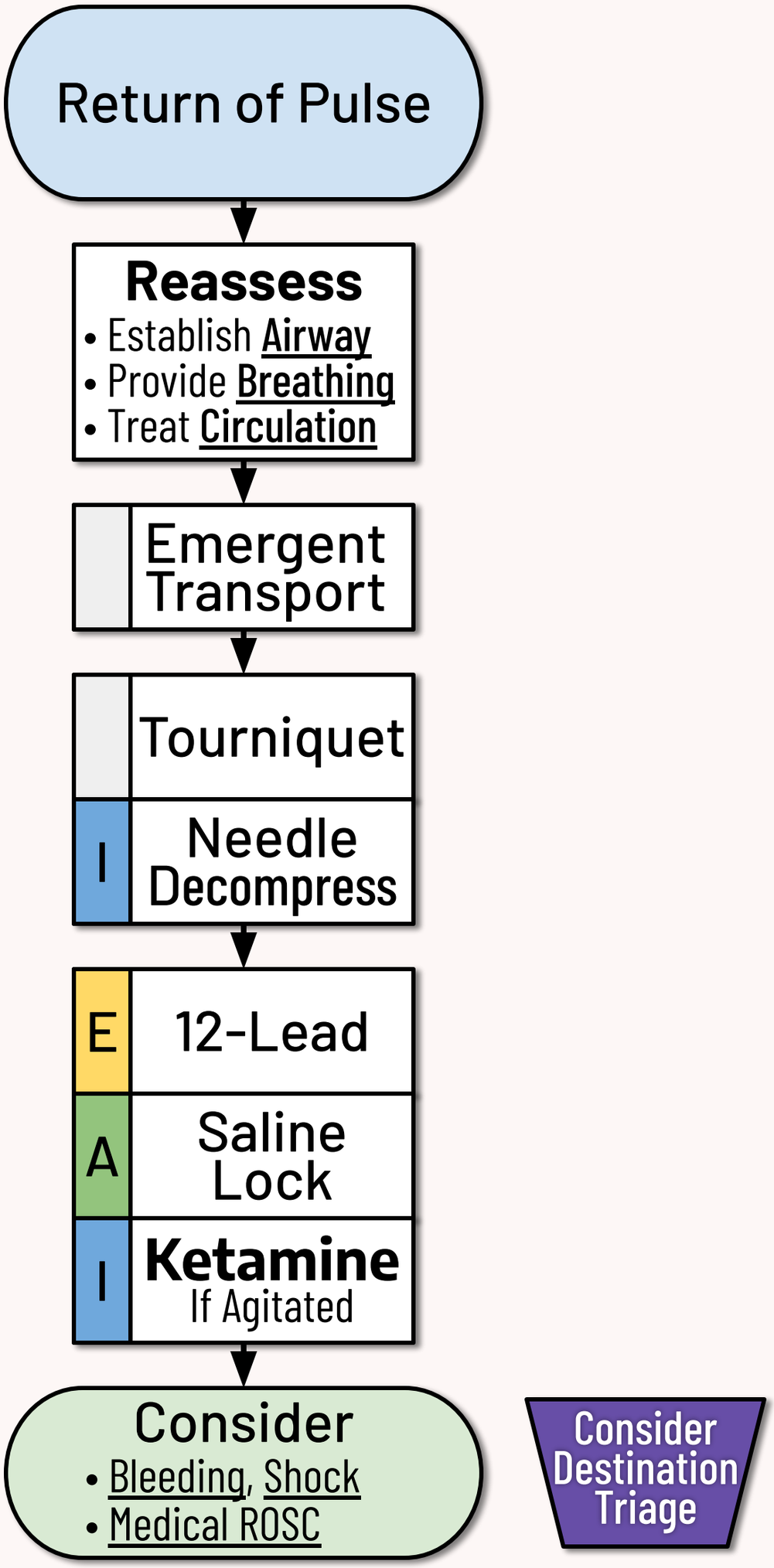
- Use Peds Reference or other approved source for peds dosing.

References

- ATLS®: https://viaaerearcp.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

NEMSIS: 9914087
Reviewed: Feb 2021

Trauma ROSC



Ketamine: 20 mg	IV/IO	Q 5 min x2	Adult

NEMSIS: 9914165
Reviewed: Nov 2017

AKA: Return of Pulse / Post-Resuscitation after Trauma

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

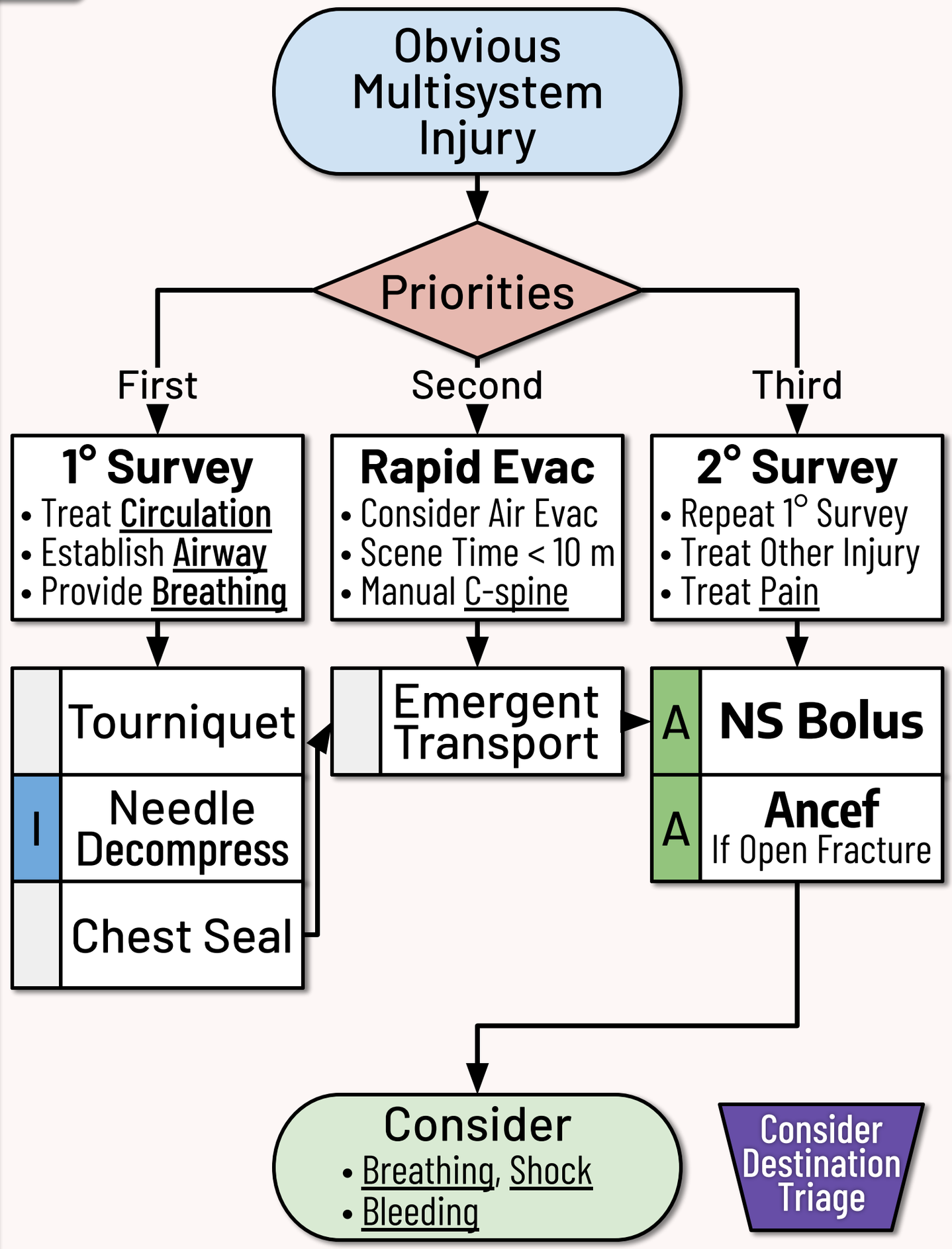
- Use Peds Reference or other approved source for peds dosing.

References

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

NEMSIS: 9914165
Reviewed: Jan 2019

Major Trauma



NS Bolus:	**1,000** mL	IV/IO	x2
Ancef:	**1** gram	IV/IO, IM	x1

Adult Doses

NEMSIS: 9914045, 9914105, 9914207
Reviewed: Jun 2021

AKA: Multisystem Trauma, Explosion / Blast Injury

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.

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

Call ER

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.
- **Ancef®** (Cefazolin): Provide if an open fracture is suspected.
  - Avoid if pt allergic to Keflex, PCN or other cephalosporins.
  - Reconstitute powder with 2-3 mL of NS and **shake well**.

Notes

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

Pediatrics

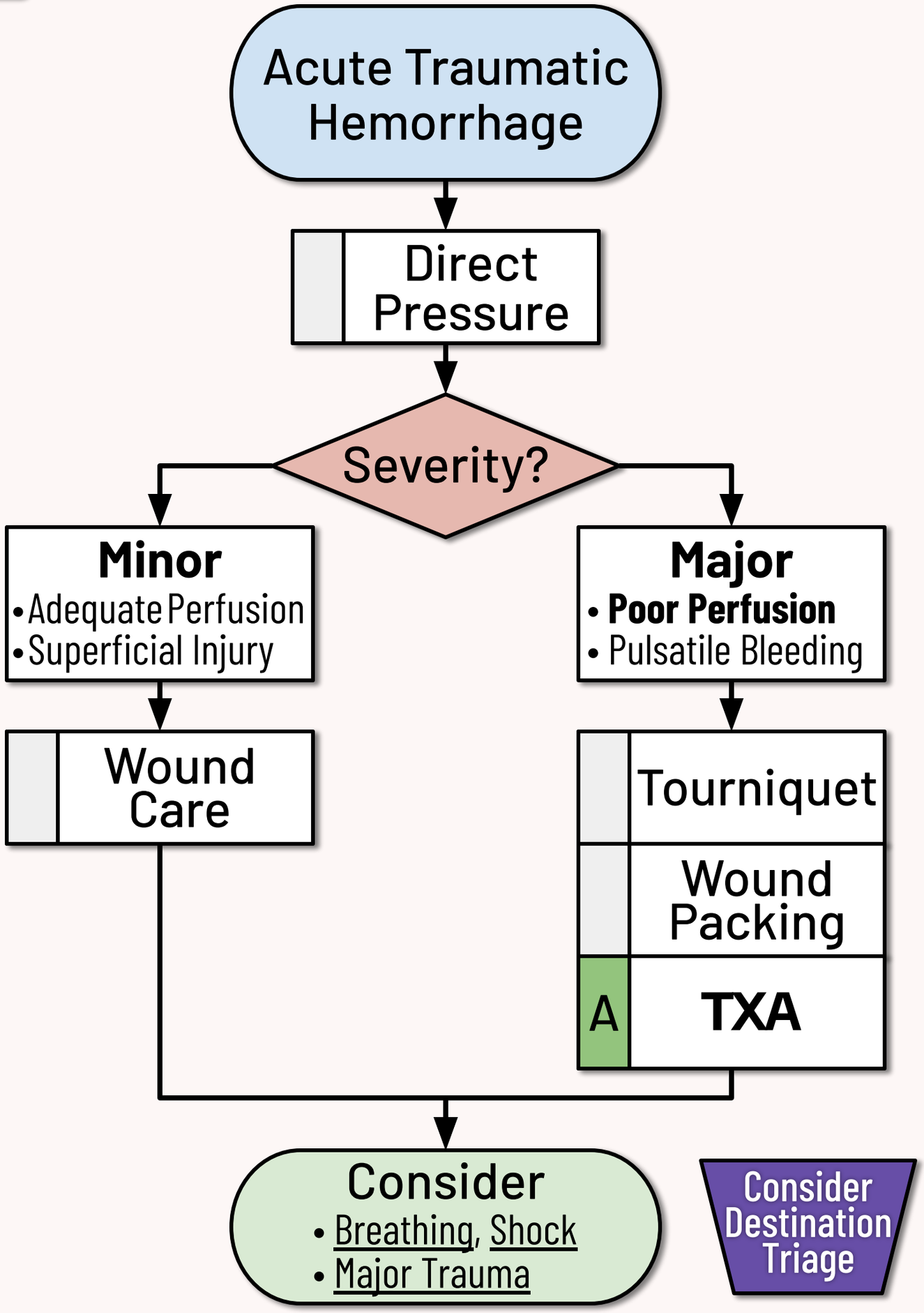
- Use Peds Reference or other approved source for peds dosing.

