WVEMS
Western Virginia Emergency Medical Services Council, Inc.

Protocols 2023

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WVEMS Protocols 2023

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

Editors: Drs. Ekey, LePera, and Stanley

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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: Jun 2023

Welcome to the WVEMS Protocols **2023**

- 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 needs 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 14 y/o and over (14+) are generally given **adult** therapy.
- Children (1-13) and Infants (<1) are considered **peds**.
- Use Peds Reference or other approved source for peds dosing.

Critical Care is for credentialed **paramedics only**.

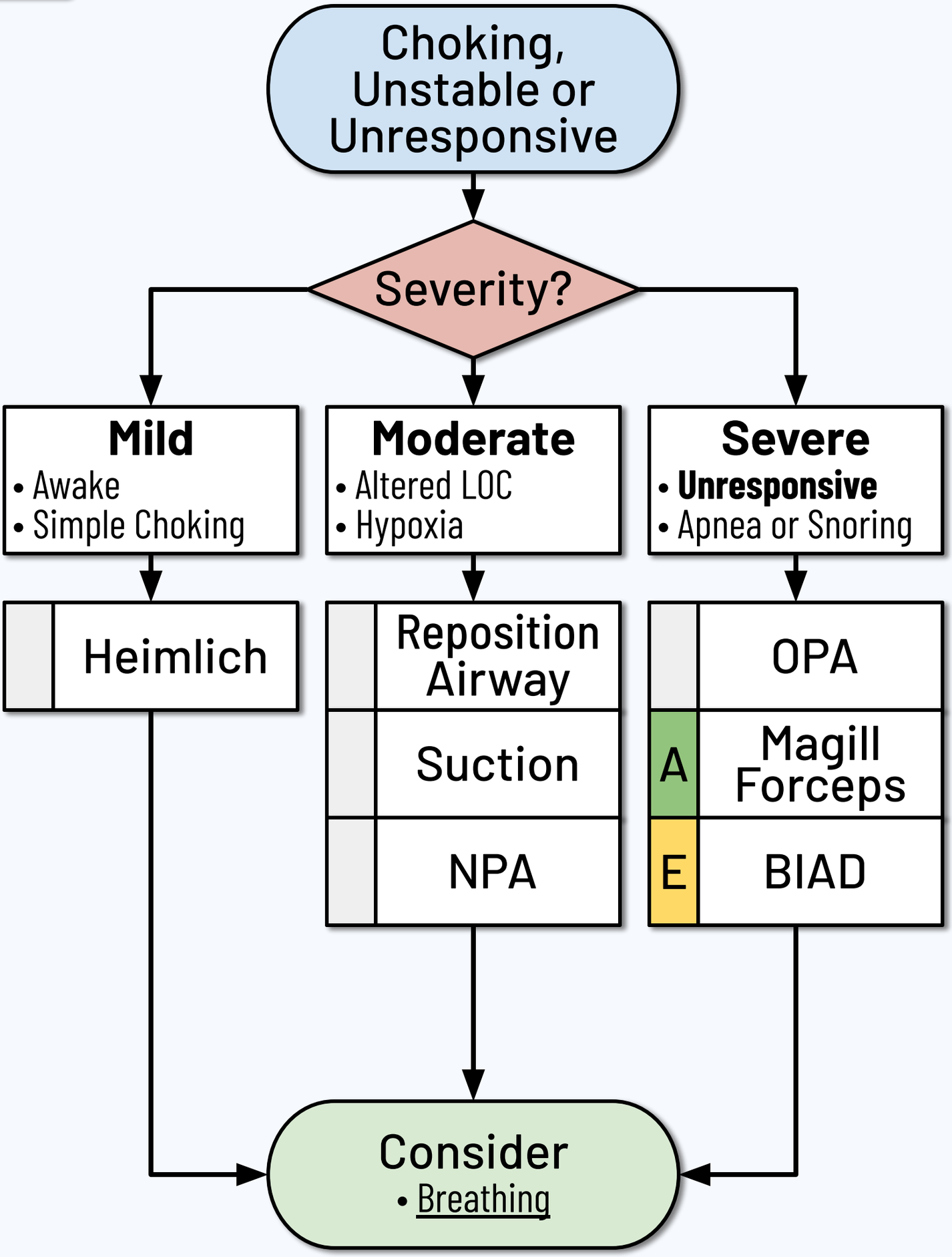
- Provider's responsibility to maintain **mandatory prerequisites**.
- Must be approved **for that specific protocol** by the agency OMD.
- All deadlines expire on the last day of the month (a grace period).

References are included. This text is not comprehensive.

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

Reviewed: Jun 2023

Airway



NEMSIS: 9914001, 9914003, 9914005
Reviewed: Jun 2023

Alias: 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, chest rise, etc.
  - Vitals: rising SpO_2, good $EtCO_2$ (capnography or capnometry)
- Be prepared to escalate airway if signs of **Poor Perfusion**.
- E May Suction Nose/BIAD/ETT/trach/stoma with flexible cath.

Poor Perfusion

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

Notes

- Secure BIAD well. Use tape or manufactured holding device.
  - May place c-collar (even without trauma) to help stabilize.
  - A Consider placing an OG-Tube if BIAD will accommodate it.
- Use caution with NPA if any 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

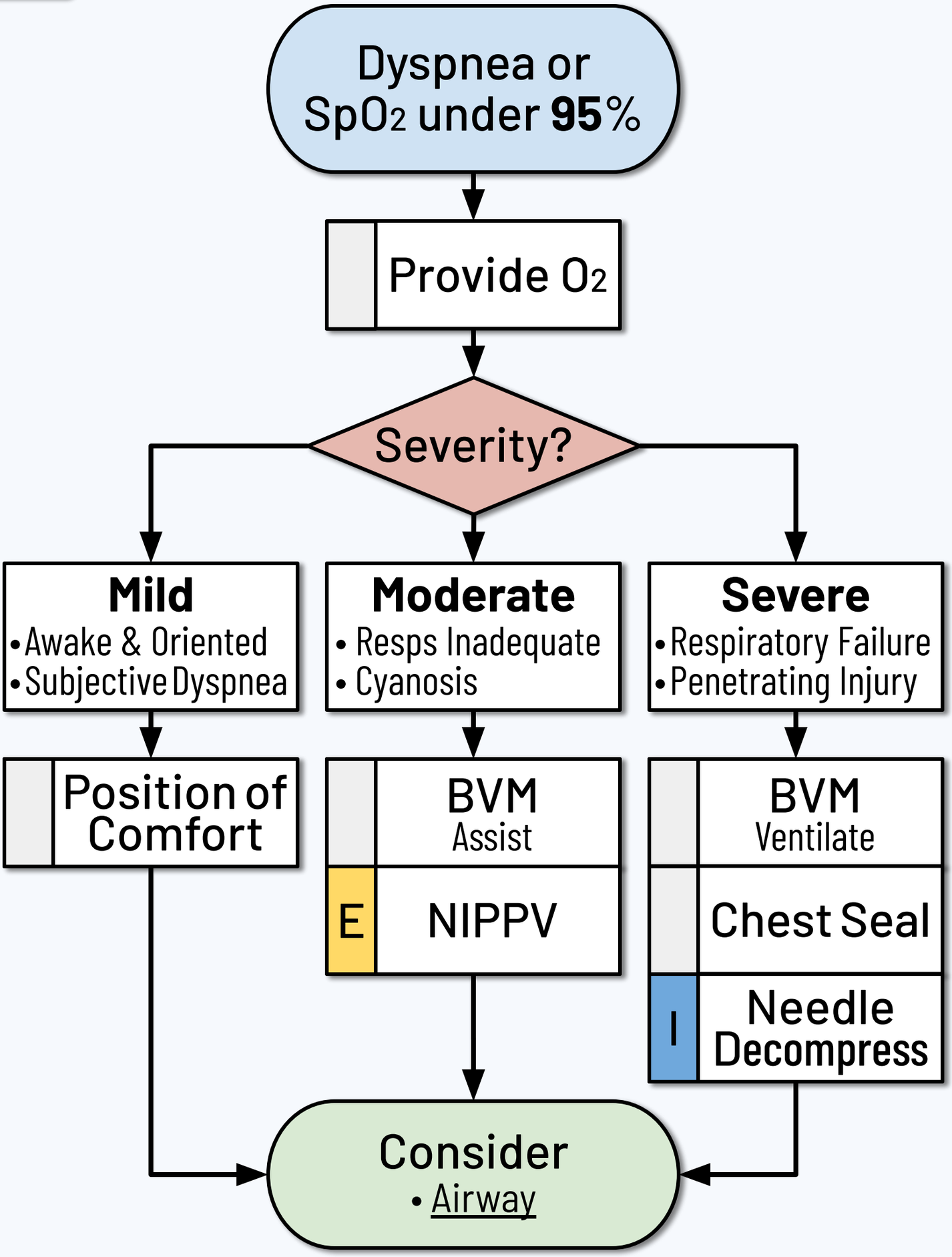
- Be suspicious for an airway obstruction, especially with **stridor**.
- Use back blows if indicated. Do not use blind finger sweeps.

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

NEMSIS: 9914001, 9914003, 9914005
Reviewed: Jun 2023

Breathing



NEMSIS: 9914001, 9914211
Reviewed: Jun 2023

Alias: 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.
  - **Use $EtCO_2$** and **maintain 35-45** mmHg. Avoid hyperventilation.
  - During CPR: alternate **30 : 2** until BIAD (or ETT) is placed.
- NIPPV: Requires a patient that is awake and compliant.
  - Contraindicated with vomiting, hypotension or altered LOC.

BVM Rate

- Adult: **Q 6 sec** (10 /min)
- Peds: **Q 2 sec** (20-30 /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.
- **SCUBA** injury may cause hypoxia: consider if any recent diving.

Pediatrics

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

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, 9914211
Reviewed: Jun 2023

Circulation / Shock

Systolic Under (Or **MAP**)
- Adult (14+): **90** mmHg (65 mmHg)
- Child (1-13): **70** mmHg (50 mmHg)
- Infant (< 1): **60** mmHg (40 mmHg)

Severity?

Mild	Moderate	Severe
• Adequate Perfusion • No Symptoms	• Adequate Perfusion • Tachy or Dizzy	• **Poor Perfusion** • Altered LOC
A: Saline Lock	A: **NS Bolus**	A: **NS Bolus**
E: 12-Lead	E: 12-Lead	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: Oct 2022

Alias: Hypotension, Low blood Pressure

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**.
  - Recheck lung sounds before and after fluid administration.
- **Epi Drip** (Epinephrine): Mix and use as follows:
  - Add 1 mg **Epi** into a 1,000 mL bag of NS (makes it 1 mcg/mL).
  - Adults (14+ y/o): Use a macro drip (10 or 15 gtt/mL) set.
  - Peds (0-13 y/o): Use a micro drip (60 gtt/mL) set.
  - Start at 1 drop per second and **titrate as needed**.
  - Avoid **Epi** if active chest pain and confirmed STEMI.
- **Dopamine** (Intropin®): for medical causes refractory to **Epi**.
  - **Use a micro drip** (60 gtt/mL) set. May titrate **up to 4x** if needed.
  - Average adults start around **1 drop every 5 sec** (with micro set).

Notes

- Give fluids and reassess. Start pressors if poor response.
- Mean Arterial Pressure (**MAP**) is a better indicator when available.
  - Consider Vasopressors if appropriate & cleared for Critical Care.

Pediatrics

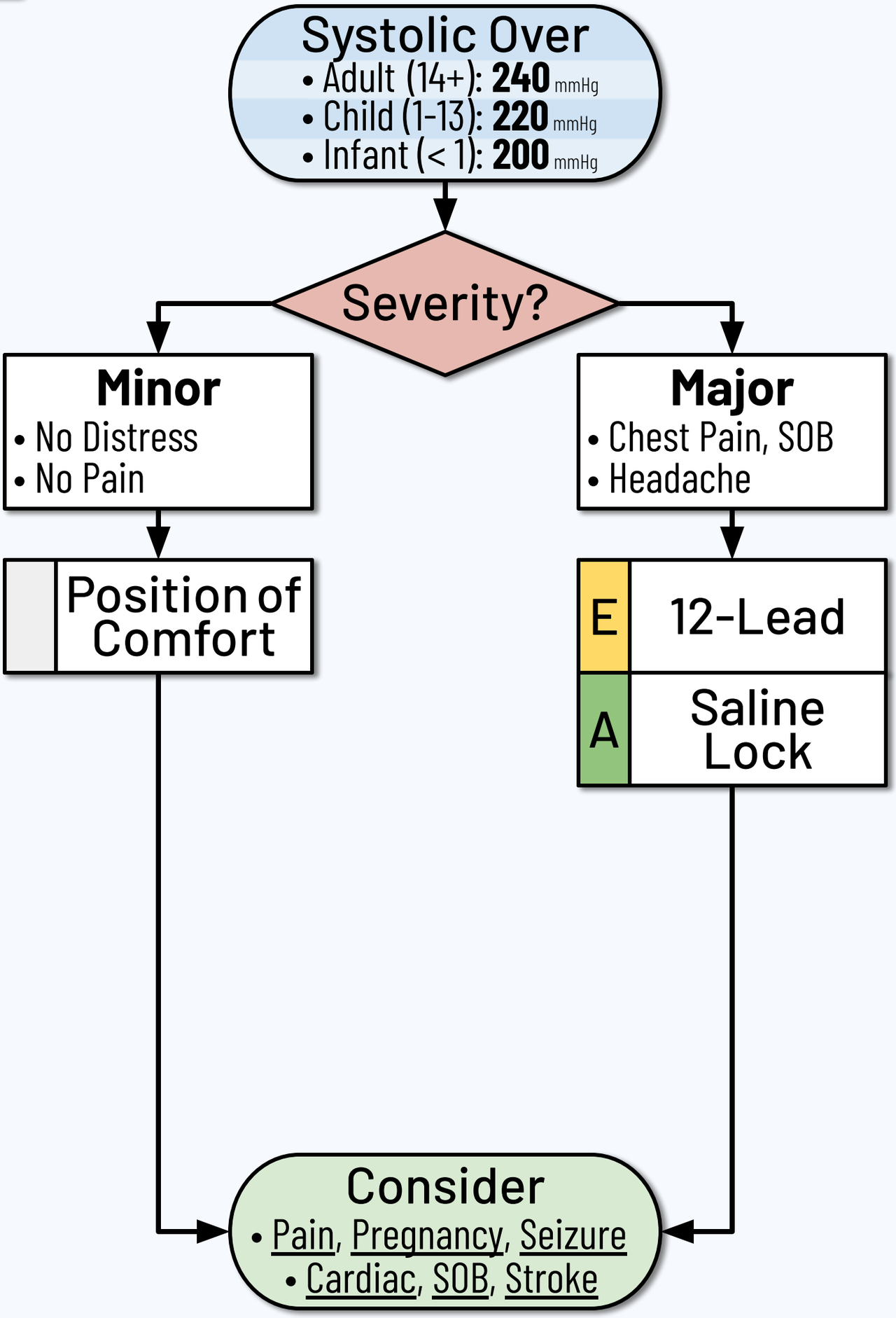
- The majority of peds decompensation is airway related.
- Fluids are important for hypotension. Pressors are a last resort.
- Use Peds Reference or other approved source for peds dosing.

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: Oct 2022

Hypertension



NEMSIS: 9914123
Reviewed: Feb 2023

Alias: HTN, Elevated Blood Pressure

Hypertension Imperatives

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

Notes

- Many other **underlying causes** can result in significant HTN.
  - Consider Cardiac pathology if any chest pain.
  - Consider CHF and pulmonary edema if any dyspnea.
  - Consider Stroke if any acute focal neurologic deficits.
  - Consider OD/Tox if any recent stimulant or illicit drug use.
  - Consider Psych if overt anxiety from recent emotional triggers.
  - Consider Head Injury if any history of trauma or signs of injury.
- Ask about new or recent changes to cardiac or **BP medications**.
- Consider Malignant HTN if indicated & cleared for Critical Care.