References

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

NEMSIS: 9914045, 9914105, 9914207
Reviewed: Jun 2021

Bleeding



TXA: 1 gram	IV/IO	over 10 min		Adult

NEMSIS: 9914083
Reviewed: Oct 2020

AKA: Hemorrhage, Tourniquet, Wound Packing

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

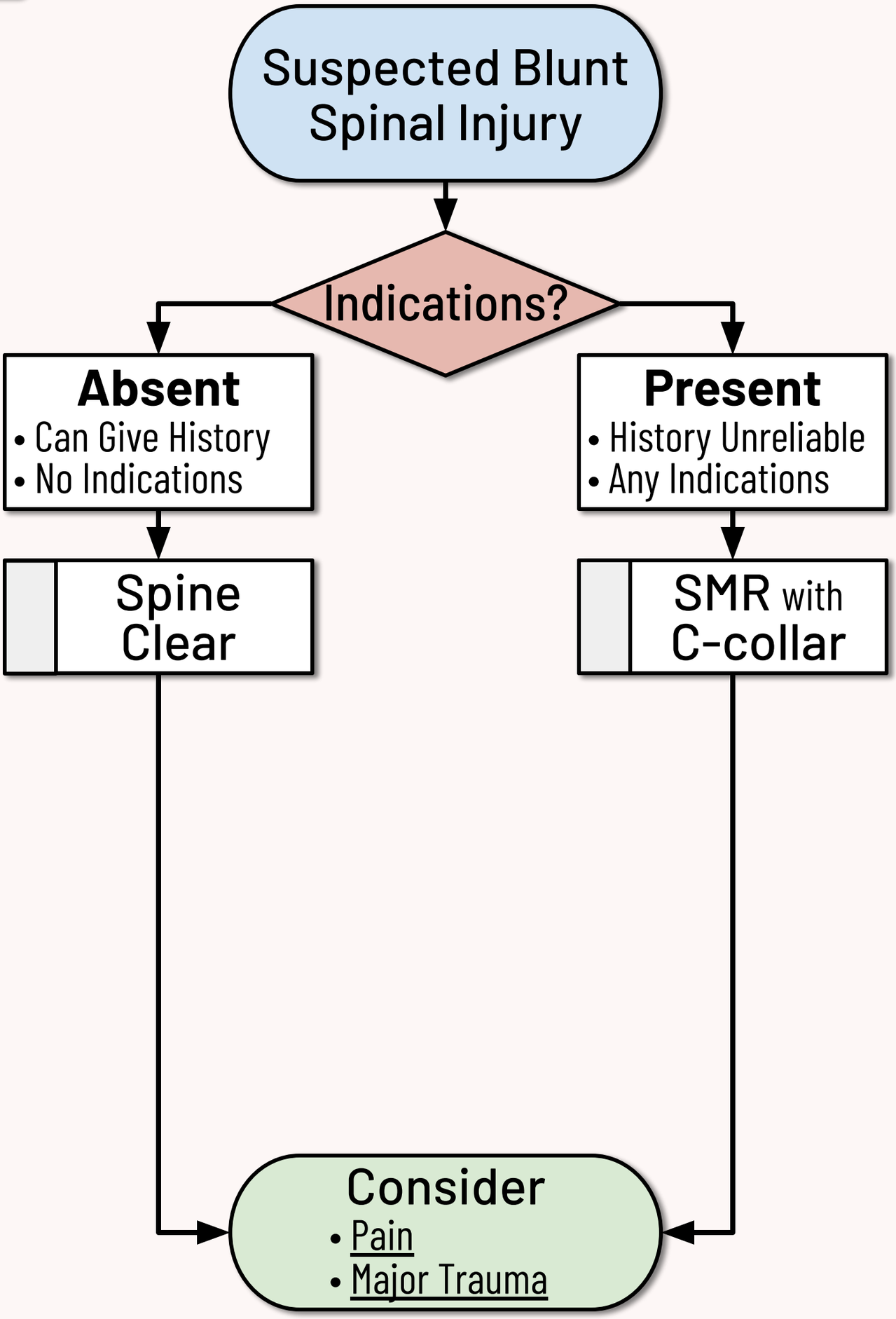
- Hypotension is a late sign of Shock in peds.
- Use Peds Reference or other approved source for peds dosing.

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

NEMSIS: 9914083
Reviewed: Oct 2020

Immobilization



Indications

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

NEMSIS: 9914073, 9914107
Reviewed: Feb 2021

AKA: Spinal Motion Restriction (**SMR**), C-spine, Backboard

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, crepitus, 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, or unstable vitals
  - Fall > 10 ft, flail chest, unstable pelvis, or 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

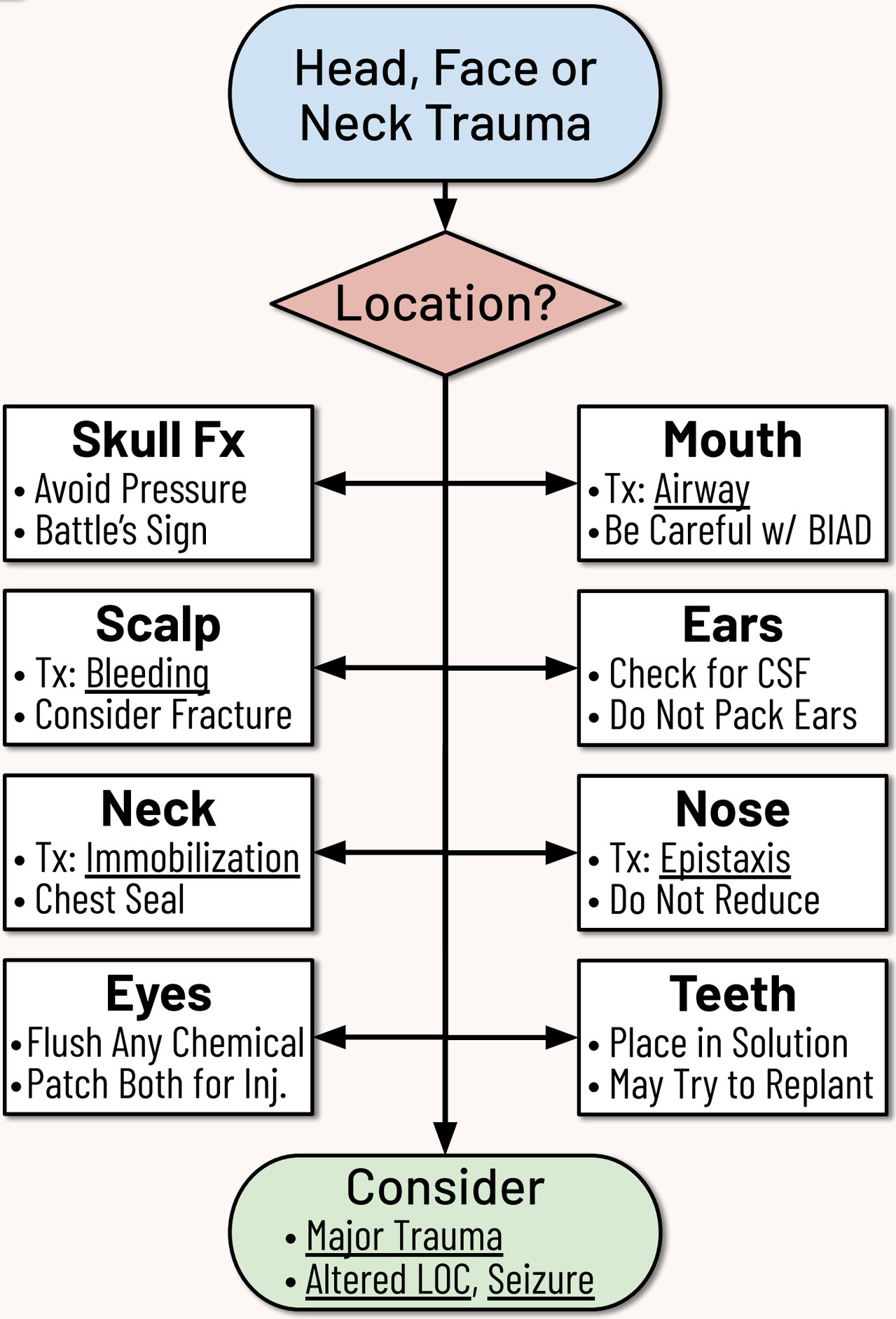
- Any child that cannot provide a reliable history should have **SMR**.