Pediatrics

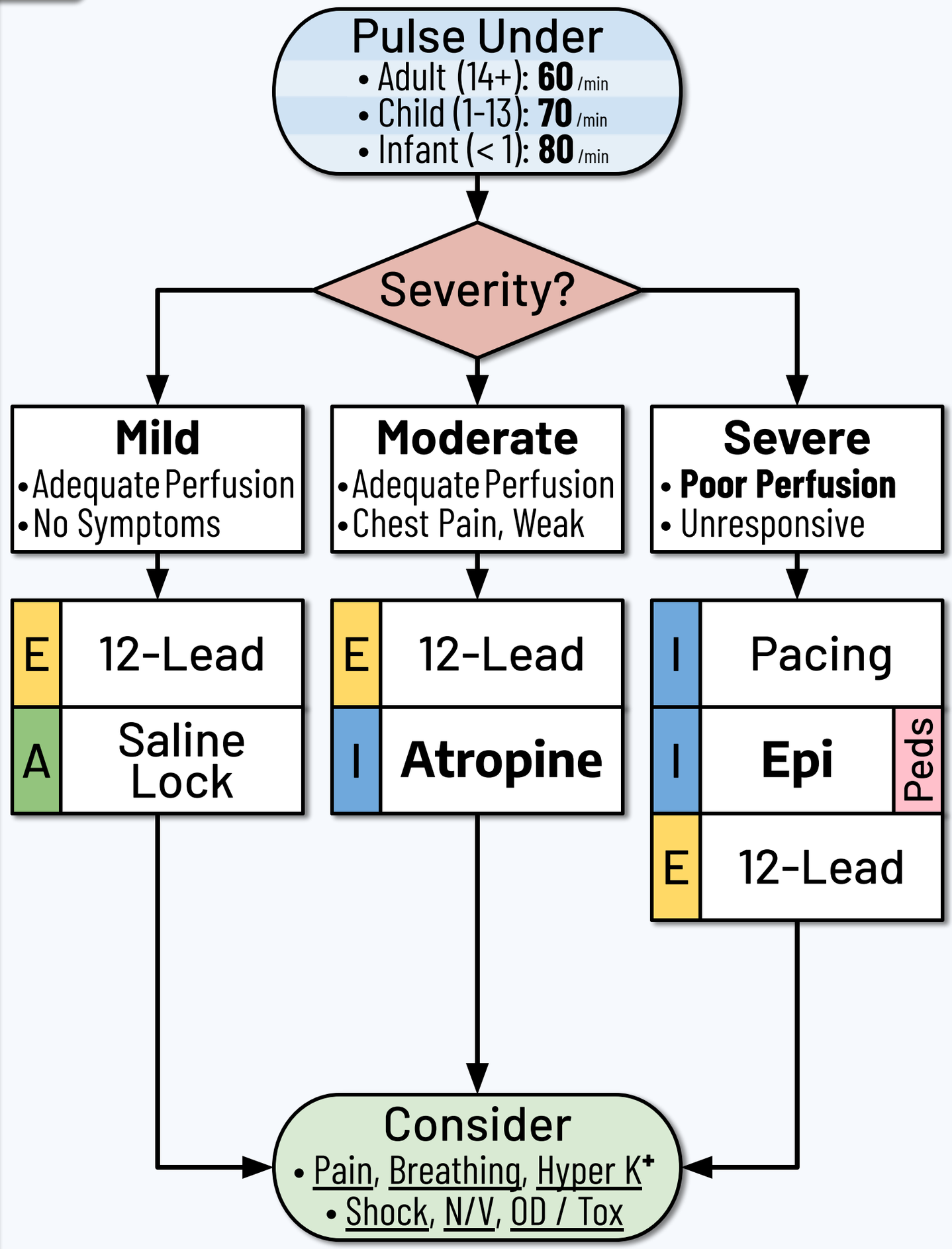
- Pathologic HTN is unlikely in peds. Treat underlying causes.

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: Feb 2023

Bradycardia



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

NEMSIS: 9914115
Reviewed: Feb 2023

Alias: Heart Block, Junctional, IVR (idioventricular)

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:
  - Heart Transplant, 3° Heart Block
- **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 Anxiety 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

Reviewed: Feb 2023 NEMSIS: 9914115

Tachycardia

Pulse Over

- Adult (14+): **100** /min
- Child (1-13): **130** /min
- Infant (< 1): **160** /min

Severity?

Mild

- Adequate Perfusion
- Simple Tachycardia

E	12-Lead
A	**NS Bolus**

Moderate

- Adequate Perfusion
- **Critical** Arrhythmia

E	12-Lead
A	**NS Bolus**
I	**Adenosine** If QRS ≤ 120 ms
I	**Amiodarone** If QRS > 120 ms

Severe

- **Poor Perfusion**
- **Critical** Arrhythmia

I	Cardioversion
E	12-Lead
I	**Magnesium** If Torsades
A	**NS Bolus**

Consider

- Circulation, Pain
- Fever, Bleeding

Adult Doses

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

NEMSIS: 9914147, 9914151, 9914199
Reviewed: Feb 2023

Alias: Sinus Tach, SVT, A-Fib, RVR, A-Flutter, V-Tach w/pulse

Tachycardia Imperatives

- Must distinguish a simple tachycardia from a critical arrhythmia.
- **Simple Tachycardias** (e.g. 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** (e.g. SVT, V-Tach w/pulse) are usually **faster**.
  - 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 (14+): **150** /min
  - Child (1-13): **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

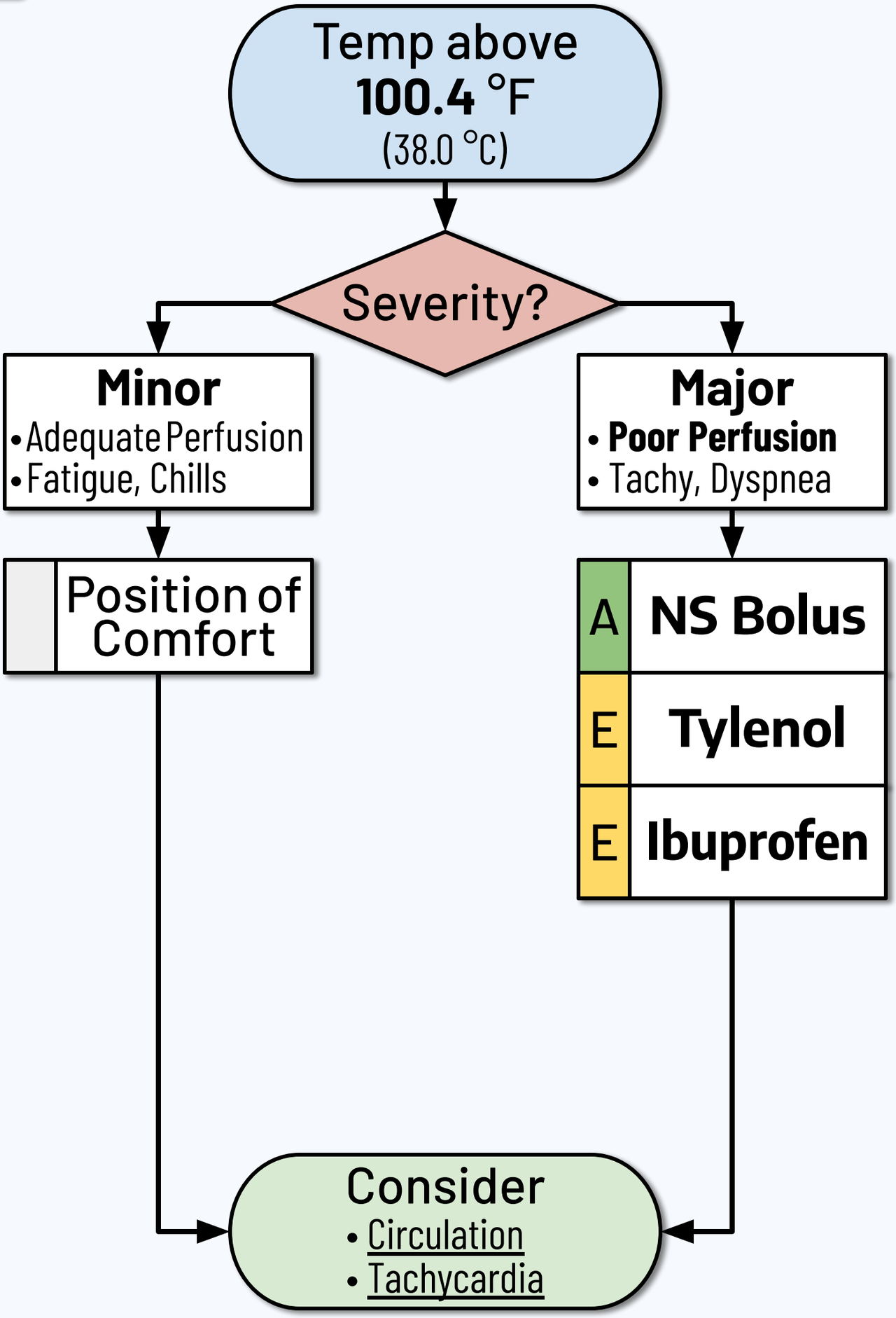
- Use Peds Reference or other approved source for peds dosing.

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: Feb 2023 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: Aug 2022

Alias: Sick, 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): avoid if end stage liver disease
- **Ibuprofen** (Advil®, Motrin®): avoid if **active** 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

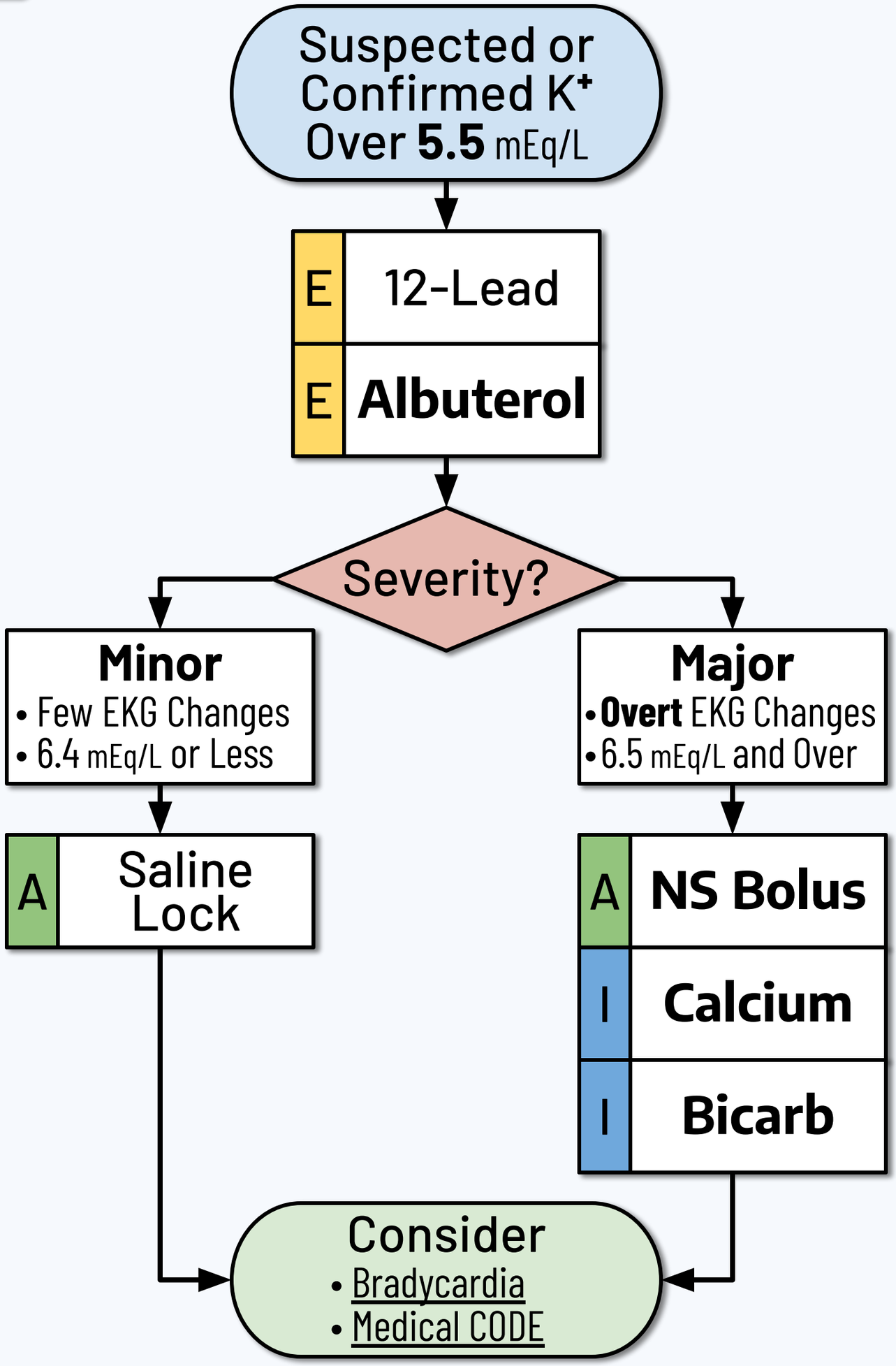
- Peds under 5 y/o may have a Seizure caused by fever.
  - It is usually self limiting and does not require intervention.
  - Consider intervention if longer than 5 min or Seizure reoccurs.
- Breaking tablets in half is appropriate. Do not break capsules.
- Consider removing excessive clothing. Dress children normally.
- 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: Aug 2022

Hyperkalemia



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

Adult Doses

NEMSIS: 9914089
Reviewed: Dec 2022

Alias: High K^+, Elevated Potassium, Dialysis, Renal Failure

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 if **QRS widening** seen 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

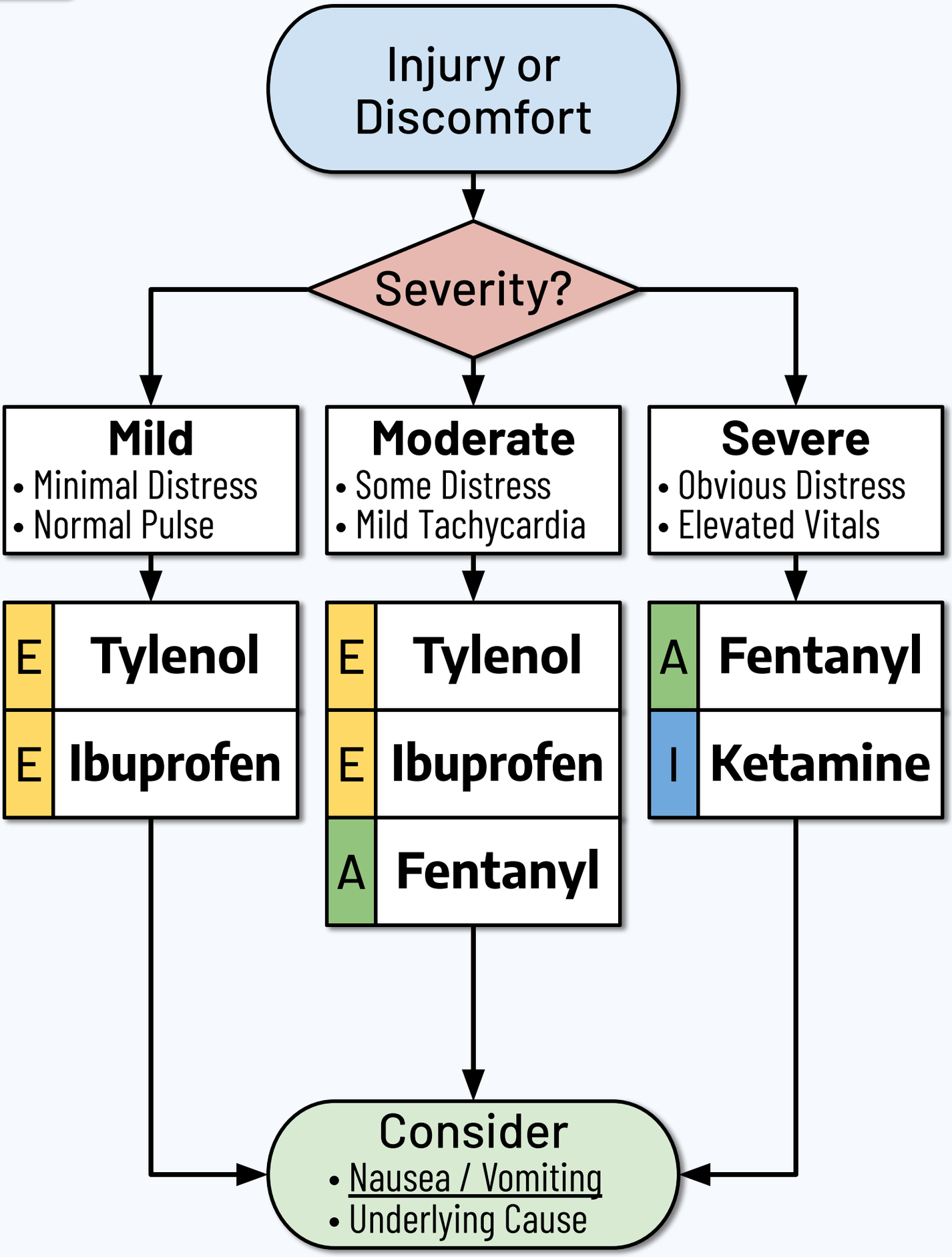
- Use Peds Reference or other approved source for peds dosing.