References

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

NEMSIS: 9914073, 9914107
Reviewed: Feb 2021

Head Injury



NEMSIS: 9914041, 9914057, 9914099, 9914101, 9914205
Reviewed: Feb 2021

AKA: Concussion, Face / Neck / Eye / Nose / Mouth Trauma

Head Injury Imperatives

- Transport emergently if sudden changes in LOC.
- **Hypoxia** and **Hypotension** are associated with poor outcomes.
  - Investigate and treat for Hypoxia and Hypotension aggressively.
- Hyperventilate to reduce $EtCO_2$ (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.
- **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

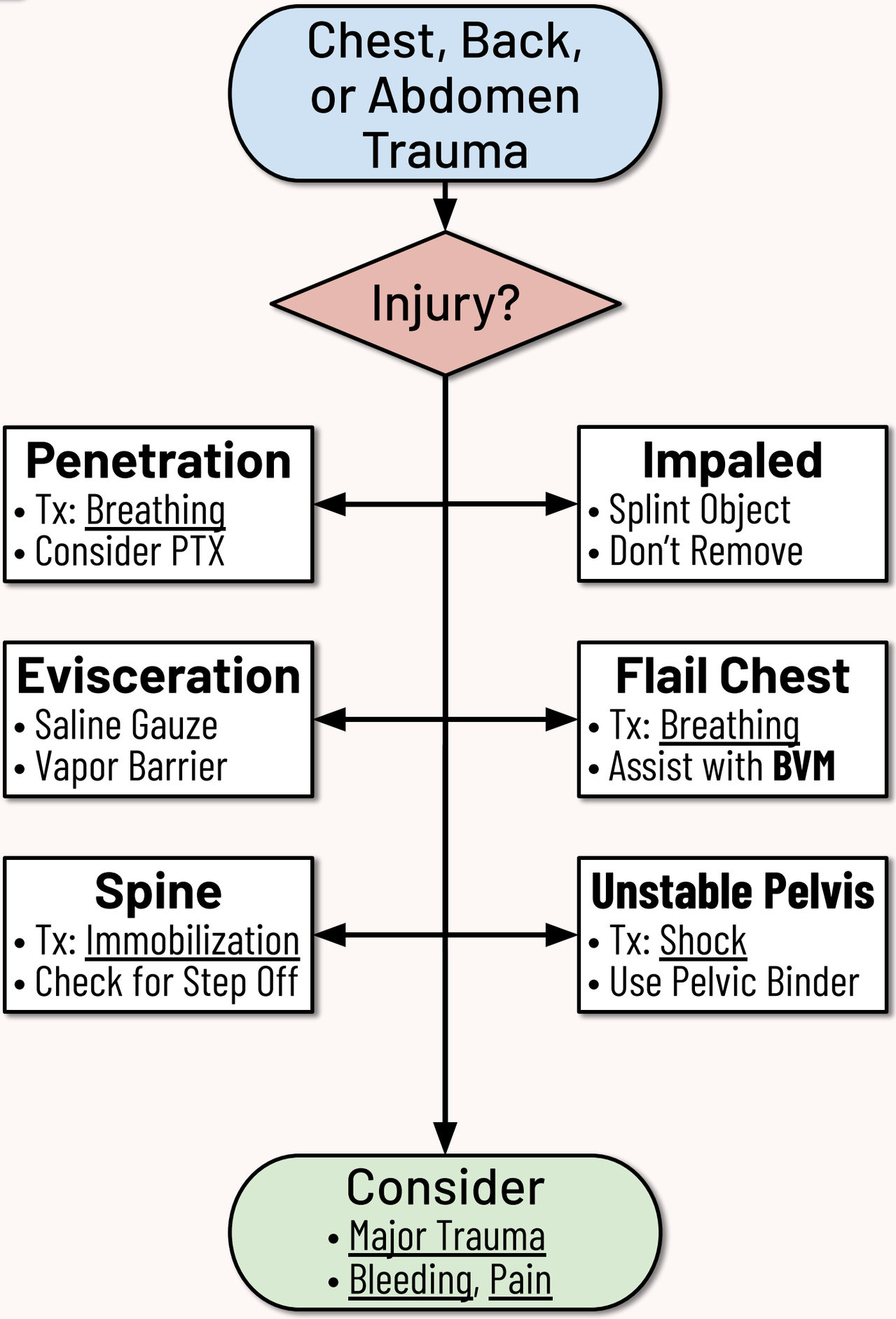
- Do not attempt replantation for primary (baby) teeth.
- Use Peds Reference or other approved source for peds dosing.

References

- Medscape Head Injury: https://emedicine.medscape.com/article/1163653 [Ver: 10/18]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 33

NEMSIS: 9914041, 9914057, 9914099, 9914101, 9914205
Reviewed: Feb 2021

Trunk Injury



NEMSIS: 9914193
Reviewed: Oct 2017

AKA: Thoracic / Abdominal Injury, Evisceration

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

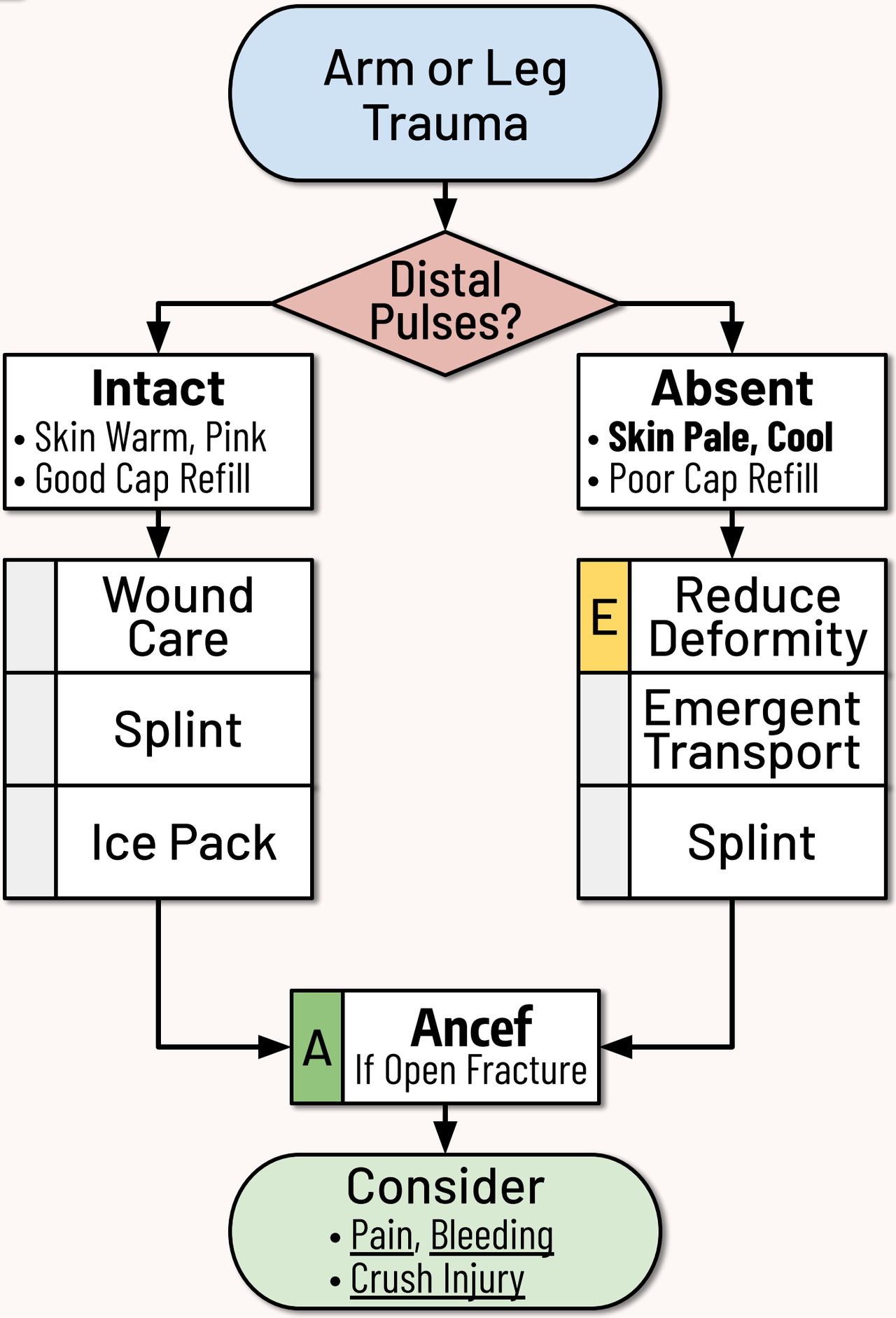
- Trunk injury is more likely in peds struck by a car.

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

NEMSIS: 9914193
Reviewed: Jan 2019

Extremity Injury



Ancef: 1 gram	IV/IO, IM	x1	Adult

NEMSIS: 9914077, 9914097
Reviewed: Jun 2021

AKA: Amputation, Long Bone Fx, Splinting, Sprain / Strain

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 hemorrhage is possible with femur or hip fx.

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

Medications

- **Ancef®** (Cefazolin): Provide if an **open fracture** is suspected.
  - Avoid if pt allergic to Keflex, PCN or other cephalosporins.
  - Reconstitute powder with 2-3 mL of NS and **shake well**.

Notes

- **Lacerations** benefit from repair within the first few hours.
- **Mechanism** is an important indicator of injury severity.

Pediatrics

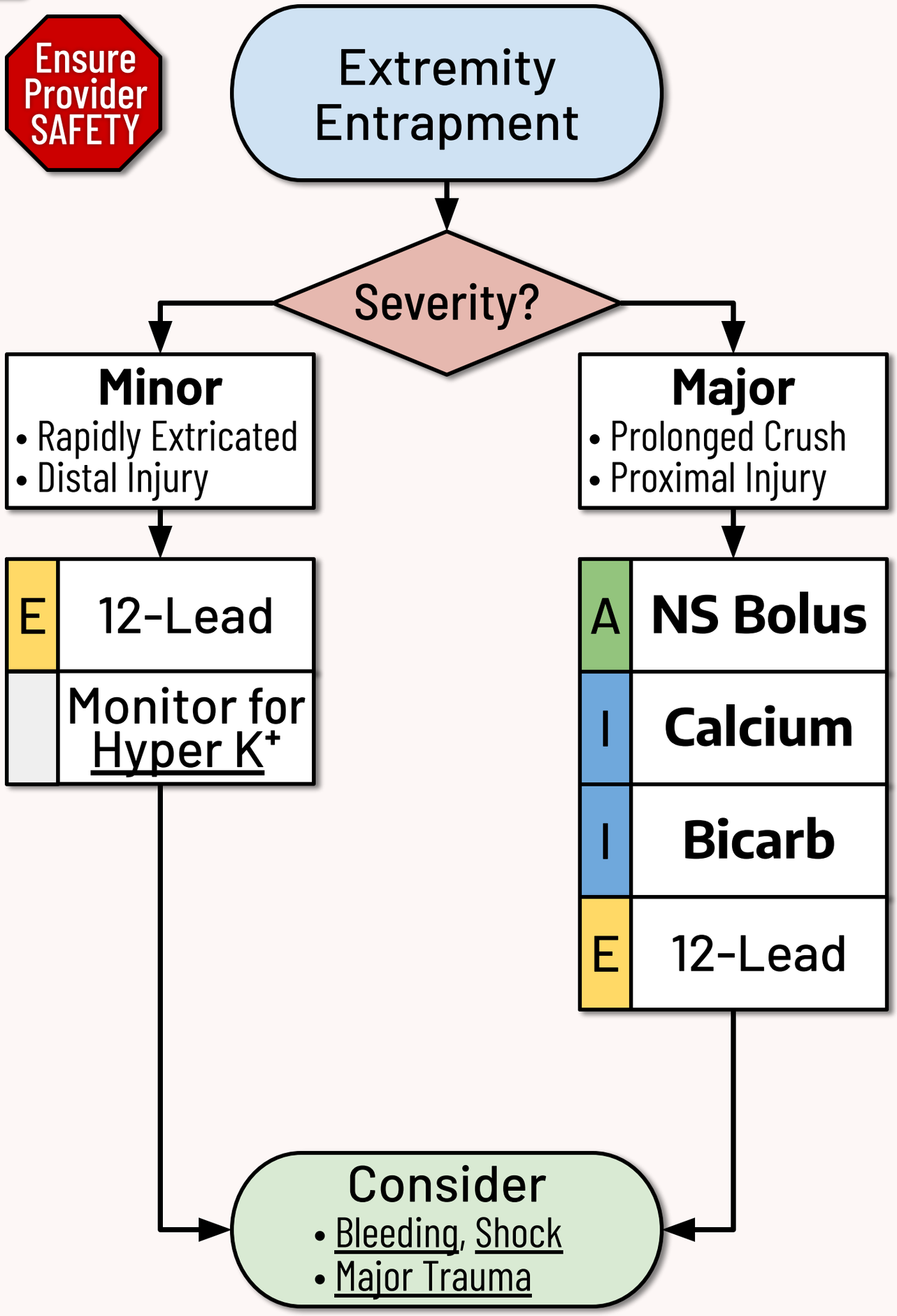
- Consider **Child Abuse** for injuries that do not match the history.