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: 12/21]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 28

Reviewed: Dec 2022 NEMSIS: 9914089

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: Dec 2022

Alias: Back Pain, 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 may be **beneficial** despite short transport times.
  - Consider **giving PO meds**, even for mild pain close to the ED.

Medications

- **Tylenol**® (Acetaminophen): avoid if end stage liver disease
- **Ibuprofen** (Advil®, Motrin®): avoid if **active** GI bleeding
- **Fentanyl** (Sublimaze®): monitor airway and hemodynamics
- **Ketamine** (Ketalar®): For IM/IN use: give as undiluted bolus
  - For IV/IO use: dilute in NS and **give slowly over 10 min**
- Use weight based peds dosing for small adults under 88 lbs (40 kg).

Notes

- **Tylenol** and **Ibuprofen** are good for **sub-acute** pain like:
  - Toothache, headache (migraine), sciatica, fibromyalgia, etc.
  - Avoid **Fentanyl** and **Ketamine** for sub-acute pain.
- 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]
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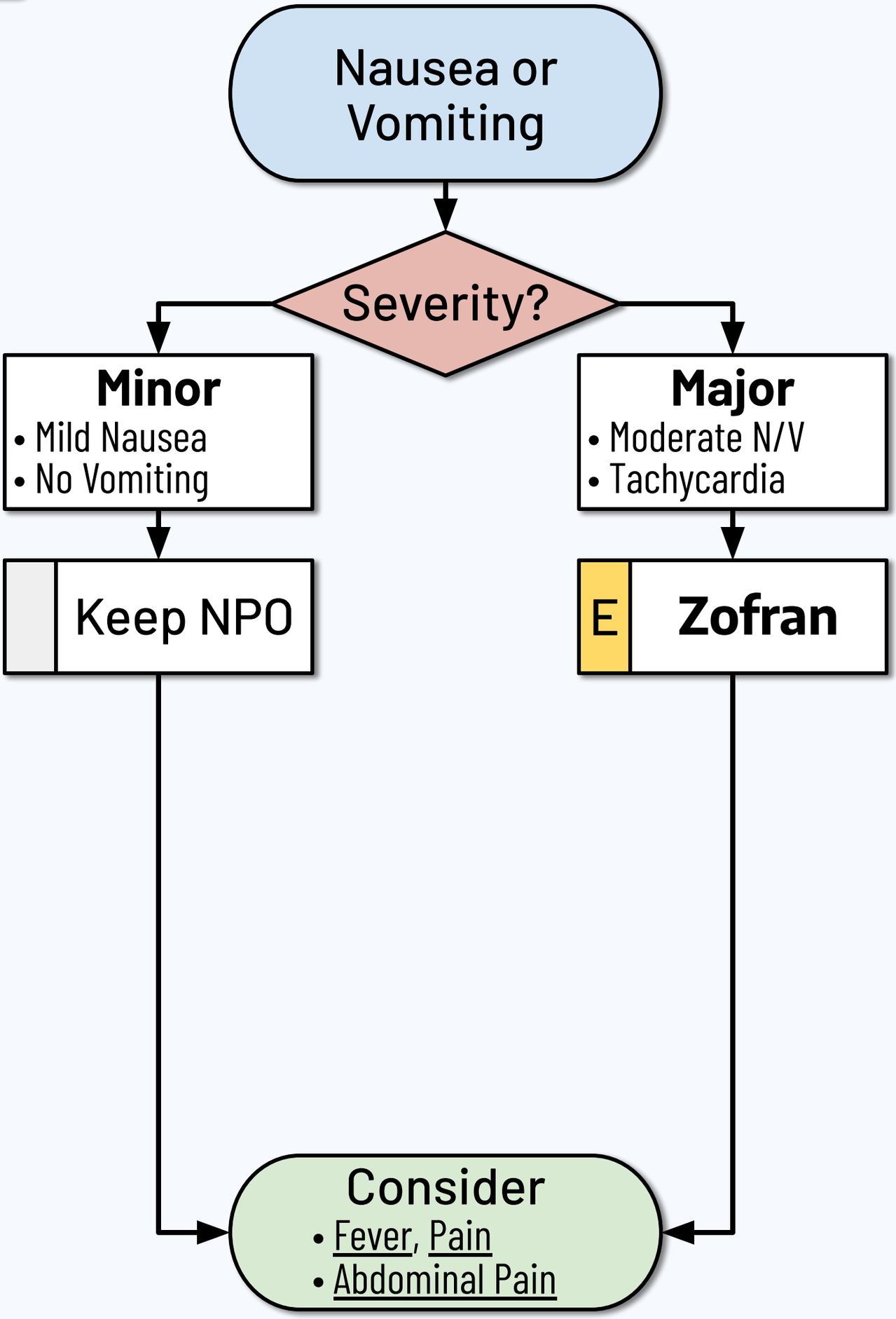
NEMSIS: 9914051, 9914071
Reviewed: Dec 2022

Nausea / Vomiting



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

NEMSIS: 9914131
Reviewed: Aug 2022

Alias: 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)
  - A Alternate 4-10y/o dose: break ODT in half and give 2 mg PO

Notes

- Consider an atypical Cardiac cause in diabetics and the elderly.
- Sniffing an alcohol prep may also provide minor nausea relief.

Pediatrics

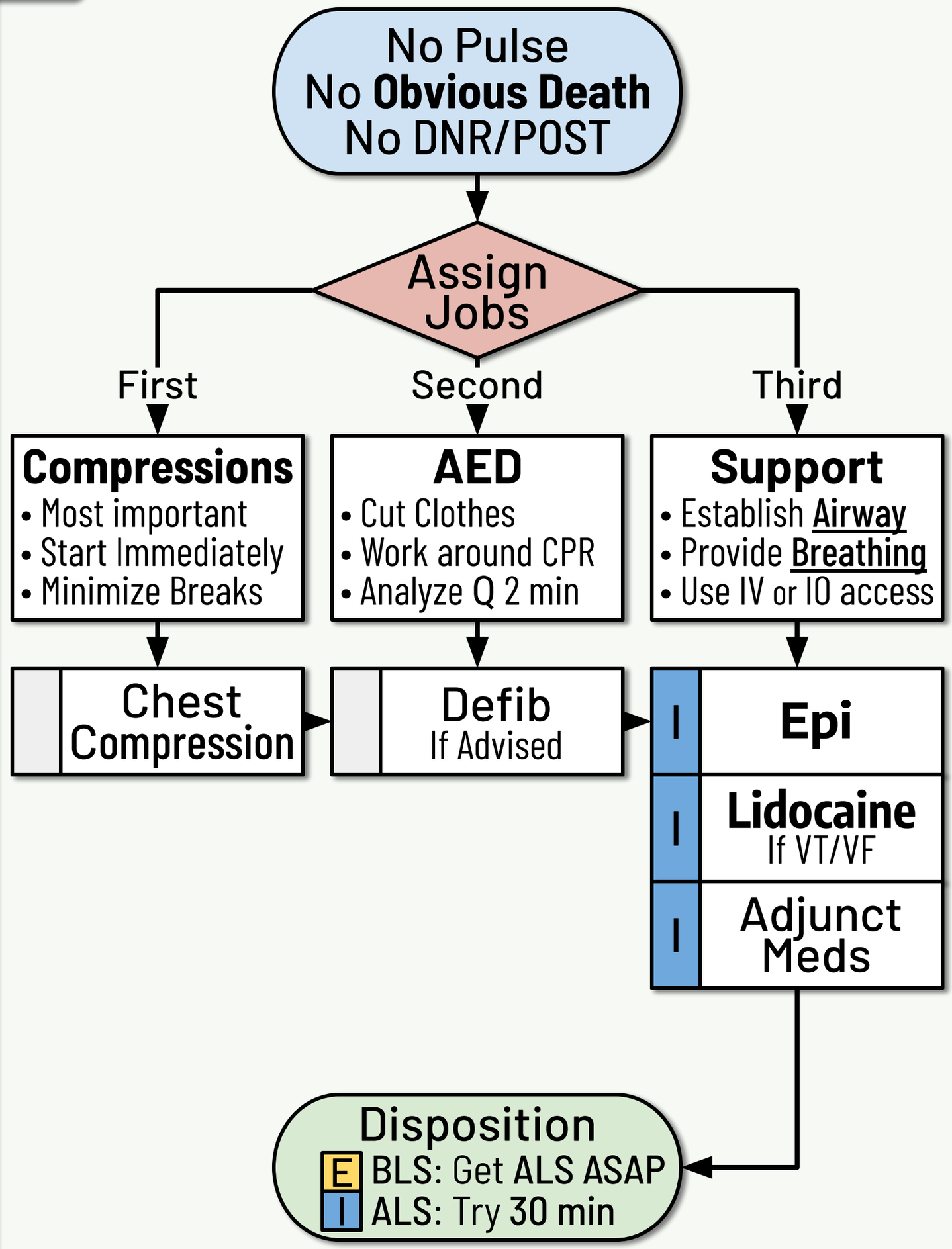
- Use Peds Reference or other approved source for peds dosing.

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: Aug 2022 NEMSIS: 9914131

Medical CODE



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

NEMSIS: 9914011, 9914015, 9914017, 9914055
Reviewed: Oct 2022

25

Alias: 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.

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

E **BLS**: Get ALS ASAP. Transport if witnessed or after any shock.

I **ALS**: Try for **30 min**. If no ROSC: Call for Termination.

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	IV/IO x2	Persistent VT/VF
I	**Bicarb: 50** mEq	IV/IO x1	Hyper K+ / OD
I	**Calcium: 1** gram	IV/IO x1	Hyper K+ / OD
I	**Magnesium: 2** grams	IV/IO x1	Torsades

  - Use either **Lidocaine** or **Amiodarone**, but **not both**.
  - Flush line well between **Bicarb** and **Calcium** (**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

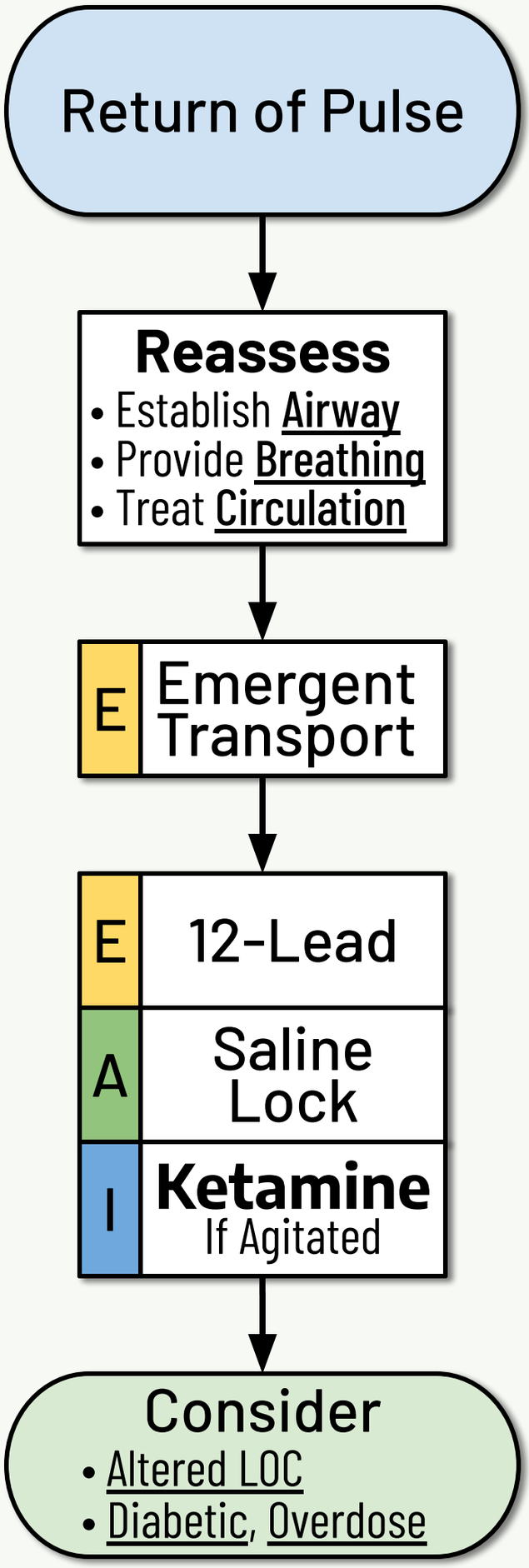
- Use 15:2 compression ratio for dual rescuer BLS resuscitation.
- Refer to Neonate for any peds **under 1 month** (< 31 days) old.
- Use Peds Reference or other approved source for peds dosing.

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: 8/21]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 21

NEMSIS: 9914011, 9914015, 9914017, 9914055
Reviewed: Oct 2022

Medical ROSC



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

NEMSIS: 9914019
Reviewed: Oct 2022

Alias: 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

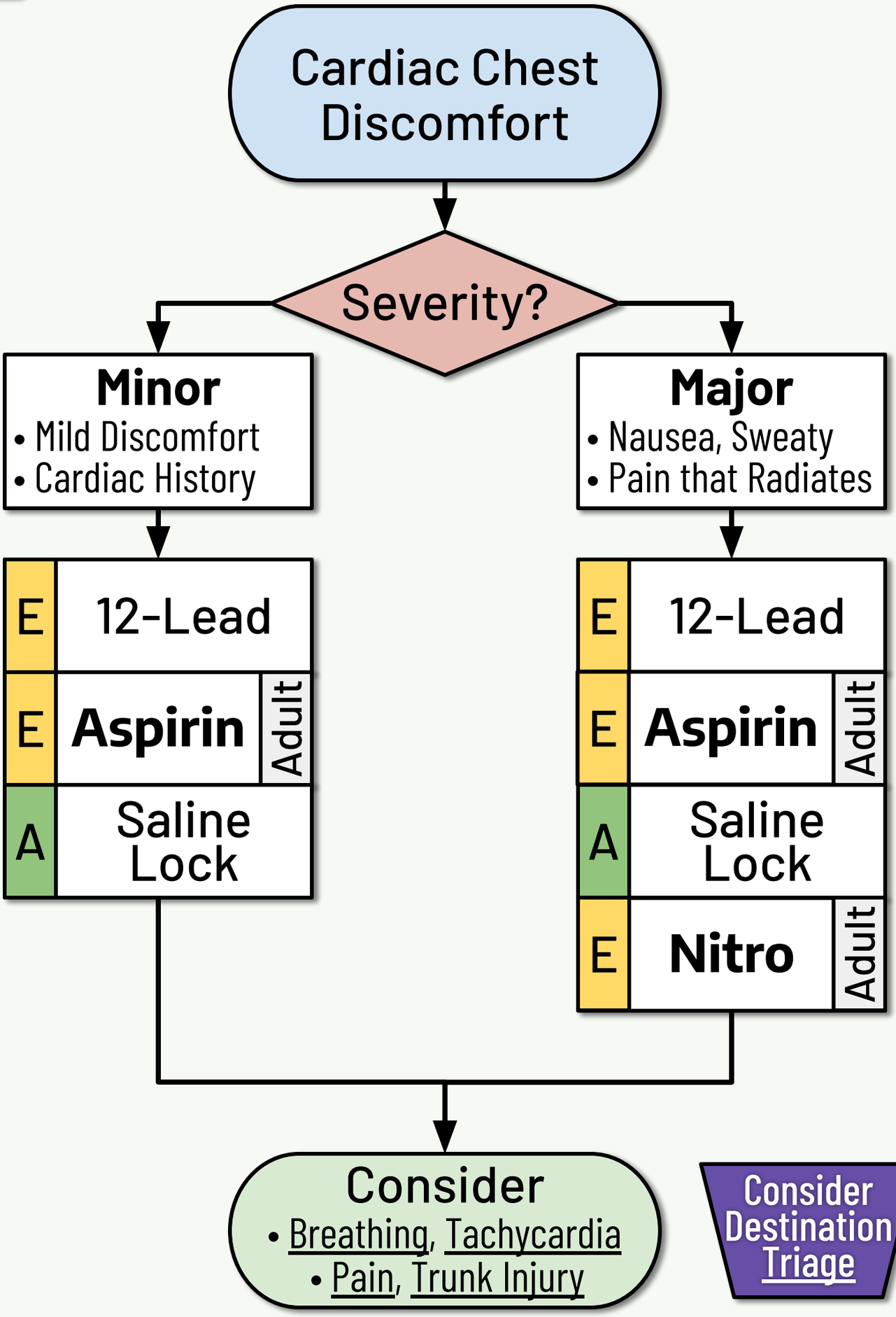
- Arrhythmias are common after ROSC, but are usually self-limited.
- Use Peds Reference or other approved source for peds dosing.

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: Oct 2022

Chest Pain



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

Adult Doses

NEMSIS: 9914117, 9914143
Reviewed: Feb 2023

Alias: Heart Attack, Acute MI, STEMI, Cardiac, Coronary

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 **active** GI bleeding
  - Have patient **chew four** (4) 81mg tabs (not enteric coated).
- **Nitro** (Nitroglycerin): May cause Hypotension.
  - Use caution if Hypotensive or suspected 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** & **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

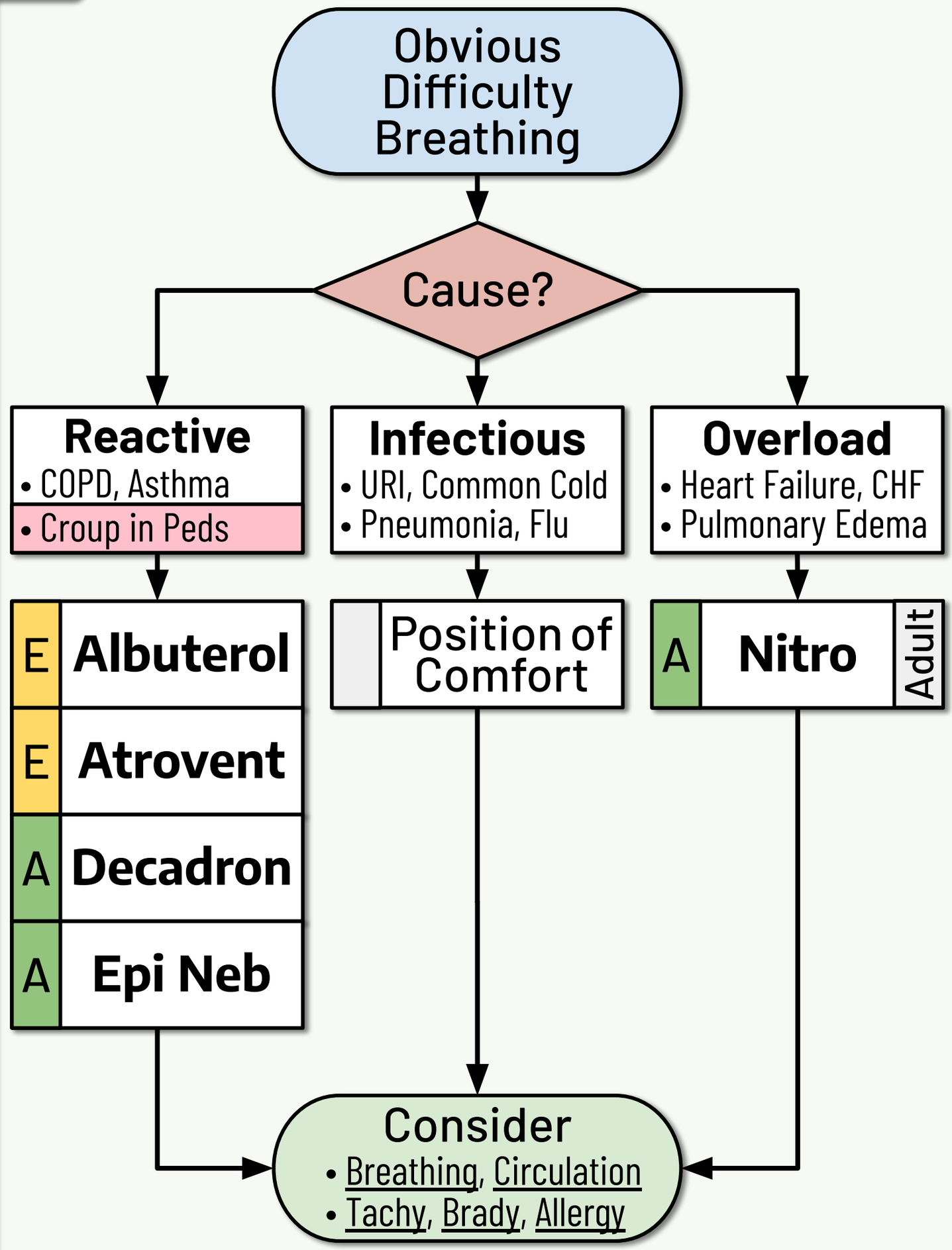
- Cardiac chest pain is unlikely in peds. Consider other causes.
- **Aspirin** and **Nitro** are contraindicated in peds chest pain.

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: Feb 2023

Dyspnea



Albuterol: 2.5 mg	NEB	Q 5 min x4
Atrovent: 0.5 mg	NEB	x1
Decadron: 8 mg	IV/IO, IM, PO	x1
Epi Neb: 5 mg	NEB	x1
Nitro: 0.4 mg	SL	Q 5 min x3

Adult Doses

NEMSIS: 9914137, 9914139, 9914197, 9914221, 9914223
Reviewed: Jun 2023

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

Dyspnea Imperatives

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

Medications

- **Albuterol** (Ventolin®) & **Atrovent®** (Ipratropium bromide):
  - May combine in same nebulizer. May cause palpitations.
- **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.
- **Epi Neb** (Epinephrine): Use 1 mg/mL concentration (multi-dose).
  - Good choice for severe croup, bronchiolitis or asthma in peds.
- **Nitro** (Nitroglycerin): May cause Hypotension.
  - May use **double dose** (0.8 mg) if hypertensive & requiring NIPPV.
  - Use caution if Hypotensive or suspected inferior STEMI.
  - Contraindicated if recent (36h) use of Viagra, Cialis or Levitra.

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

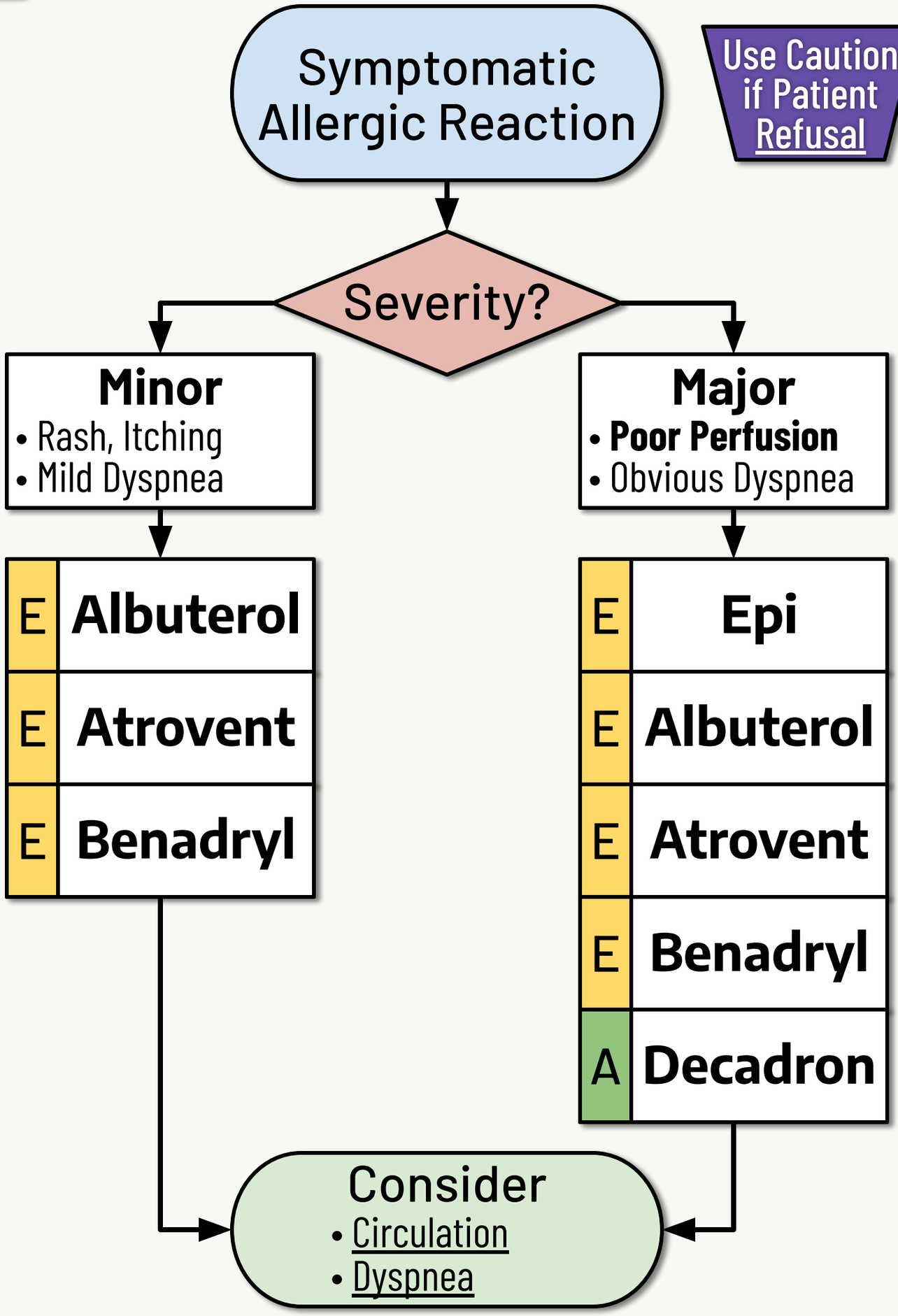
- Defer aggressive evaluation if any concern for **epiglottitis**.
  - Agitation can make it much worse.
  - Epiglottitis is unlikely in fully vaccinated patients.
- **Croup** is an infection that is best treated like a reactive cause.
  - **Stridor** may be present (but choking may also cause stridor).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

References

- Medscape COPD: https://emedicine.medscape.com/article/297664 [Ver: 6/22]
- Medscape Asthma: https://emedicine.medscape.com/article/296301 [Ver: 1/23]
- Medscape CHF: https://emedicine.medscape.com/article/163062 [Ver: 6/23]
- 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: Jun 2023

Allergic Reaction



Albuterol: 2.5 mg	NEB	Q 5 min x4
Atrovent: 0.5 mg	NEB	x1
Benadryl: 25 mg	IV/IO, IM, PO	x1
Epi: 0.3 mg	auto, IM	Q 5 min x3
Decadron: 8 mg	IV/IO, IM, PO	x1

Adult Doses

NEMSIS: 9914111
Reviewed: Jun 2023

Alias: 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** meds (or IV/IO if available) for any patient in extremis.

Medications

- **Epi** (Epinephrine): **Use IM**. 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 3-8 y/o. **EpiPen**®: Use for 9+ 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 or liquid).

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 food allergies may also induce N/V and abdominal pain.

Pediatrics

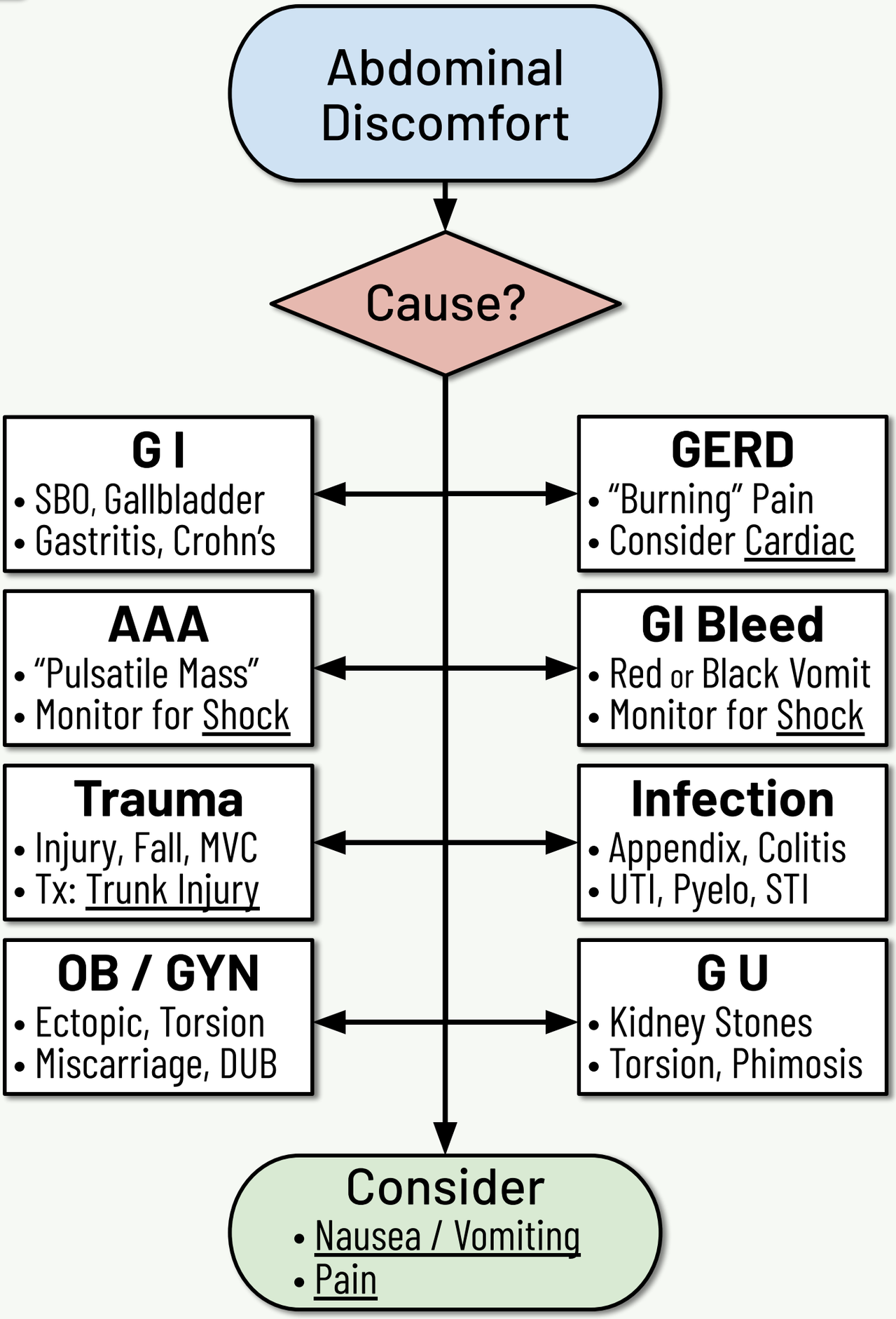
- Use Peds Reference or other approved source for peds dosing.