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

NEMSIS: 9914077, 9914097
Reviewed: Jun 2021

Crush Injury



NS Bolus:	**1,000** mL	IV/IO	x2
Calcium:	**1** gram	IV/IO	over 10 min
Bicarb:	**50** mEq	IV/IO	x1

Adult Doses

NEMSIS: 9914089
Reviewed: May 2021

AKA: Entrapment, Harness Hang

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.

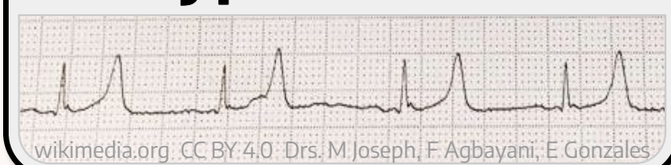
- If Major Intervention
- Or Major Mechanism
- Call a **TRAUMA Alert**

Call ER

Medications

- **NS Bolus** (0.9% Saline): Aggressive fluids help dilute potassium.
  - Consider aggressive fluids even without Hypotension.
- **Calcium** (Chloride): **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



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**)

Notes

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

Pediatrics

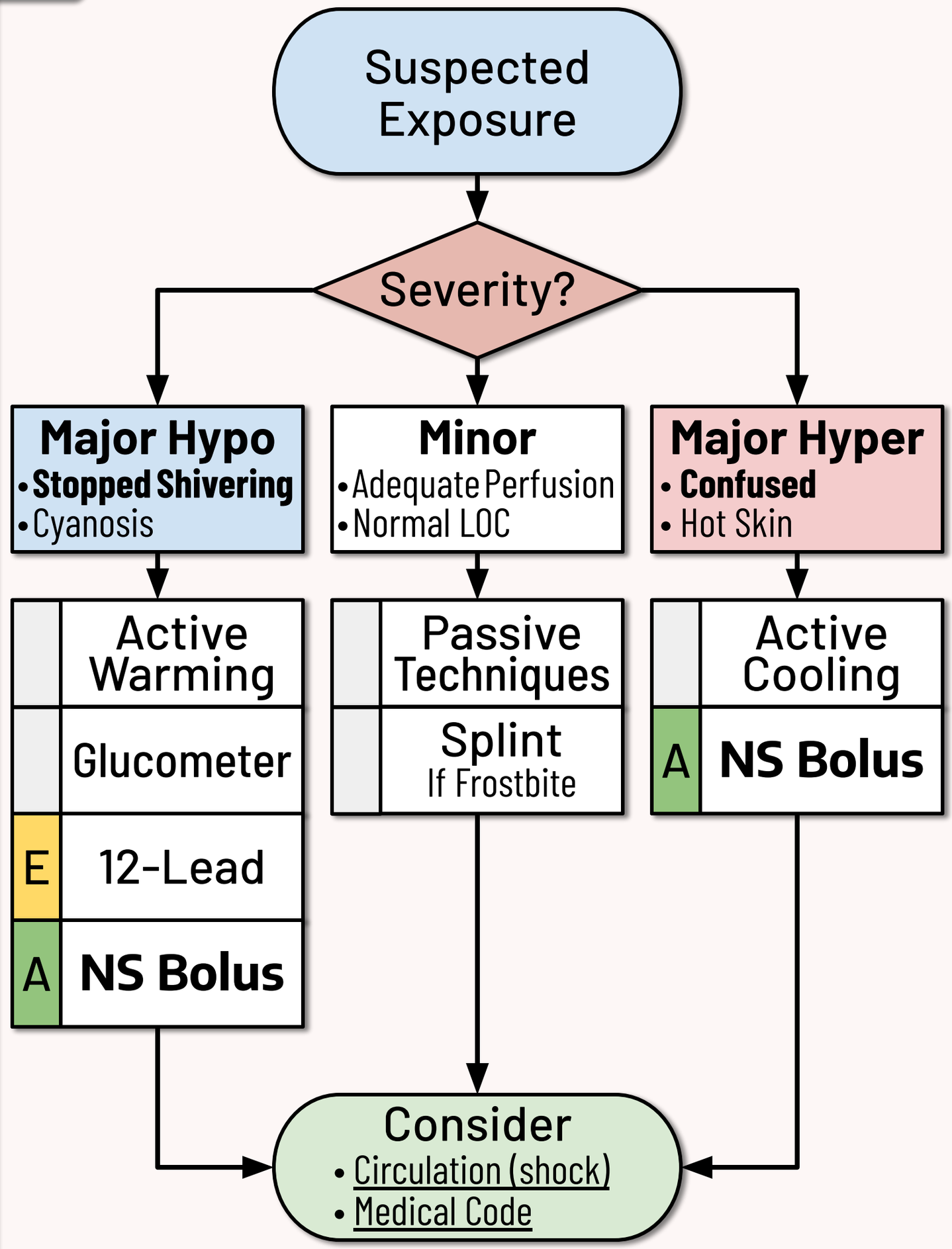
- May exhibit symptoms quicker than adults.
- Use Peds Reference or other approved source for peds dosing.

References

- Medscape Rhabdo: https://emedicine.medscape.com/article/1007814 [Ver: 8/20]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 30

NEMSIS: 9914089
Reviewed: May 2021

Cold / Heat



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

NEMSIS: 9914023, 9914025, 9914027, 9914029, 9914031
Reviewed: Nov 2017

AKA: Hypo / Hyperthermia, Frost Nip / Bite, Heat Stroke

Cold / Heat Imperatives

- **Resuscitation** of major **hypo**thermia 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 **hyper**thermic emergencies.
  - Patients with a normal LOC respond well to passive cooling.
- **Hyper**thermia is **not** the same as Fever.
  - Meds for Fever **worsen** **hyper**thermia and are contraindicated.
- **Passive techniques** include clothing and environment changes.

Notes

- Special thermometers or core temp monitors may be helpful.
  - Major **hypo**thermia is likely below: **86** °F (**30** °C).
  - Major **hyper**thermia is likely above: **106** °F (**41** °C).
- Excessive movement of **hypo**thermic patients can cause V-Fib.
- Delay active rewarming if unable to maintain (prolonged evac).
- Drugs may also cause **hyper**thermia. The treatment is the same.
- Peds and the elderly will decompensate faster.
- Pad heat & 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

NEMSIS: 9914023, 9914025, 9914027, 9914031
Reviewed: Sep 2017

Burns

Ensure Provider SAFETY

Heat, Chemical, or Electric Injury

Stop the Burning

Severity?

Minor
- Superficial
- Less than 5% BSA

Position of Comfort

Major
- Deep or Blistering
- Face or Genitals

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

NEMSIS: 9914085, 9914095, 9914209, 9914213
Reviewed: Aug 2017

AKA: Hazmat, Heat / Chemical / Electrical Burn, Sunburn

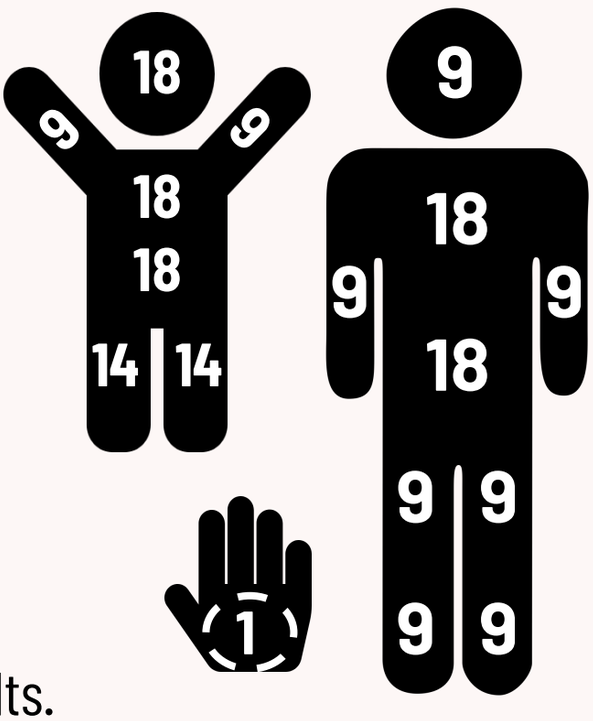
Burn Imperatives

- 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.

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

Call ER

BSA percentage
(front and back)



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 **ingestion** 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

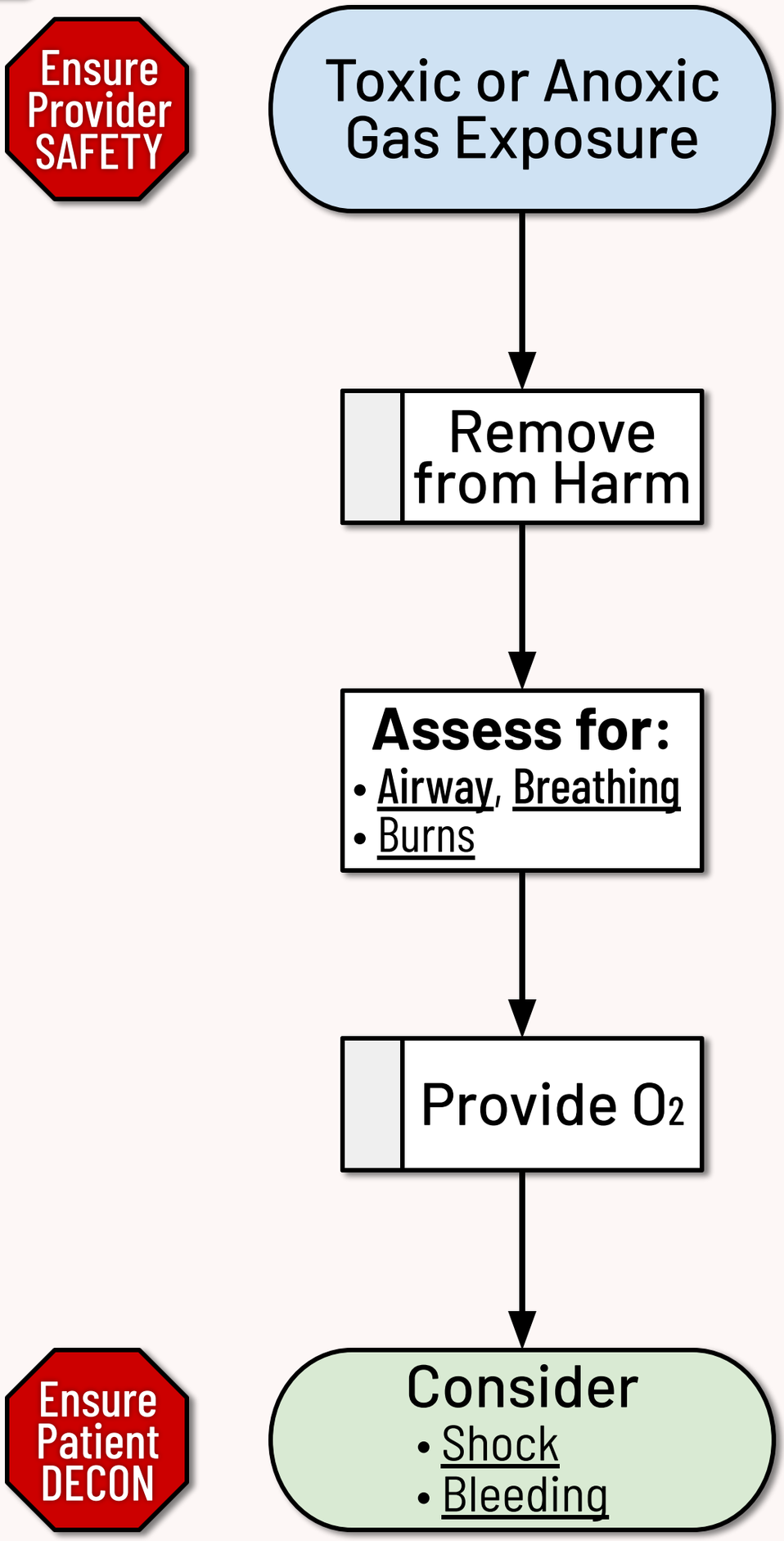
- Use Peds Reference or other approved source for peds dosing.