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

Reviewed: Jun 2023 NEMSIS: 9914111

Abdominal Pain



NEMSIS: 9914109
Reviewed: Aug 2022

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

Abdominal Pain Imperatives

- This protocol is for **medical** causes of abdominal pain.
  - For traumatic abdominal pain, refer to Trunk Injury.
- Many common causes do not require specific EMS intervention.
  - E.g. gastroenteritis, gallbladder, appendix, bowel obstruction, etc
  - Consider treatment of the symptoms: Fever, Pain, Nausea
- Prepare for Hypotension if any reported blood loss or suspected:
  - **AAA**: Midline "pulsatile mass" in the elderly
  - **GI Bleeding**: Black stool (melena) or "coffee ground" emesis
- Inquire about Pregnancy and consider complications.
  - Consider an **ectopic** in any pregnant female.
- **Avoid oral** food and fluids. (Oral meds are OK.)
  - Keep patients **NPO** (*Nil Per Os*: Lat. "nothing through the mouth")

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

NEMSIS: 9914109
Reviewed: Aug 2022

Altered LOC / Syncope

Confused or Unresponsive (but breathing)

Use Caution if Patient Refusal

	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 Flushed, Hot

Stroke
- Facial Droop, Weakness
- Slurred Speech

Cardiac
- Brady, Tachy
- Shock, Chest Pain

NEMSIS: 9914113, 9914149
Reviewed: Aug 2022

Alias: Dizzy, Fainting, Collapse, Orthostatic, POTS

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

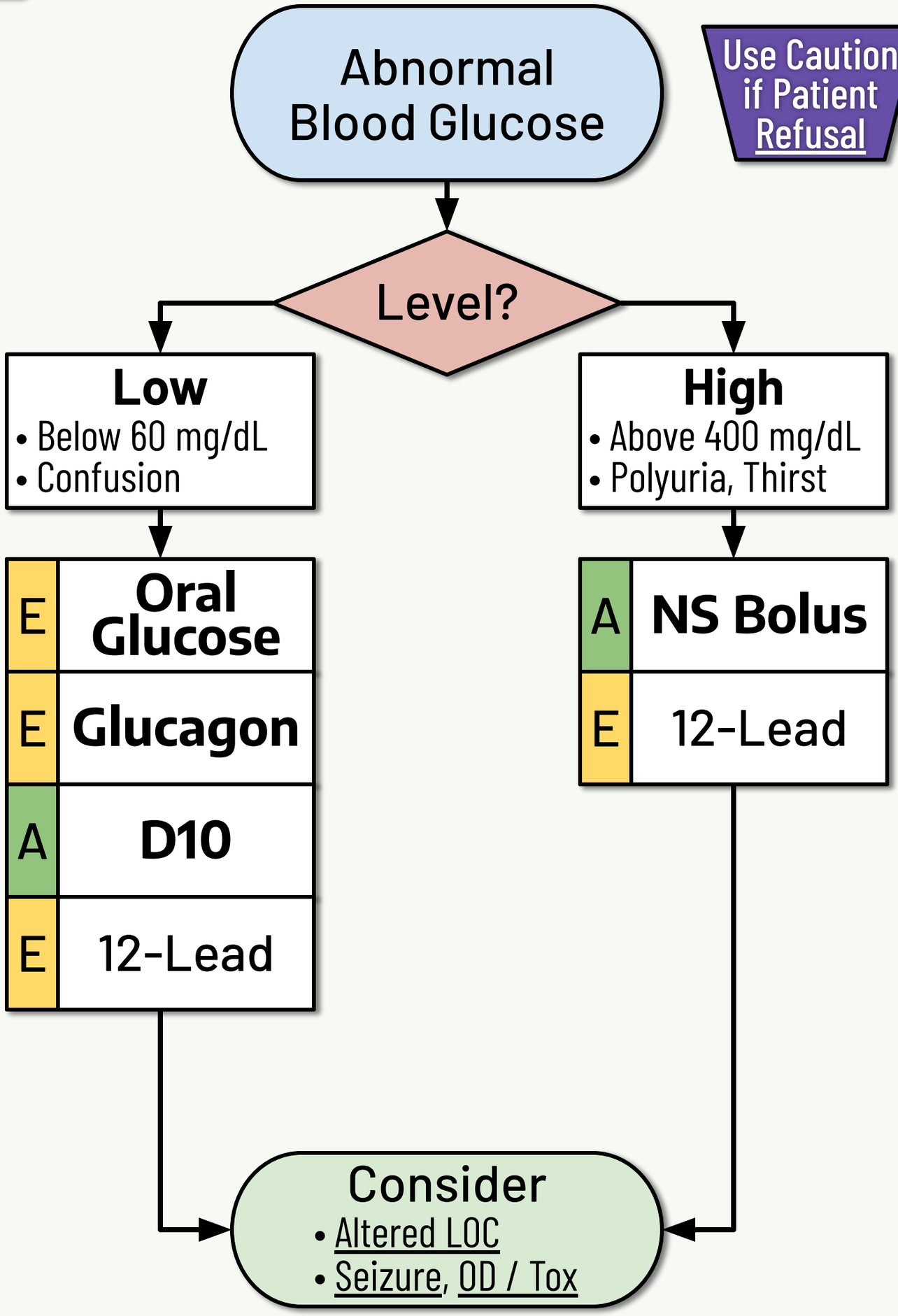
- Most causes of transient syncope are benign.
- Prolonged altered LOC indicates potentially serious pathology.
- Syncope **during exertion** can be a true cardiac emergency.

References

- Medscape Syncope: https://emedicine.medscape.com/article/811669 [Ver: 1/17]
- Medscape Delirium: https://emedicine.medscape.com/article/793247 [Ver: 8/22]
- Medscape Hypoglycemia: https://emedicine.medscape.com/article/122122 [Ver: 2/23]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 22

Reviewed: Aug 2022 NEMSIS: 9914113, 9914149

Diabetic



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

Adult Doses

NEMSIS: 9914121, 9914125
Reviewed: Aug 2022

Alias: 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.
  - E.g. 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 any refusal after **Glucagon**.
  - E May use for pts 5+ y/o. Give whole vial intramuscular (IM).
- **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

- Consider treatment for any symptomatic peds **over 200 mg/dL**.
- Use Peds Reference or other approved source for peds dosing.

References

- Medscape Hypoglycemia: https://emedicine.medscape.com/article/122122 [Ver: 2/23]
- Medscape DKA: https://emedicine.medscape.com/article/118361 [Ver: 1/21]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 22

NEMSIS: 9914121, 9914125
Reviewed: Aug 2022

Overdose / Tox

Ensure Provider SAFETY

Symptomatic Toxic Exposure or Overdose

Use Caution if Patient Refusal

Severity?

Minor
- Adequate Perfusion
- Minor Symptoms

A: Saline Lock

Major
- **Poor Perfusion**
- Toxic Effects

I: Administer Antidote

E: 12-Lead

A: Saline Lock

Ensure Patient DECON

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

Adult Antidote Doses

	Toxin		
	Opiates	**Narcan: 0.4-4** mg	IV/IO, IM/IN
I	ß-blocker	**Glucagon: 1** mg	IM
I	Organophos	**Atropine: 2** mg	IV/IO, IM
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: Aug 2022

Alias: 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 resps & 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.
- [ ] **Charcoal** (activated): Only if directed by poison control.
- [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

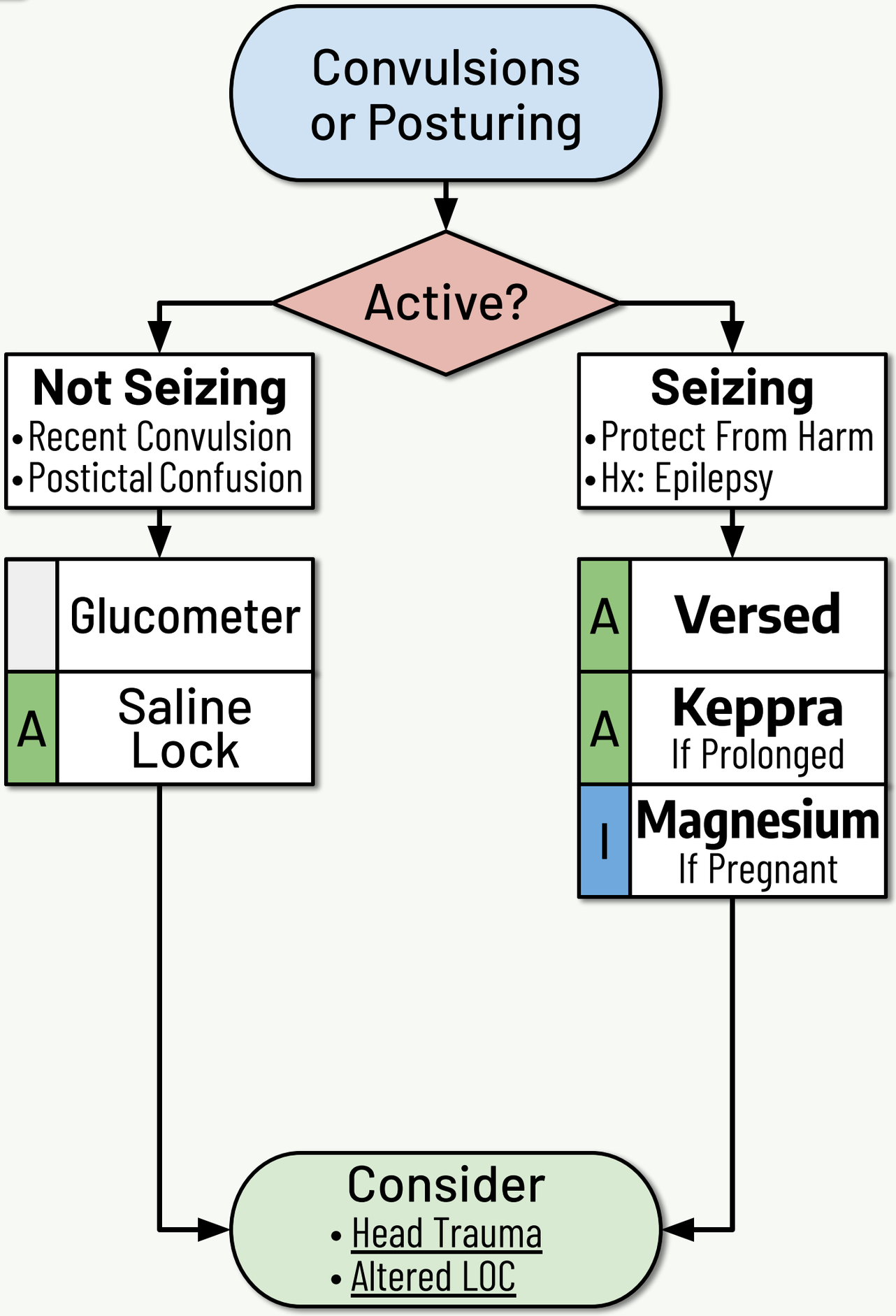
- Just a **single pill** of some adult meds can cause major symptoms.
  - Be prepared to treat Shock if overdose is suspected.
  - Ingested **cigarettes or vape fluid** (nicotine) can be **fatal**.
- Use Peds Reference or other approved source for peds dosing.

References

- Medscape Opioids: https://emedicine.medscape.com/article/815784 [Ver: 4/23]
- Medscape Tricyclics: https://emedicine.medscape.com/article/819204 [Ver: 1/23]
- Medscape Organophosphate: https://emedicine.medscape.com/article/167726 [Ver: 3/23]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 25

Reviewed: Aug 2022 NEMSIS: 9914043, 9914135, 9914215, 9914217, 9914219, 99104225

Seizure



Versed:	**2.5** mg	IV/IO, IM/IN	Q 2 min x4	Adult Doses
Keppra:	**1,000** mg	IV/IO	over 10 min	
Magnesium:	**4** grams	IV/IO	x1	

NEMSIS: 9914141, 9914157
Reviewed: Aug 2022

Alias: Epilepsy, Eclampsia, Febrile Seizure, Withdrawal

Seizure Imperatives

- Active convulsions with Altered LOC should be treated promptly.
  - Meds are contraindicated without active convulsions.
  - Aggressively treat seizures due to alcohol or benzo withdrawal.
- Shaking while awake and responsive is unlikely to be a seizure.
  - Consider other causes such as Psychiatric or OD / Tox.
  - Non-epileptic **pseudoseizures** do not require intervention.
- **Use caution with needles** - increased risk of provider injury.

Medications

- **Versed**® (Midazolam): Only appropriate for active convulsions.
  - May double dose if using IM/IN to limit risk (5 mg Q 5 min x2).
- **Keppra**® (Levetiracetam): Second line if seizures continue.
- **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.
  - Consider prophylactic dose if Malignant HTN & cleared for CC.

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

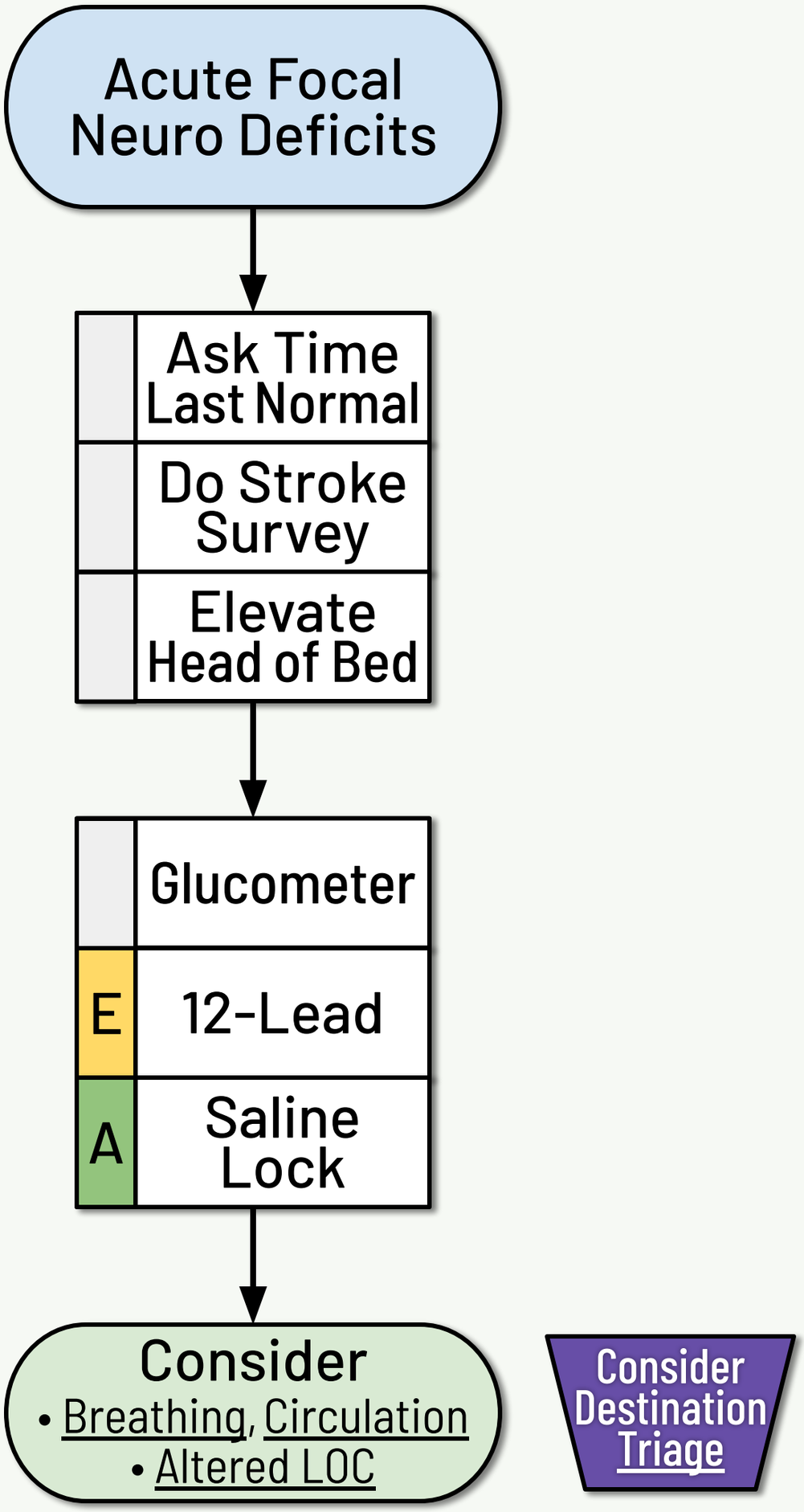
- Peds under 5 y/o may have a seizure caused by Fever.
  - It is usually self limiting and does not require intervention.
  - Consider medication if longer than 5 min or seizure reoccurs.
  - Aggressively treat any peds seizure not associated with Fever.
- Use Peds Reference or other approved source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

References

- Medscape Seizure: https://emedicine.medscape.com/article/1184846 [Ver: 6/22]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 22

NEMSIS: 9914141, 9914157
Reviewed: Aug 2022

Stroke



NEMSIS: 9914145
Reviewed: Aug 2022

Alias: 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 when they went to bed.
  - If altered LOC: last normal is when someone saw them normal.
- **Stroke Survey**: Start with the **Cincinnati Stroke** FAST exam.
  - Consider additional screening if able (Stroke VAN or NIHSS).
- **Elevate** head of bed approximately 30° (helps prevent aspiration).
- 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

- Systemic thrombolysis (tPA, TNK) must occur **within 3-6 hours**.
  - Vascular neuro-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: 7/22]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 22

NEMSIS: 9914145
Reviewed: Aug 2022

Psychiatric

Ensure Provider SAFETY

Overt Psychosis, Anxiety or SI / HI

Use Caution if Patient Refusal

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

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

NEMSIS: 9914053
Reviewed: Aug 2022

Alias: Behavioral, Suicidal, Delirium, Restraint, Agitation

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.
  - Beware any physical or verbal threats, aggression, or agitation.
- **Use caution with needles** - increased risk of provider injury.