References

- Medscape Burns: https://emedicine.medscape.com/article/1278244 [Ver: 9/19]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 30

NEMSIS: 9914085, 9914095, 9914209, 9914213
Reviewed: Jan 2019

Inhalation



NEMSIS: 9914033, 9914167, 9914173
Reviewed: Sep 2017

AKA: Smoke Inhalation, Carbon Monoxide, Toxic Gas

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.
  - SpO_2 may read **false normal**. (CO can fool the SpO_2 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 SpO_2 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 **ingestion** 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

NEMSIS: 9914033, 9914167, 9914173
Reviewed: Nov 2017

Sting / Bite

Ensure Provider SAFETY

Animal or Insect Trauma

Assess for:
- Allergic Reaction
- Bleeding

Splint

Stinger Removal

Consider
- Pain
- Underlying Injury

NEMSIS: 9914079
Reviewed: Jan 2018

AKA: Animal / Snake / Spider / Tick Bite, Bee / Wasp Sting

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

wikimedia.org CC-BY-2.0 PeterPaplanus

Copperhead

wikimedia.org CC-BY-2.0 2ndPeter

Black Widow

wikimedia.org CC-BYSA-3.0 Shenrich91

Pediatrics

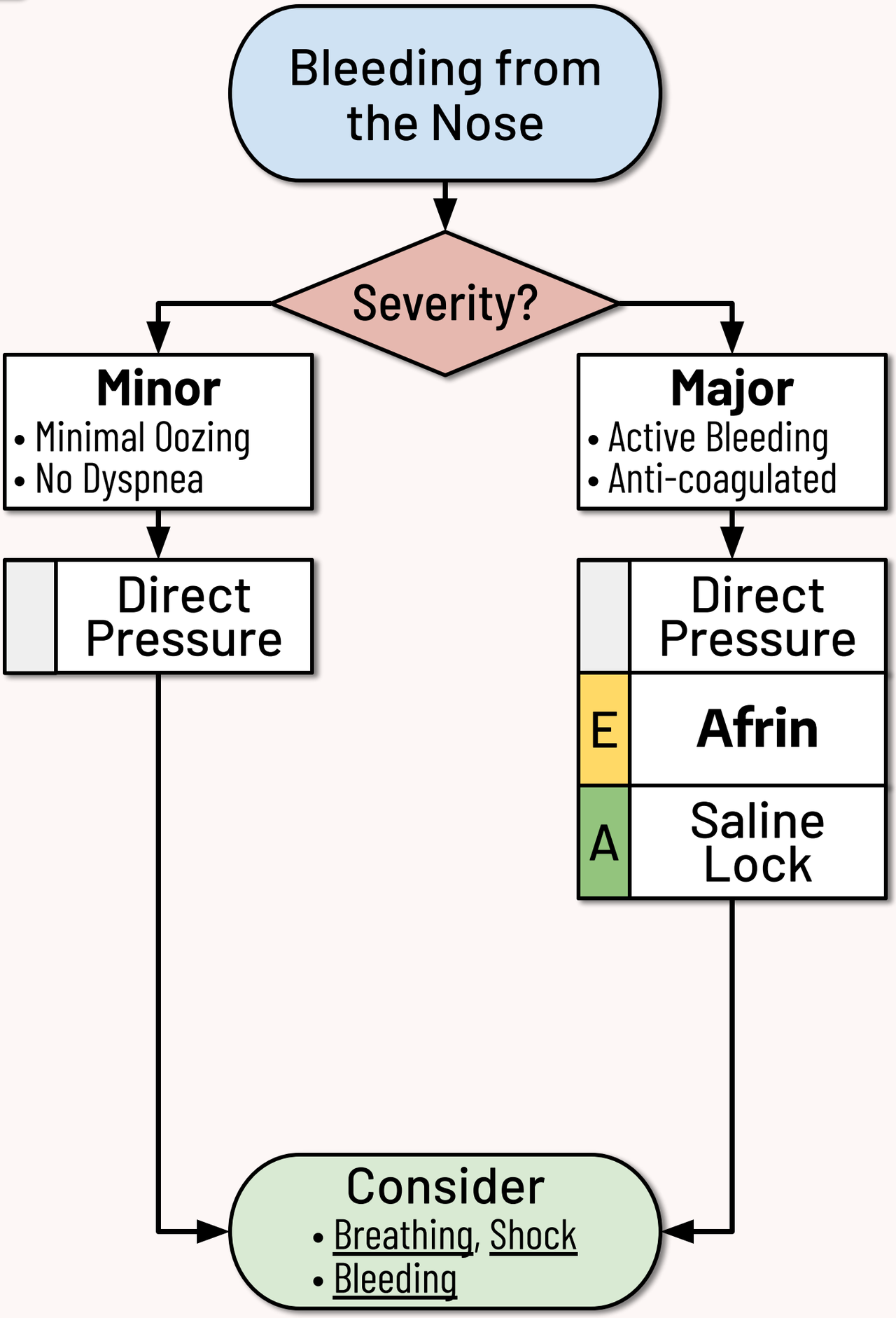
- Watch for first time Anaphylaxis.

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

NEMSIS: 9914079
Reviewed: Sep 2018

Epistaxis



Afrin: 1 spray	IN	Q 5 min x3	Adult

NEMSIS: 9914059
Reviewed: Aug 2017

AKA: Nose Bleed, Bloody Nose

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

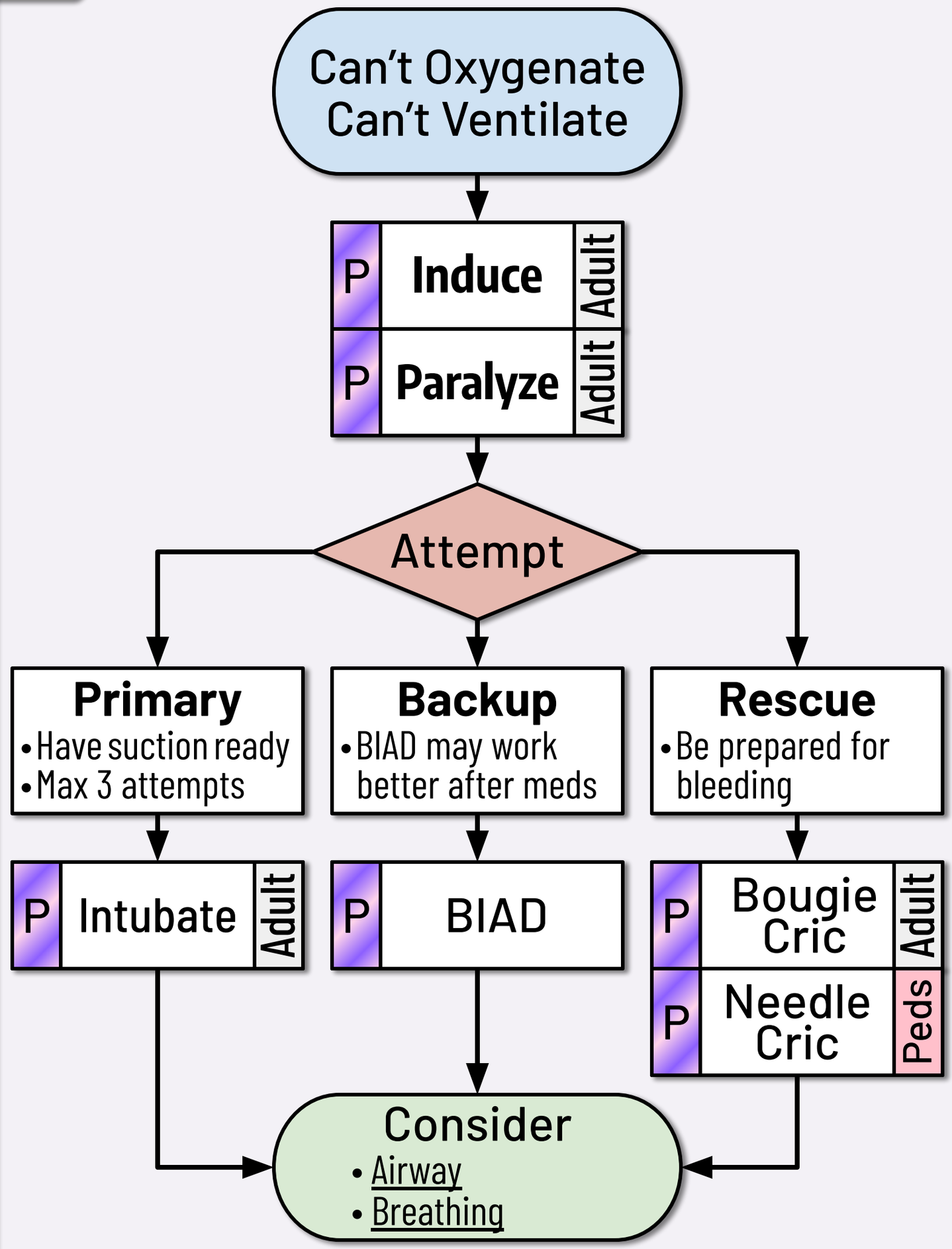
- Nose bleeds are usually from minor trauma (nose picking).
- Use Peds Reference or other approved source for peds dosing.