Medications

- **Versed**® (Midazolam): Use with caution with peds and elderly.
  - May double dose if using IM/IN to limit risk (5 mg Q 5 min x2).
- **Haldol**® (Haloperidol): Requires transport and **ALS** monitoring.
- Antipsychotics may cause dystonic muscle spasms (not seizure).
  - Consider treatment with **Benadryl** if spasms are severe.
  - I **Benadryl**® (diphenhydramine): 25 mg PO, IV/IO, IM x1

Notes

- Consider calling **Medical Control** for repeat dosing.
- SI / HI: Suicidal or Homicidal Ideation (any recent thoughts or acts)

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: 6/22]
- Medscape Aggression: https://emedicine.medscape.com/article/288689 [Ver: 11/22]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 27

NEMSIS: 9914053
Reviewed: Aug 2022

Pregnancy / Delivery

Suspected or Known Pregnancy (20 weeks & over)

Use Caution if Patient Refusal

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
- Failed Delivery
- Prolapse or Breech

	Don't Push
E	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: Apr 2023

Alias: Contractions, Pre / Eclampsia, Postpartum care

Pregnancy / Delivery Imperatives

- This protocol applies to **late pregnancy** (20 weeks & over).
  - There are no specific EMS interventions for early pregnancy.
  - Uterus palpable **above the umbilicus** suggests late pregnancy.
- Any SBP reading **above 160** mmHg may be **preeclampsia**.
  - Prioritize transport. Call **Medical Control** for any refusal.
  - Consider Malignant HTN if appropriate & cleared for critical care.
- 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
  - Prolapse: don't handle cord, relieve pressure using fingers in vagina
  - Breech: do not pull, elevate presenting part if pressing on cord

Notes

- Remember not all medications are safe in pregnancy.
  - Call **Medical Control** if any question.
- **Postpartum bleeding** can be severe; fundal massage can help.
  - A If poor perfusion: **TXA** (Tranex. Acid): 1 g IV/IO over 10 m
- 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

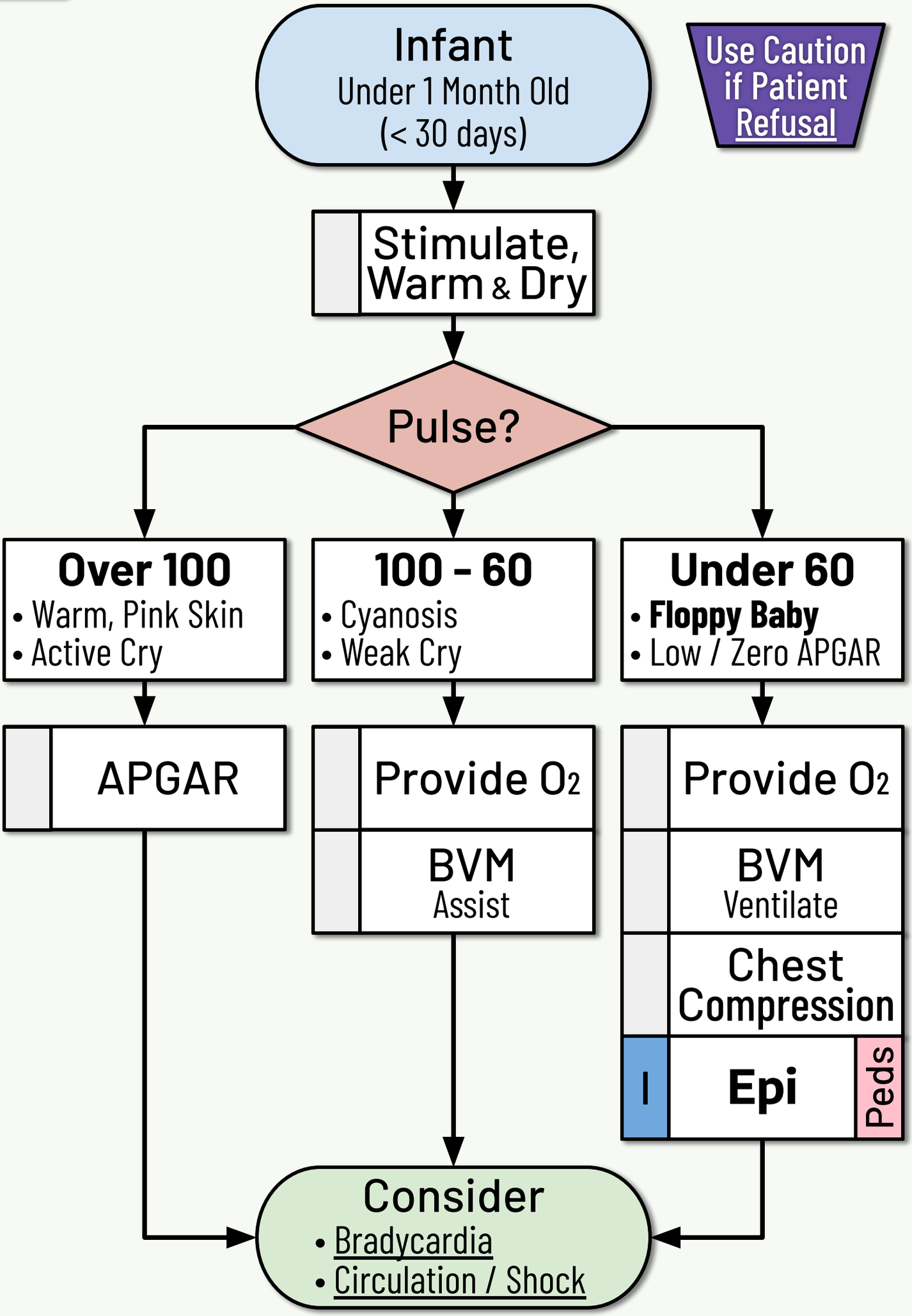
- Refer to Neonate for management of the newborn baby.

References

- Medscape Delivery: https://emedicine.medscape.com/article/260036 [Ver: 1/19]
- Medscape Eclampsia: https://emedicine.medscape.com/article/253960 [Ver: 2/22]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 36

NEMSIS: 9914155
Reviewed: Apr 2023

Neonate



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

NEMSIS: 9914133, 9914163
Reviewed: Apr 2023

Alias: 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.
  - Dry off. Keep warm.
  - Wait ~60 sec, then clamp cord.
  - 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

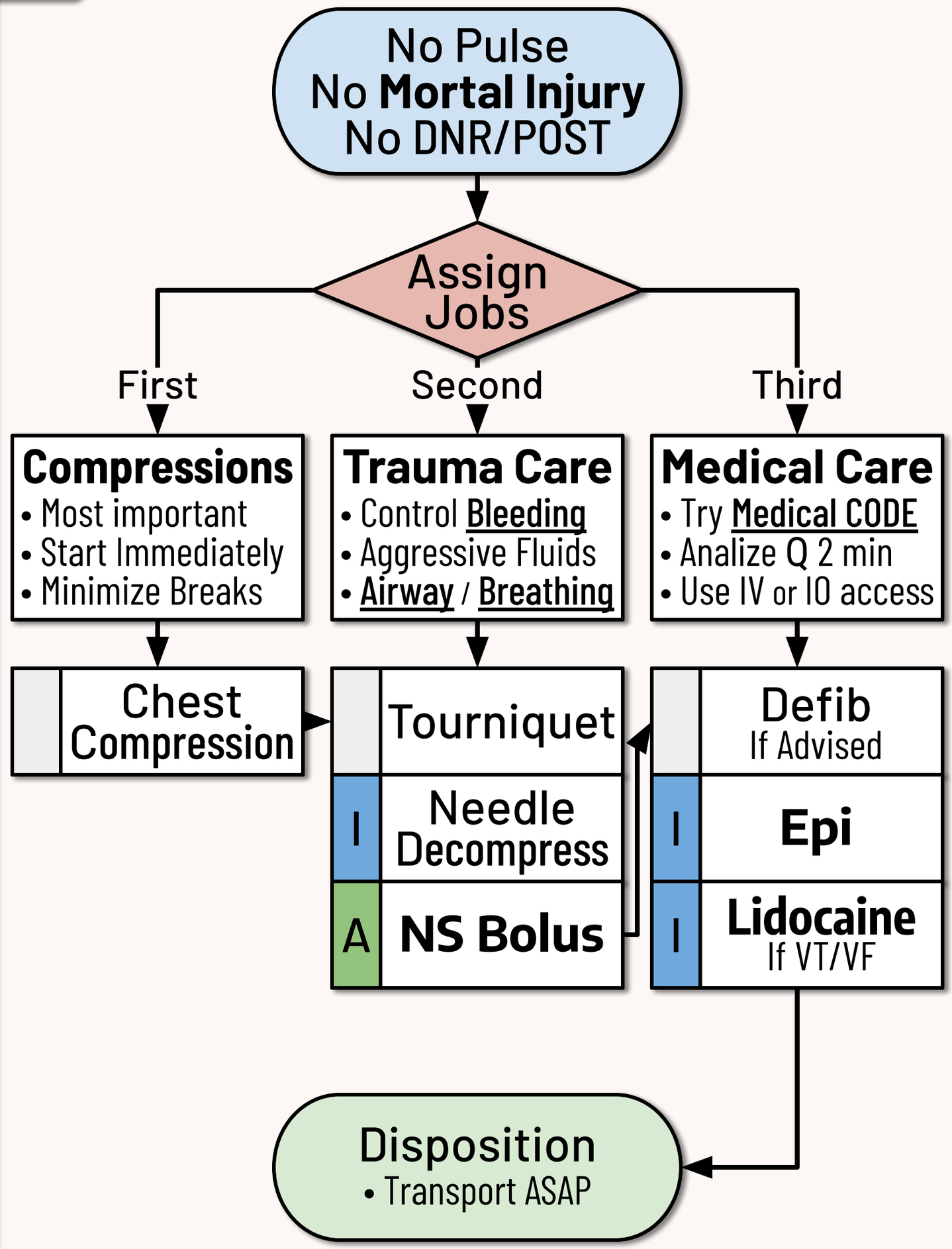
- This protocol is for infants under 1 month (< 30 days) old only.
- It does not apply to adults or older peds.

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: 5 / 21]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 36

NEMSIS: 9914133, 9914163
Reviewed: Apr 2023

Trauma CODE



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

Adult Doses

NEMSIS: 9914087
Reviewed: Oct 2022

Alias: 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

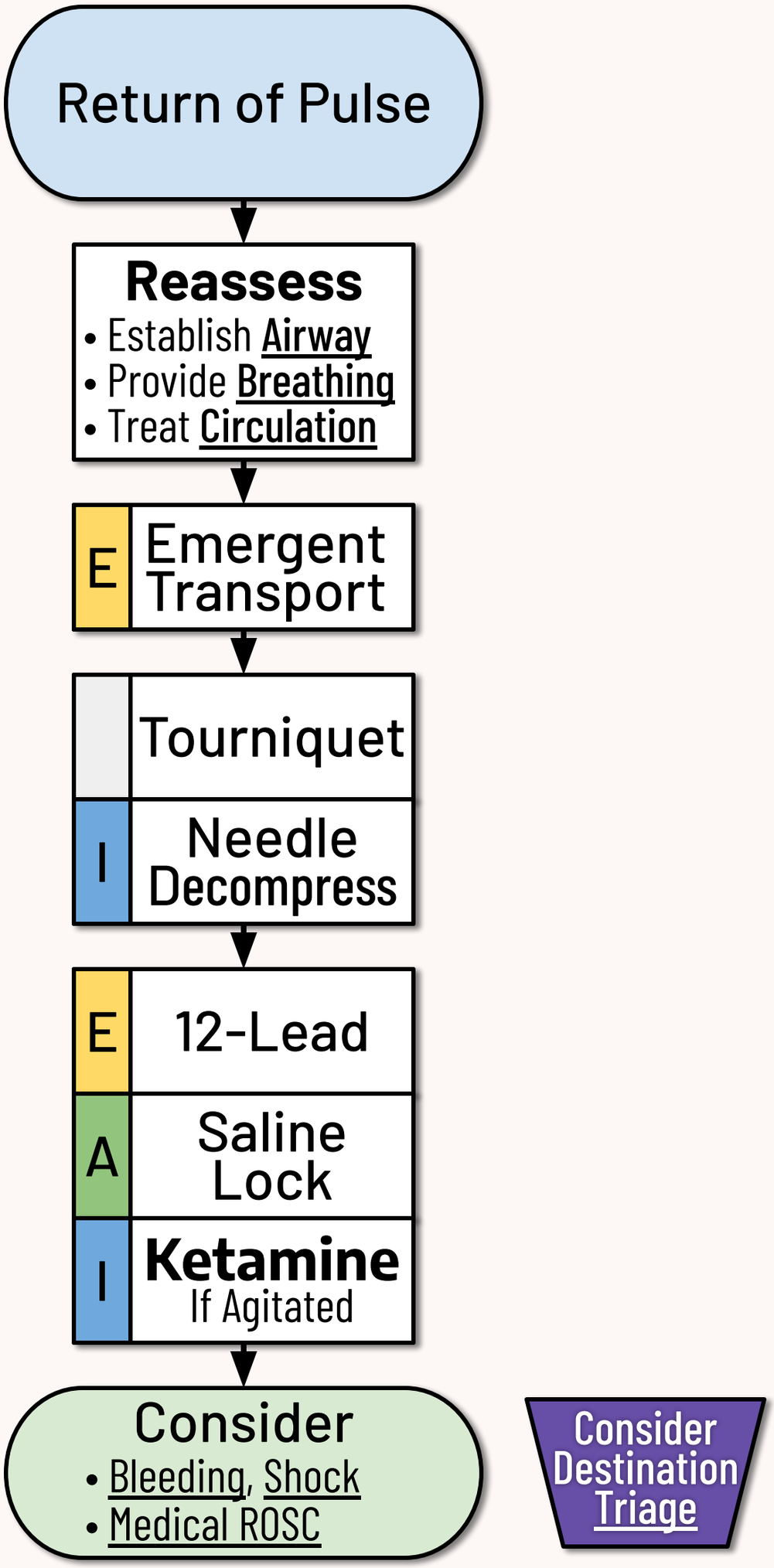
- Use Peds Reference or other approved source for peds dosing.