References

- Medscape Epistaxis: https://emedicine.medscape.com/article/764719 [Ver: 4/19]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 29

Reviewed: Sep 2017 NEMSIS: 9914059

Intubation / RSI



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

NEMSIS: 9914003, 9914007
Reviewed: Jun 2021

AKA: Advanced / Difficult / Failed Airway

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, SpO_2 and $EtCO_2$** with waveform. Try to maintain:
  - $EtCO_2$ 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**.
  - **Etomidate** is not appropriate for patients under 10 y/o.
- **Rocuronium** (Zemuron®): Onset - 1 min; Duration - 30 min
- **Succinylcholine** (Anectine®): Onset - 30sec; Duration - 5 min
  - Depolarizing, use caution with hyperkalemia, myopathies, burns

Pediatrics

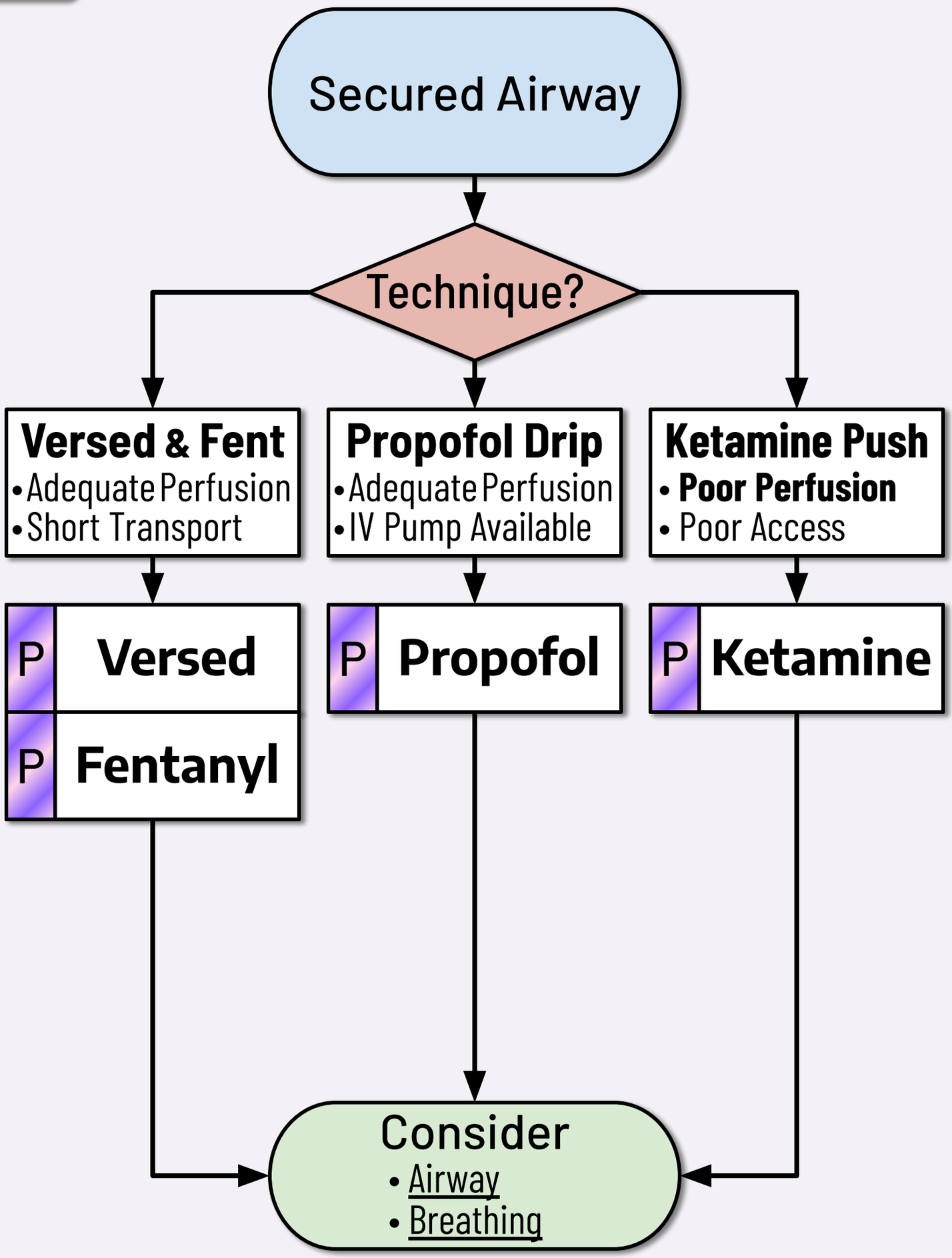
- Pediatric prehospital advanced airway is highly specialized.
- A simple **BIAD is appropriate** for most peds resuscitation.

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

NEMSIS: 9914003, 9914007
Reviewed: Jun 2021

Sedation



Fentanyl: 0.5-1 mcg/kg	IV/IO	Q 30 min PRN	Adult Doses
Versed: 10-50 mcg/kg	IV/IO	Q 30 min PRN	
Ketamine: 0.5-2 mg/kg	IM,IV/IO	Q 30 min PRN	
Propofol: 10-50 mcg/kg/min	IV/IO	Titrated Drip	

NEMSIS: 9914071
Reviewed: Dec 2020

AKA: Medically Induced Coma

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 SpO_2 and $EtCO_2$**.
  - 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

Reviewed: Dec 2020 NEMSIS: 9914071

DKA / HHS

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
Insulin:	**10** units	IM, IV/IO	x1
Bicarb:	**50** mEq	IV/IO	x1

Adult Doses

NEMSIS: 9914125
Reviewed: Dec 2929

AKA: Diabetic Ketoacidosis, Diabetic Coma, HHNK

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

NEMSIS: 9914125
Reviewed: Dec 2929

Immunization

Public Health or Provider Clinic

Screen For:
- Serious Allergies
- Prior Reactions

P Administer Vaccine

Record:
- Vaccine Details
- Adverse Events

Consider
- Allergic Reaction

Vaccine: *<follow OMD guideline>* | Adult

NEMSIS: 9914063, 9914175
Reviewed: Jun 2021

AKA: Vaccination, Vaccine Admin, Shot Clinic

Immunization Mandatory Prerequisites

- Within the last twelve (12) months:
  - Complete an approved vaccine administration training.
- Follow local squad / OMD policy and procedure.

Imperatives

- A vaccination program requires appropriate **admin support**.
  - Squads may sponsor or participate in regional clinics.
  - Follow site direction and scheduling policies.
- A vaccination program requires **medical direction**.
  - Follow OMD written direction for injection procedure.
  - Only give vaccinations specifically authorized by your OMD.
  - [A] May also give vaccinations if authorized by OMD.

Notes

- May provide vaccinations to EMS members or the general public.
  - A formal prehospital care report may not be required.

Pediatrics

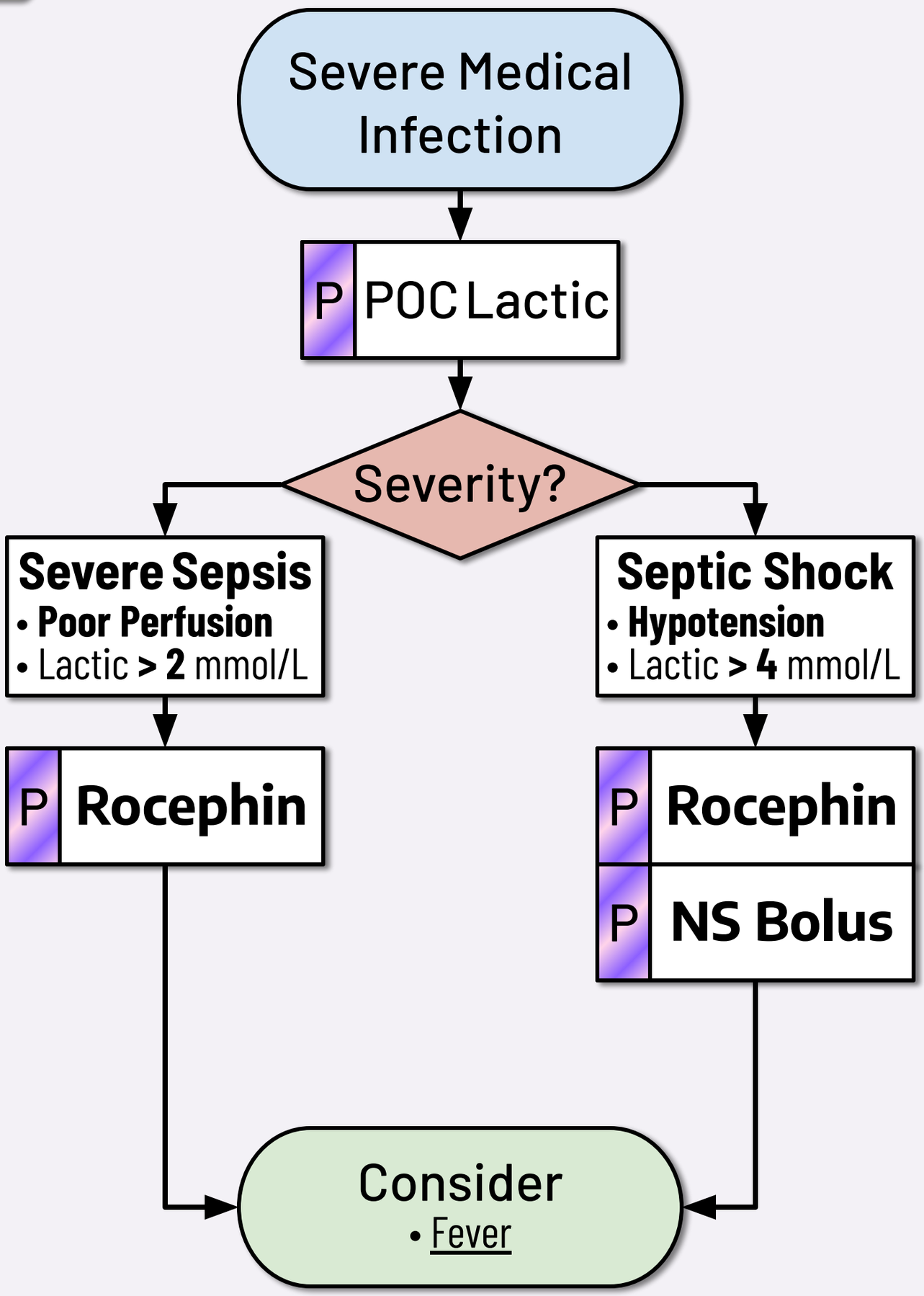
- May provide appropriate vaccinations to pediatrics.

References

- Medscape Vaccination: https://emedicine.medscape.com/article/2172006 [Ver: 2/20]
- Medscape Peds Vaccination: https://emedicine.medscape.com/article/2172012 [Ver: 2/20]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapters 24,38

NEMSIS: 9914063, 9914175
Reviewed: Jun 2021

Sepsis



Rocephin: **1** gram	IV/IO, IM	x1	Adult Doses
NS Bolus: **30** mL/kg	IV/IO	x1	

NEMSIS: 9914127
Reviewed: Dec 2020

AKA: Severe Sepsis, Septic Shock

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**

Call ER

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

NEMSIS: 9914127
Reviewed: Dec 2020

Page 91
General

	Glucometer
E	12-Lead
A	Saline Lock

Page 92
Airway

	Heimlich
	Suction
A	Magill Forceps

Page 93
Breathing

	BVM
E	CPAP

Page 94
Resuscitation

	Chest Compression
	Defib
A	I O

Page 95
Adjuncts

	NPA
	OPA
E	OG-Tube

Page 96
Advanced Adjuncts

E	BIAD
I	Needle Decompress

Page 97
Bleeding

	Wound Care
	Tourniquet
	Wound Packing

Page 98
Injury

	SMR with C-collar
	Splint
E	Reduce Deformity
	Stinger Removal

Page 99
Cardiac

I	Pacing
I	Cardioversion

Page 100
Obstetrics

E	Deliver Baby
E	Manage OB Complication

Page 101
- Critical Care

Page 102
- Policies

Reviewed: Dec 2020

Glucometer

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.

E 12-Lead

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.

A Saline Lock

1. Investigate for good site.
   - AC and wrist are common sites.
   - Try to avoid legs, forehead and jugular unless necessary.
   - Advance rapidly to **IO in emergencies**. Start with IO 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.

Reviewed: Jan 2017

Heimlich

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.

Suction

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.

A Magill Forceps

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.

Reviewed: Dec 2020

BVM

1. Prepare appropriately sized BVM.
   - Connect to high-flow **oxygen**.
   - Extend O_2 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.

E CPAP

1. Explain procedure to pt.
   - Consider an NPA.
2. Start the flow of oxygen to the mask. Set PEEP at 7.5 cm H_2O.
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 H_2O. ALS: May titrate PEEP.

Reviewed: Dec 2018

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 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

5. Consider using a pressure bag to increase fluid rates if needed.

Reviewed: Sep 2018

NPA

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**.

OPA

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 peds**.
3. Rotate into place. Remove promptly if any gagging.

E OG-Tube

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.

Reviewed: Nov 2017

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, $EtCO_2$ and SpO_2 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.

Reviewed: Dec 2018

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.

Reviewed: Dec 2020

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.

Reviewed: Feb 2019

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.

Reviewed: Nov 2017

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.
6. Deliver body. Caution: **neonates are slippery**.
7. **Clamp and cut cord**.
   - Clamp about 2 in. away from the baby. Cut between clamps.
8. Manage Neonate. (Stimulate, warm, clean, dry.)
9. Massage mother's lower abdomen (fundal massage).
   - This should help stop postpartum bleeding.
10. 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**.
3. Continue standard care. Treat: Breathing, Pain, etc.
   - EMS can do very little for: **preemies**, **twins**, or **breech** birth.
4. 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

Reviewed: Nov 2017

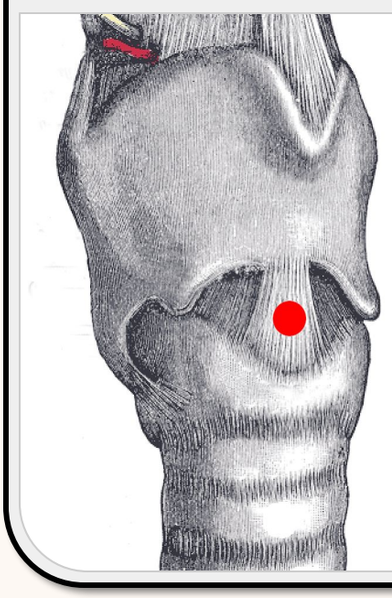
P Cric

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.

Cricothyroid Membrane



wikimedia.org CC-BY-SA 3.0 PhilippN

5. **Confirm** placement. **Secure** w/ tape/device.
   - Use auscultation, clinical response, skin color, SpO_2 and/or $EtCO_2$.

P i-STAT Labs

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.
5. Use a pipette to dispense sample up to the **fill mark**.
6. **Fold the snap closure** over the sample well until it clicks.
7. Push the **cartridge into the handheld** port until it clicks.
8. **Wait** for test to complete. Review results and discard cartridge.

Reviewed: Jun 2021

Page 103 - Medications
- Drug Box

Page 104 - Abuse
- Patient Abuse and Neglect
- Infant Abandonment

Page 105 - Bystanders, Physicians
- Verification of On Scene Personnel
- Physician Orders

Page 106 - Termination
- 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

Reviewed: Apr 2019

WVEMS Drug Box

- Drug Boxes are intended to be used on only ONE patient prior to restocking. Under extenuating circumstances, such as back-to-back calls with no time in-between to exchange the box, or in a mass casualty situation, it may be necessary to use a box on more than one patient. Such use must be appropriately documented on the patient care reports.
- Agencies participating in the regional drug box exchange program shall follow the procedures below regarding the use and exchange of boxes at regional hospitals.

1. EMS provider breaks RED drug box seal and places broken seal in top tray. There will be a new (unused) GREEN seal in both the drug box, and in the narcotics box, and these must be retained for resealing the opened box(es) after use.
2. 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 Pharmacy Administration Record - Physician Order Form.
3. EMS provider and E.D. nurse, physician, pharmacist pharmacy technician and/or other person as authorized, checks used box to account for narcotics. Both assure that all trash and used needles have been removed from the box. The old (broken) 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 use the green reseal(s) provided in the drug box/narcotics box and seal the box(es).
4. 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. The medical facility may require additional documentation. 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.
5. Pharmacy will fill the box, replacing used items, in accordance with 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.
6. If a box is returned to the pharmacy with dirty needles or excessive litter and debris, the box will be taken out of service and the EMS Council notified. The Council will 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.
7. Refilled boxes are returned to the E.D. or stored in the pharmacy for distribution. Each hospital is responsible to ensure that the boxes are properly secured against tampering while at the hospital.
8. If an EMS provider opens a box and finds one or more medications missing, the provider 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.
9. No item for item exchange of drug box contents may be made in the E.D. The box must be returned to the pharmacy to be checked, restocked, and resealed.
10. **NARCOTICS**: When controlled substances are used on a call; **wastage** should be performed in the emergency department in the presence of a certified/licensed professional in conformance with the State Board of Pharmacy Regulations. For the purposes of this policy, "certified/licensed professionals" includes: Pharmacist, nurse, prescriber, or **a second EMS Provider**. See Virginia Administrative Code Sections 18VAC110-20-500 and 12VAC5-31-520. The AIC and the authorized persons listed above will document the amount of the controlled substance administered, and the amount (if any) wasted. This should be recorded on the WVEMS/BREMS Pharmacy Administration Record – Physician Order Form and signed by the provider and the witness. The authorized person signing, and the ALS technician will then properly dispose and account for the narcotic according to hospital policy.
11. In the event that medications 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 the Western Virginia EMS Council
        3. Contact Virginia State Police. (NARCOTICS ONLY)
        4. Contact the agency Chief or Captain
        5. Complete & file a drug diversion form with the Office of EMS (see 12 VAC 5-31-520, D of the Va EMS Rules & Regs)
        6. Have drug box inspection forms ready for Virginia State Police, WVEMS EMS Council, and Va OEMS 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 missing consider requesting another unit to rendezvous - 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.
        6. Notify the hospital that this box must be sequestered in the pharmacy until released 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.

Reviewed: Sep 2021

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.

Reviewed: June 2018

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.

Reviewed: June 2018

Withholding Resuscitation

- Resuscitation is not appropriate if efforts are futile or against the patient's explicit wishes. **Withhold resuscitation if any signs of <u>obvious death</u>, <u>mortal injury</u>, 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.

Special Cases

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

- **ALS** should resuscitate on scene for non-special cases. Call **Medical Control** if no ROSC **within 30 min**.

ALS Termination

- Not a **Special Case**
- 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.

BLS Termination

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

Reviewed: Sep 2018

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**.

Reviewed: Nov 2017

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 first 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 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.

Reviewed: Jan 2019

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, medical POA 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.

Reviewed: Jun 2021

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

- Adults 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 & Carilion **New River Valley**
  - **Danville** Regional, Lewis Gale **Salem** & Lewis Gale **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

Reviewed: Aug 2021

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.

Reviewed: Sep 2018

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

Reviewed: Dec 2020

Albuterol — Ventolin®

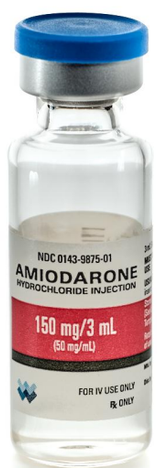
Use
- Tx: Wheezing, Hyperkalemia
- Adults: **2.5 mg** neb
- Peds: 0.15 mg/kg

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

Notes
- Protocols: Dyspnea, Allergic Reaction
- Four (4x) nebs back-to-back for Hyperkalemia
- Adrenergic: ß-agonist - Onset: 30 min - Duration: 2 hr
- https://reference.medscape.com/drug/343426

Amiodarone — Pacerone®

Use
- Tx: V-Tach / V-Fib
- Adult CODE: **300**, then **150 mg** IV/IO
- Peds CODE: 5 mg/kg, then 5 mg/kg
- Gtt: over 10 min (peds over 30 min)



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

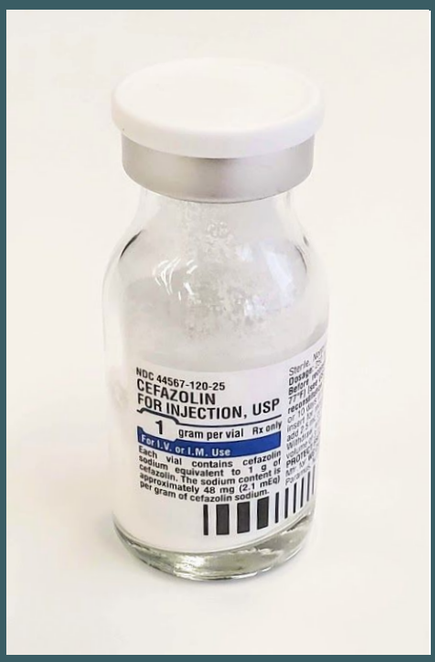
Notes
- Protocols: Tachycardia, Medical CODE
- Antiarrhythmic: Class III - Onset: mins - Duration: hours
- https://reference.medscape.com/drug/342296

Reviewed: May 2021

Ancef® — Cefazolin

Use

- Tx: Open Fractures
- Adults: **1 gram** IV/IO, IM
- Peds: 10-30 mg/kg IV/IO, IM



Caution

- **PCN / Cephalosporin Allergy**
- May cause: anaphylaxis
- **Preg B**: likely safe

Notes

- Protocols: Major Trauma, Extremity Injury
- **Reconstitute**: with 3 mL NS for IV/IO (give slow) or IM
- Antibiotic: 1st Gen Ceph -Onset: minutes -Duration: hours
- https://reference.medscape.com/drug/342492

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

Reviewed: Jun 2021

Atropine — AtroPen®

Use

- Tx: Brady, Organophosphate OD
- Adults: **1 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

Reviewed: Apr 2021

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

Reviewed: Dec 2020

Calcium — Calcium Chloride

Use

- Tx: Hyperkalemia, Ca-blocker OD
- Adults: **1 gram** IV/IO
- Peds: 20 mg/kg
- Give **over 10 min** (or bolus in CODE)

Caution

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

Notes

- Protocols: Hyperkalemia, Medical CODE, OD/Tox, Crush Inj
- Add to 100 mL NS and **give over 10 min if non-emergent**
- Electrolyte: cofactor - Onset: minutes - Duration: hours
- https://reference.medscape.com/drug/344432

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

Reviewed: May 2021

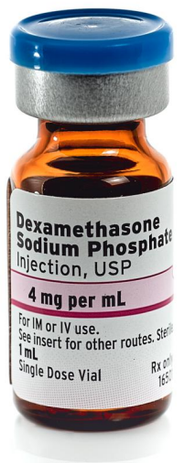
Decadron® — Dexamethasone

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 — Intropin®

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

Reviewed: Dec 2020

Epi — Epinephrine, EpiPen®

Use

- Tx: Shock, Brady, Arrest, Anaphylaxis
- Adults: **1 mg** IV/IO (CODE)
- Peds: 0.01 mg/kg (Brady, CODE)
- Lower doses for 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, ß 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, ß agonist - Onset: 1 min
- https://reference.medscape.com/drug/342437