References

- ATLS®: www.facs.org/quality-programs/trauma/education/advanced-trauma-life-support/ [Ver: 10th]
- 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: Oct 2022

Trauma ROSC



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

NEMSIS: 9914165
Reviewed: Oct 2022

Alias: 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.
  - Apply pressure and pack wounds for junctional 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

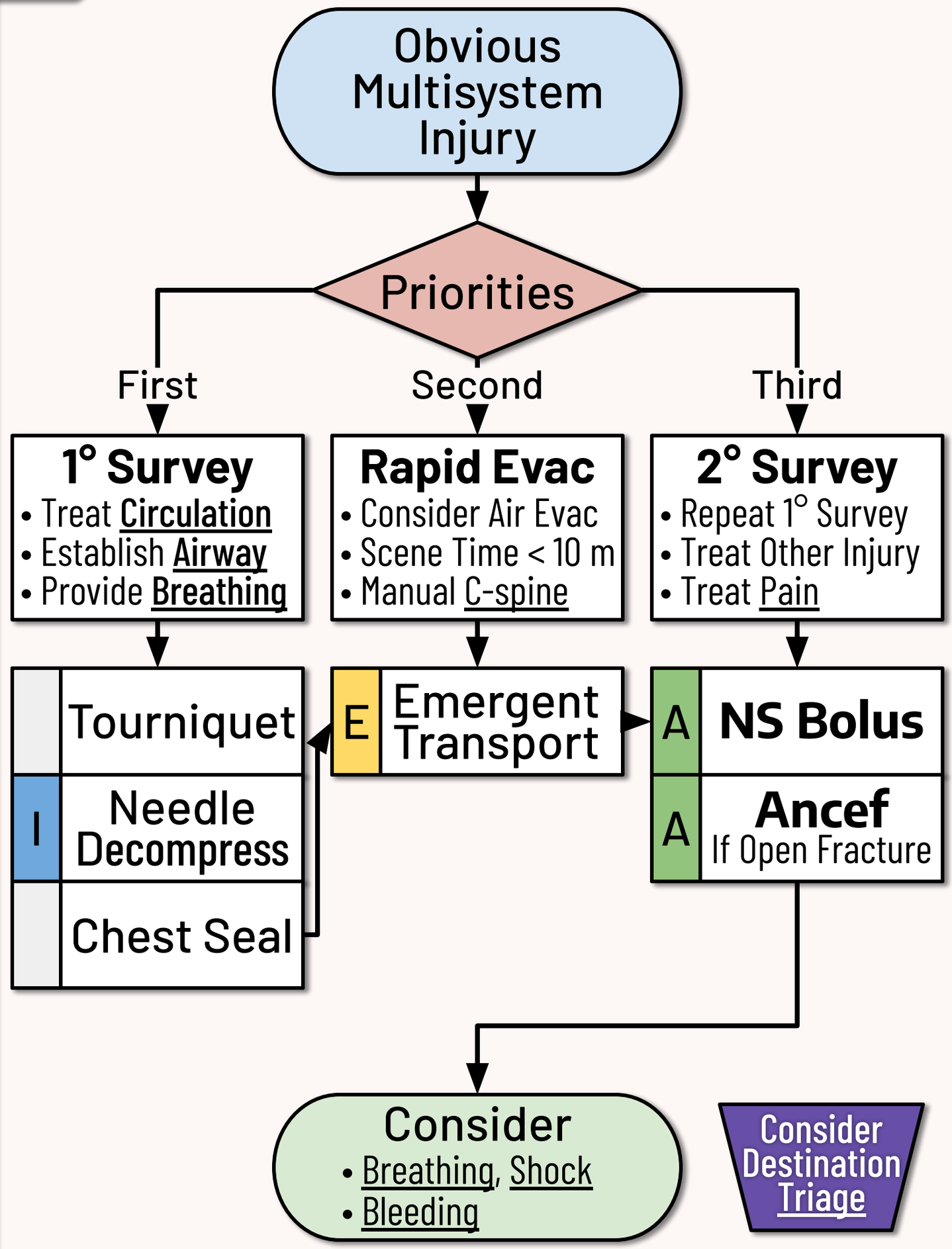
- Use Peds Reference or other approved source for peds dosing.

References

- ACLS: https://www.ahajournals.org/doi/10.1161/CIR.0000000000000916 [Ver: 2020]
- ATLS®: www.facs.org/quality-programs/trauma/education/advanced-trauma-life-support/ [Ver: 10th]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 29, 34

NEMSIS: 9914165
Reviewed: Oct 2022

Major Trauma



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

Adult Doses

NEMSIS: 9914045, 9914105, 9914207
Reviewed: Oct 2022

Alias: 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.
  - You may defer placing a c-collar to the secondary survey.
  - You should defer extremity splinting to the secondary survey.

- 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

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

Notes

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

Pediatrics

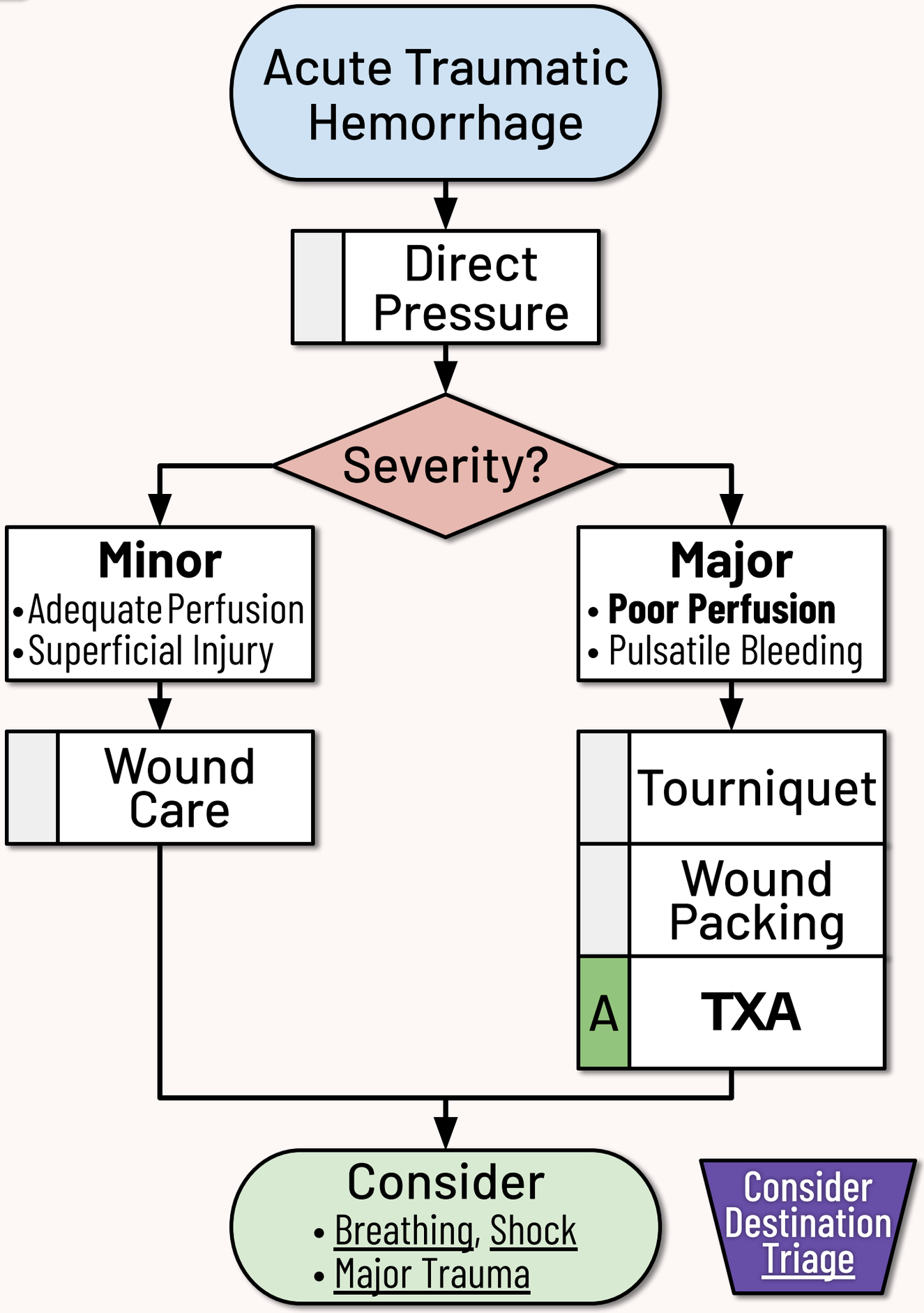
- Use Peds Reference or other approved source for peds dosing.

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: Oct 2022

Bleeding



TXA: 1 gram	IV/IO	over 10 min	Adult

NEMSIS: 9914083
Reviewed: Oct 2022

Alias: 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/abd 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.
  - Use for suspected **intra-thoracic bleeding** w/ poor perfusion.
  - Such as: pelvic fracture, rigid abdomen, major contusions, SOB
  - May also use for severe **postpartum** (non-traumatic) bleeding.
  - Avoid for other forms of suspected internal or medical 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

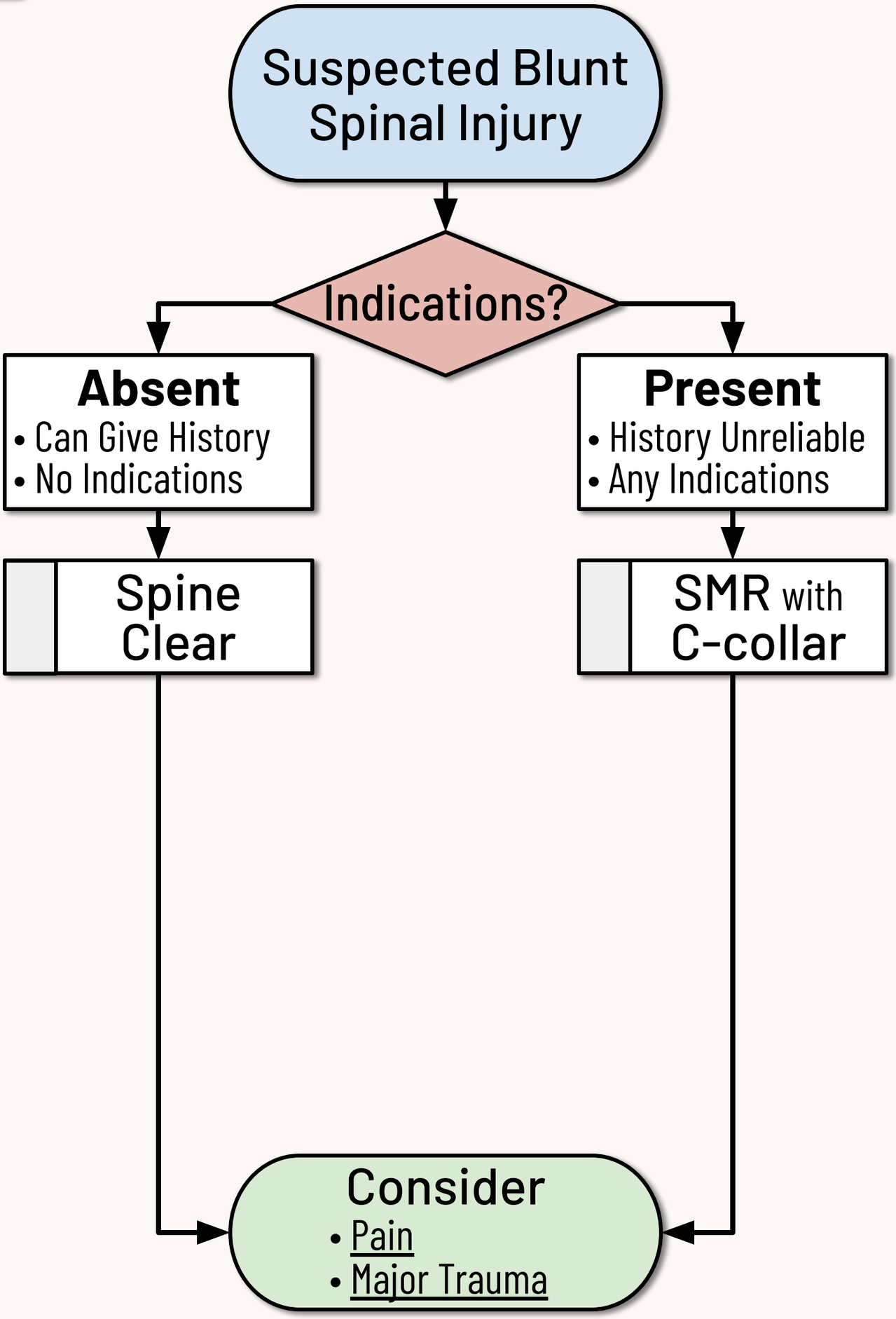
- Hypotension is a late sign of Shock in peds.
- Use Peds Reference or other approved source for peds dosing.

References

- ACLS: https://www.ahajournals.org/doi/10.1161/CIR.0000000000000916 [Ver: 2020]
- ATLS®: www.facs.org/quality-programs/trauma/education/advanced-trauma-life-support/ [Ver: 10th]
- Stop the Bleed®: https://www.stopthebleed.org/ [Ver: 2023]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 29, 34

NEMSIS: 9914083
Reviewed: Oct 2022

Immobilization



Indications

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

NEMSIS: 9914073, 9914107
Reviewed: Dec 2022

Alias: 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. †
  - May try gentle **self-extrication** from a vehicle (with a c-collar).
- 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, recreational 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

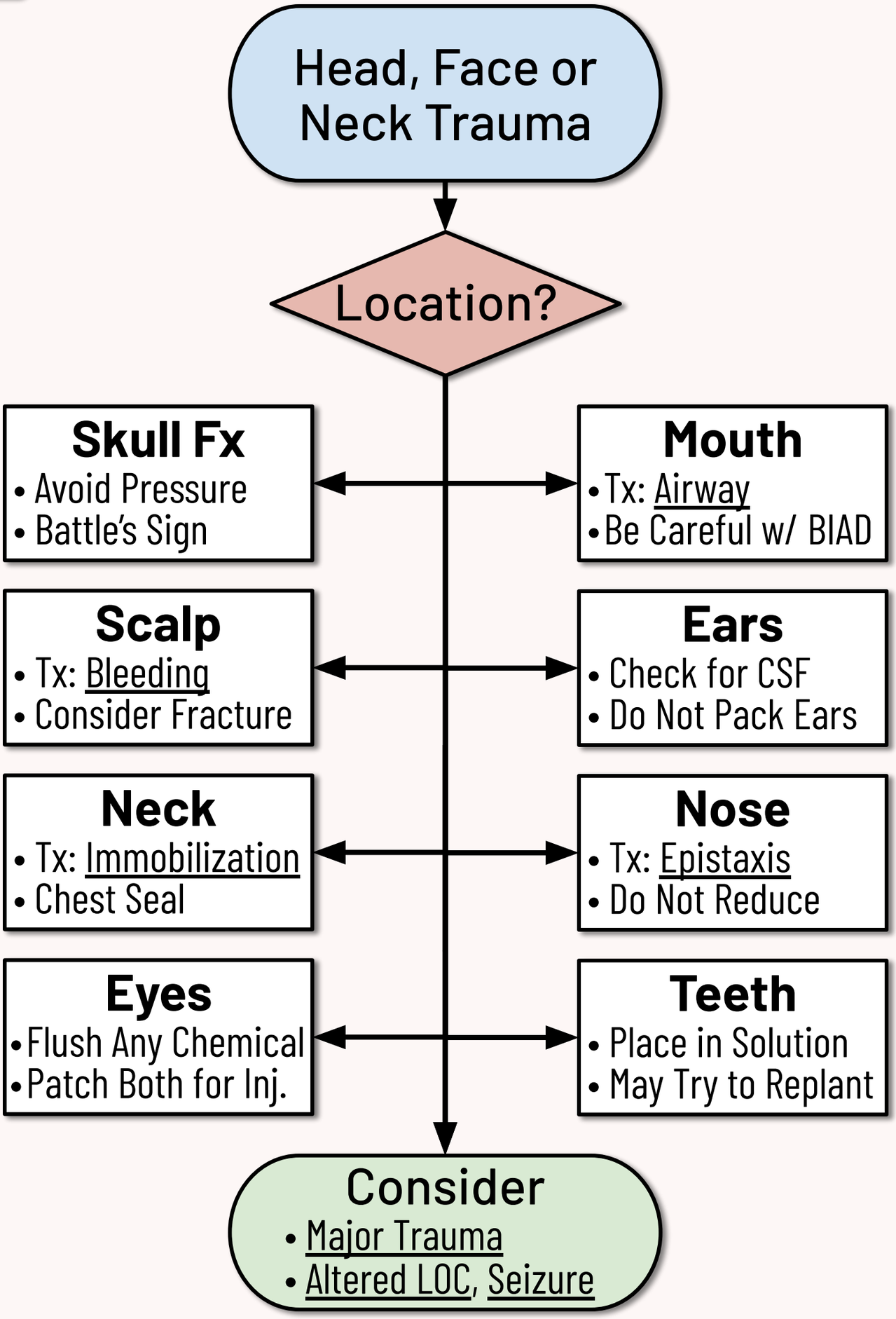
- Any child that cannot provide a reliable history should have **SMR**.

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: Dec 2022

Head Injury



NEMSIS: 9914041, 9914057, 9914099, 9914101, 9914205
Reviewed: Dec 2022

63

Alias: 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.
- Do not remove **impaled** objects. Splint object in position found.
- Intentional hyperventilation by EMS is not appropriate.
- **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**: Direct pressure for brisk bleeding (unless skull crepitus/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 avulsed teeth in Hank's solution or NS.
  - Attempt replantation only in uncomplicated & isolated injury.
- **Concussion**: Usually does not require EMS intervention.