Reviewed: Apr 2021

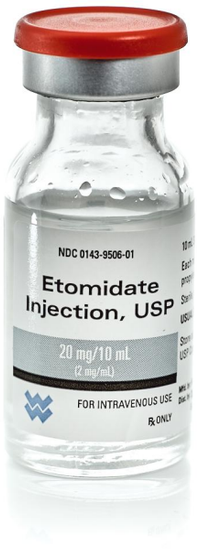
Etomidate — Amidate®

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

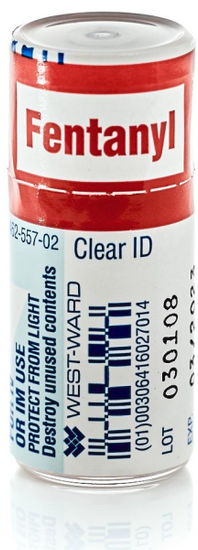
Fentanyl — Sublimaze®

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

Reviewed: Dec 2020

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 — Glucagen®

Use

- Tx: Hypoglycemia, ß-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

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

Reviewed: Dec 2020

Glucose — Oral Glucose, Glutose 15™

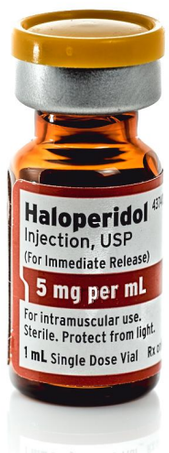
Use
- Tx: Hypoglycemia
- Adults: **15 g** PO
- Peds: 0.5 g/kg

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® — Haloperidol

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

Reviewed: Dec 2020

Ibuprofen — Advil®, Motrin®

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

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

Reviewed: Dec 2020

Ketamine — Ketalar®

Use

- Tx: Severe Pain, Discomfort
- Adults: **20 mg** IV/IO, IM/IN (pain)
- Peds: 0.25 - 0.5 mg/kg
- Give **over 10 min** in 100 mL NS (pain)

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 — Trandate®

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*>
- ß-blocker - Onset: 3 minutes - Duration: hours
- https://reference.medscape.com/drug/342359

Reviewed: Jun 2021

Lidocaine — Xylocaine®

Use

- Tx: V-Tach / V-Fib, (or pain after IO)
- All Pts: 1 mg/kg, then 0.5 mg/kg IV/IO
  - Typical Adults: **100 mg**, then **50 mg**
- Pain after IO (adult only): 10 mg IO

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

Lopressor® — Metoprolol

Use

- Tx: HTN, Tachycardia
- Adults: **5 mg** IV/IO
- Peds: <*do not use*>

Caution

- PMH: CHF, AV block
- May cause: **hypotension**, syncope
- May cause: **bradycardia**, dizzy
- **Preg C**: safety not established

Notes

- Protocols: <*none*>
- ß-blocker - Onset: minutes - Duration: hours
- https://reference.medscape.com/drug/342360

Reviewed: Jun 2021

Magnesium — Magnesium Sulfate

Use

- Tx: VT/VF, Dyspnea, Eclampsia
- Adults: **2 grams** 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® — Naloxone

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

Reviewed: Dec 2020

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 H_2O & NaCl - Onset: seconds - Duration: varies
- https://www.rxlist.com/normal-saline-drug.htm

Reviewed: Dec 2020

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 gram** 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: Sepsis
- **Reconstitute**: w/ 3 mL - NS for IV/IO, or lidocaine for IM
- Antibiotic: 3rd Gen Ceph - Onset: minutes - Duration: hours
- https://reference.medscape.com/drug/342510

Reviewed: Jun 2021

Rocuronium — Zemuron®

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

Succinylcholine — Anectine®

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

Reviewed: Dec 2020

TXA — Tranexamic Acid

Use

- Tx: Bleeding
- Adults: **1 gram** 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

Reviewed: Jun 2021

Versed® — Midazolam

Use

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

Caution

- PMH: antivirals, glaucoma
- May cause: **respiratory 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

Zofran® (injectable) — Ondansetron

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

Notes

- Protocols: Nausea / Vomiting
- **Use injectable for IV/IO, IM/IN** (use Zofran ODT for PO)
- 5-HT3 antagonist - Onset: seconds - Duration: hours
- https://reference.medscape.com/drug/342052

Reviewed: Jul 2021

Zofran ODT® — Ondansetron ODT

Use

- Tx: Nausea, Vomiting
- Adults: **4 mg PO**
- Peds: 0.1 mg/kg

Caution

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

Notes

- Protocols: Nausea / Vomiting
- **Use ODT for PO** (use Zofran injectable for IV/IO, IM/IN)
- 5-HT3 antagonist - Onset: seconds - Duration: hours
- https://reference.medscape.com/drug/342052

WVEMS Medications List

Adenosine (Adenocard®)
Afrin® (Oxymetazoline)
Albuterol (Ventolin®)
Amiodarone (Pacerone®)
Ancef® (Cefazolin)
Aspirin (Baby ASA)
Atropine (AtroPen®)
Atrovent® (Ipratropium)
Benadryl® (Diphenhydramine)
Bicarb (Sodium Bicarbonate)
Calcium (Chloride)
D10 (Dextrose 10%)
Decadron® (Dexamethasone)
Dopamine (Intropin®)
Epi (Epinephrine)
Etomidate (Amidate®)
Fentanyl (Sublimaze®)
Furosemide (Lasix®)
Glucagon (Glucagen®)
Glucose (Glutose 15™)
Haldol® (Haloperidol)
Ibuprofen (Motrin®)
Insulin (Humulin R®)
Ketamine (Ketalar®)
Labetalol (Trandate®)
Lidocaine (Xylocaine®)
Lopressor® (Metoprolol)
Magnesium (Sulfate)
Narcan® (Naloxone)
Nitro (Nitroglycerin)
NS Bolus (0.9% Saline)
Propofol (Diprivan®)
Rocephin® (Ceftriaxone)
Rocuronium (Zemuron®)
Succinylcholine (Anectine®)
TXA (Tranexamic Acid)
Tylenol® (Acetaminophen)
Versed® (Midazolam)
Zofran® (Ondansetron)

Reviewed: Jul 2021

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 → 2 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):	0.05 mg
Epi (brady):	0.05 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:	0.8 mg
Amiodarone:	*< do not use >*
Ancef:	100 mg
Atropine:	0.1 mg
Bicarbonate:	4 mEq
Calcium:	100 mg
Dopamine:	20 mcg/min
Glucagon:	0.5 mg
Haldol:	*< do not use >*
Magnesium:	250 mg
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.

Reviewed: Jun 2021

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 → 3 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):	0.06 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:	1.2 mg
Amiodarone:	30 mg
Ancef:	200 mg
Atropine:	0.1 mg
Bicarbonate:	6 mEq
Calcium:	150 mg
Dopamine:	30 mcg/min
Glucagon:	0.5 mg
Haldol:	*< do not use >*
Magnesium:	250 mg
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.

Reviewed: Jun 2021

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 → 4 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):	0.08 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:	1.6 mg
Amiodarone:	40 mg
Ancef:	250 mg
Atropine:	0.2 mg
Bicarbonate:	8 mEq
Calcium:	150 mg
Dopamine:	40 mcg/min
Glucagon:	0.5 mg
Haldol:	*< do not use >*
Magnesium:	250 mg
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.

Reviewed: Jun 2021

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 → 5 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):	0.1 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:	2 mg
Amiodarone:	50 mg
Ancef:	300 mg
Atropine:	0.2 mg
Bicarbonate:	10 mEq
Calcium:	200 mg
Dopamine:	50 mcg/min
Glucagon:	0.5 mg
Haldol:	*< do not use >*
Magnesium:	500 mg
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.

Reviewed: Jun 2021

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:	14 → 7 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):	0.12 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:	2.4 mg
Amiodarone:	60 mg
Ancef:	400 mg
Atropine:	0.3 mg
Bicarbonate:	12 mEq
Calcium:	250 mg
Dopamine:	60 mcg/min
Glucagon:	0.5 mg
Haldol:	*< do not use >*
Magnesium:	500 mg
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.

Reviewed: Jun 2021

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:	18 → 9 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):	0.15 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:	3 mg
Amiodarone:	60 mg
Ancef:	500 mg
Atropine:	0.3 mg
Bicarbonate:	15 mEq
Calcium:	300 mg
Dopamine:	80 mcg/min
Glucagon:	0.5 mg
Haldol:	*< do not use >*
Magnesium:	500 mg
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.

Reviewed: Jun 2021

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:	22 → 11 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):	0.2 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:	4 mg
Amiodarone:	100 mg
Ancef:	600 mg
Atropine:	0.4 mg
Bicarbonate:	20 mEq
Calcium:	400 mg
Dopamine:	100 mcg/min
Glucagon:	1 mg
Haldol:	2 mg
Magnesium:	1 gram
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.

Reviewed: Jun 2021

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:	28 → 14 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):	0.25 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:	5 mg
Amiodarone:	125 mg
Ancef:	800 mg
Atropine:	0.5 mg
Bicarbonate:	20 mEq
Calcium:	400 mg
Dopamine:	125 mcg/min
Glucagon:	1 mg
Haldol:	2.5 mg
Magnesium:	1 gram
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.

Reviewed: Jun 2021

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:	36 → 18 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):	0.3 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:	6 mg
Amiodarone:	150 mg
Ancef:	900 mg
Atropine:	0.5 mg
Bicarbonate:	30 mEq
Calcium:	600 mg
Dopamine:	150 mcg/min
Glucagon:	1 mg
Haldol:	2.5 mg
Magnesium:	1 gram
Insulin:	3 units
Ketamine (RSI):	32 mg
Propofol:	3 mg/min
Rocephin:	1 gram
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.

Reviewed: Jun 2021

##

A

B

C

C (cont.)

Reviewed: Jun 2021

D

E

E (cont.)

F

G

H

Reviewed: Jul 2021

I

J

K

L

L (cont.)

M

N

N (cont.)

O

P

Reviewed: Jul 2021

P (cont.)

Q

R

S

T

T (cont.)

U

V

W

X

Y

Z

Reviewed: Jun 2021

Western Virginia Emergency Medical Services Council, Inc.

Protocols 2021

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

Editors: Drs. Ekey, LePera, and Stanley

Adapted From

- WVEMS Protocols 2020
- VA OEMS Procedure Scope 2020
- VA OEMS Formulary Scope 2020
- NEMSIS 3.4.0 2020

Physician Review

- Dr. C. Bernier
- Dr. B. Ekey
- Dr. K. Hinshaw
- Dr. D. Lander
- Dr. A. LePera
- Dr. S. Osborne
- Dr. J. Patterson
- 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 Simon
- Steve Spangler
- Joey Trigg
- Kari Whitney

Special Thanks

- Click & Pledge®
- MayJuun, LLC
- Salem Fire & EMS

WVEMS Council
1944 Peters Creek Rd.
Roanoke, VA 24017

Phone: 540-562-3482
Web: https://wvems.org
Email: western@vaems.org