Pediatrics

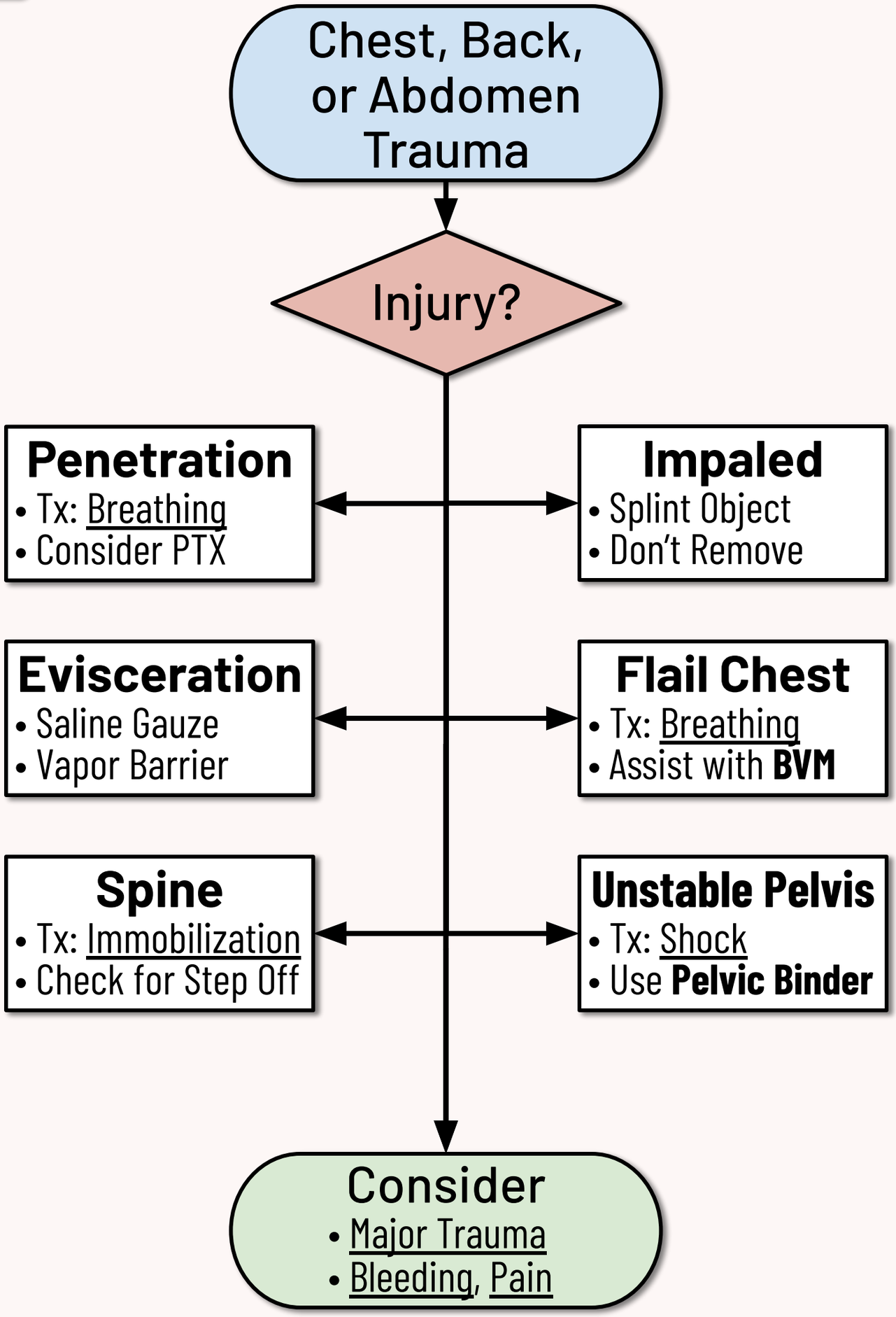
- Do not attempt replantation for primary (baby) teeth.
- Use Peds Reference or other approved source for peds dosing.

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: Dec 2022

Trunk Injury



NEMSIS: 9914193
Reviewed: Dec 2022

Alias: 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 provide 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

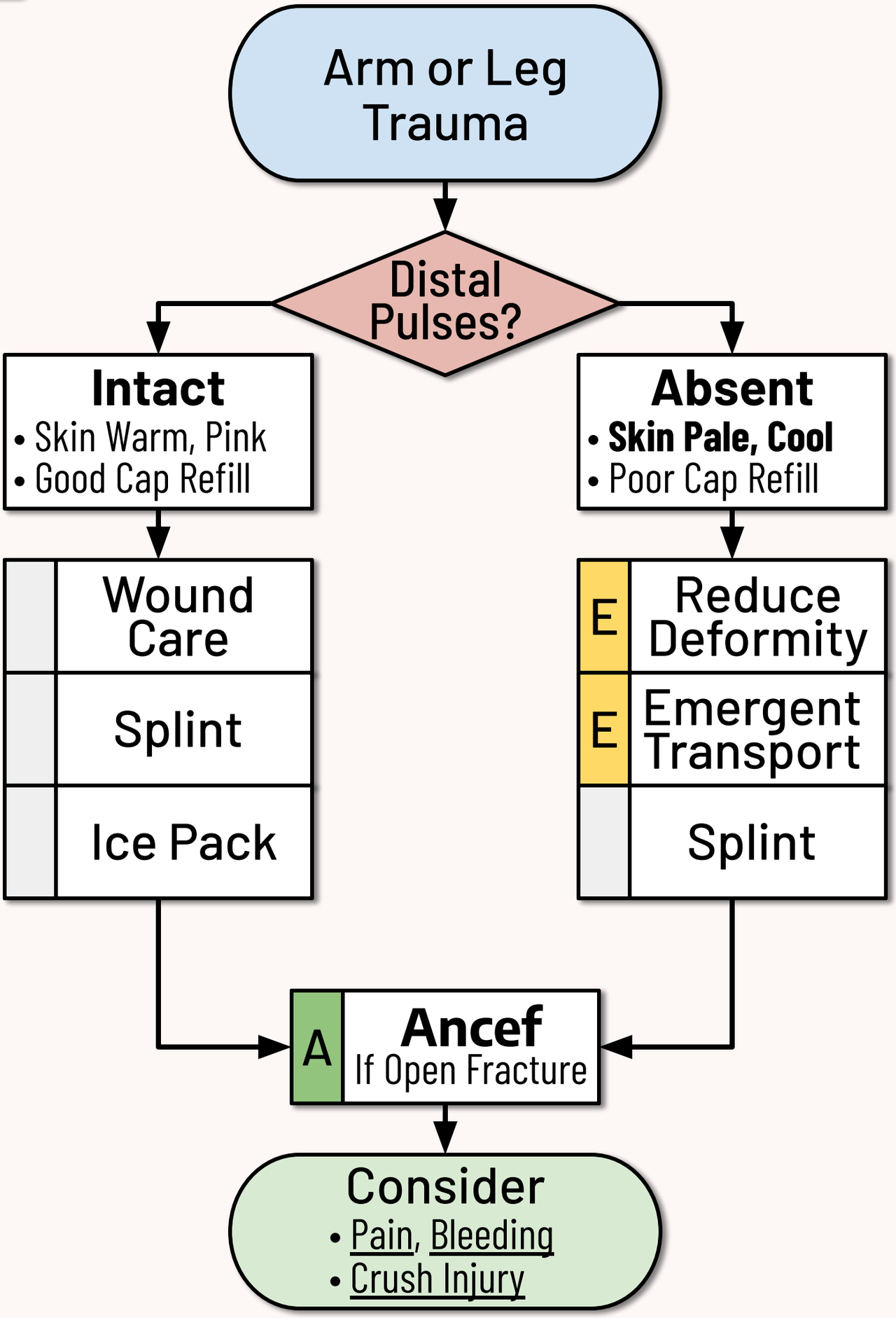
- Trunk injury is more likely in peds struck by a car.

References

- Medscape Blunt Chest: https://emedicine.medscape.com/article/428723 [Ver: 11/22]
- Medscape Penetrating Abd: https://emedicine.medscape.com/article/2036859 [Ver: 3/22]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 31

NEMSIS: 9914193
Reviewed: Dec 2022

Extremity Injury



Ancef: 1 gram	IV/IO, IM	x1	Adult

NEMSIS: 9914077, 9914097
Reviewed: Dec 2022

Alias: 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 normal saline and **shake well** to mix.

Notes

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

Pediatrics

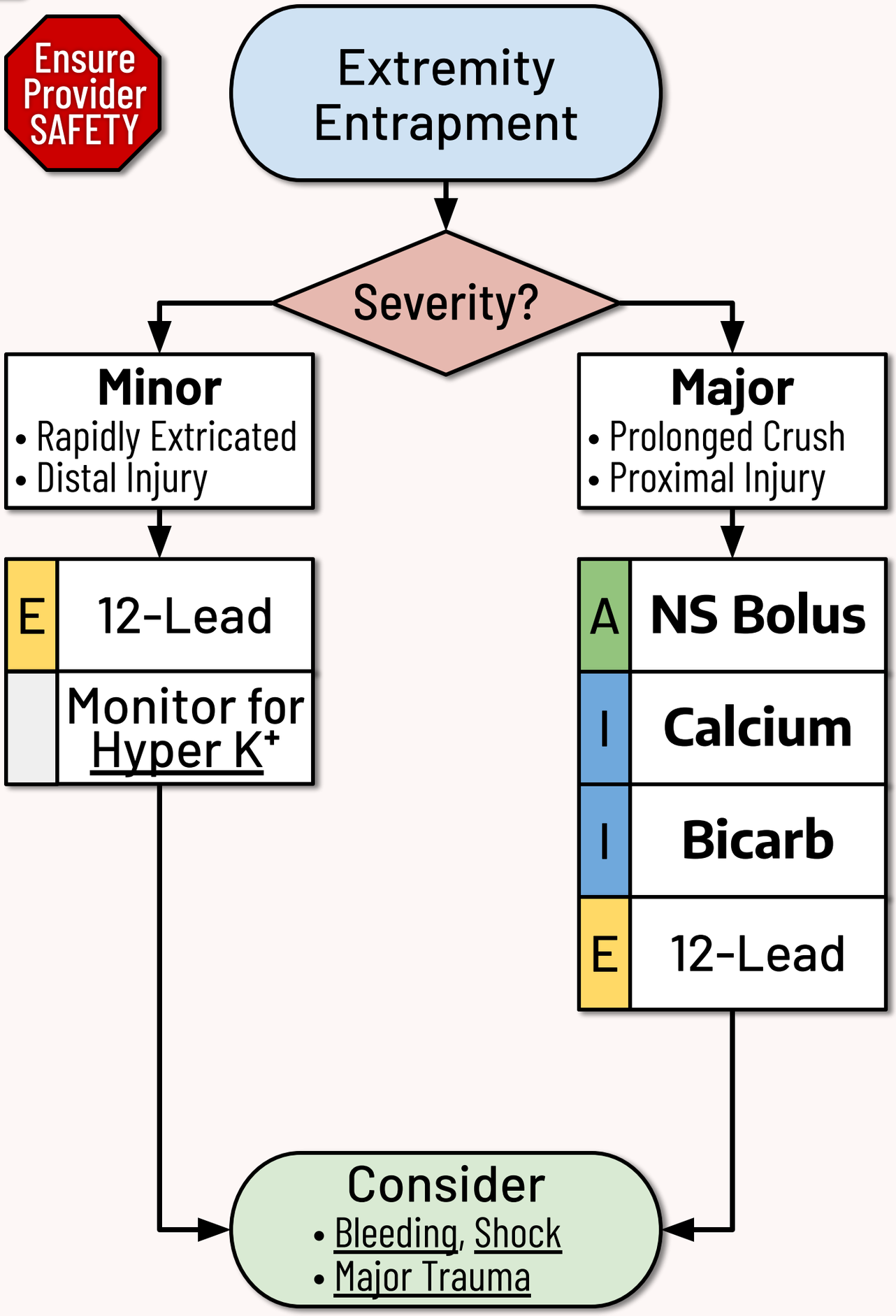
- Consider **Child Abuse** for injuries that do not match the history.

References

- Medscape Fracture Care: https://emedicine.medscape.com/article/1270717 [Ver: 3/22]
- Medscape Vascular Trauma: https://emedicine.medscape.com/article/462752 [Ver: 11/21]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 29, 30

NEMSIS: 9914077, 9914097
Reviewed: Dec 2022

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: Dec 2021

Alias: Entrapment, Harness Hang, Suspension Injury

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 adjacent and distal jewelry if able.

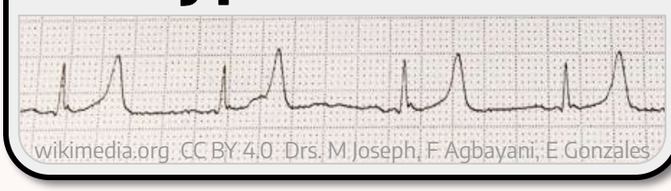
- If Major Intervention
- Or Major Mechanism
- Call a **TRAUMA Alert**

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

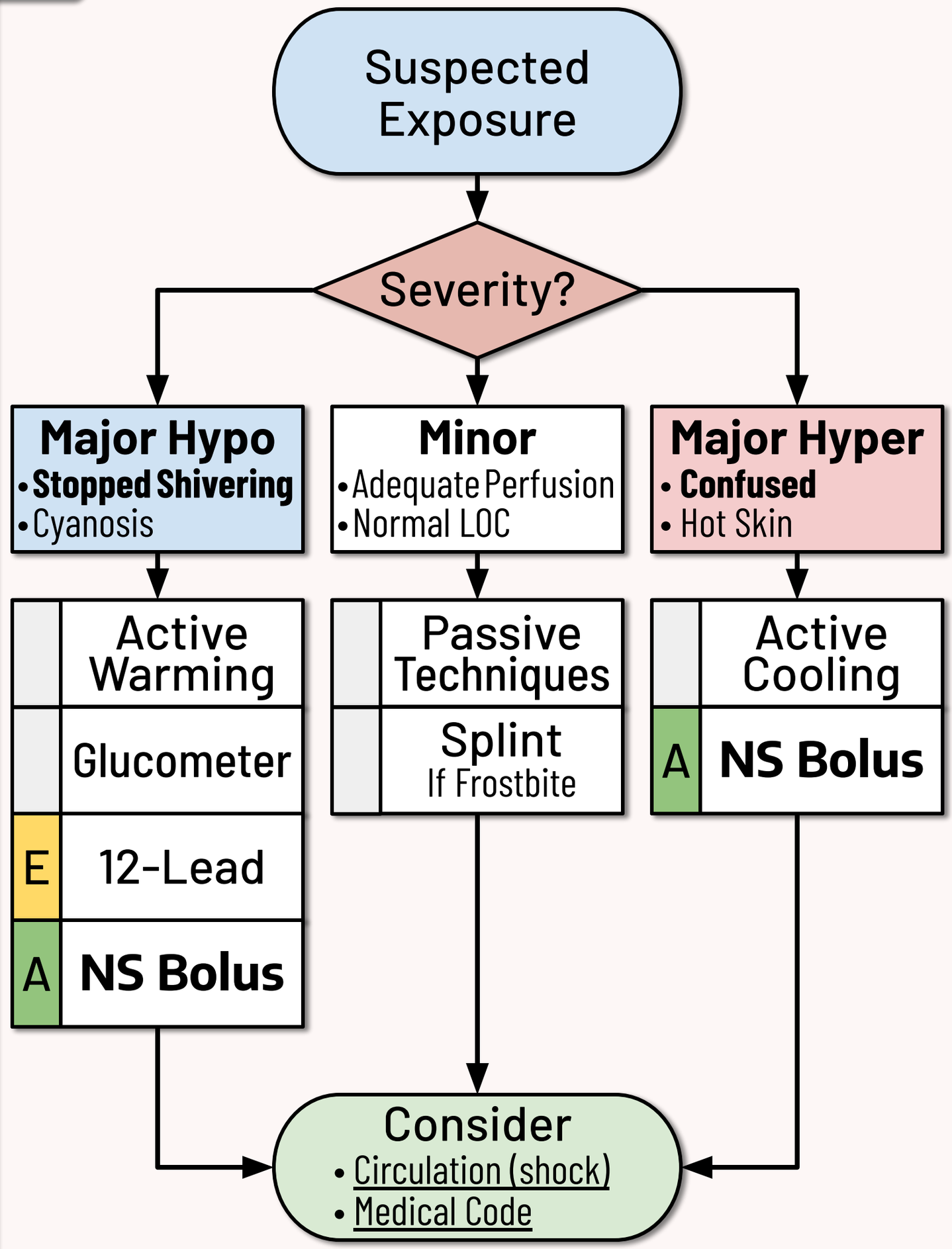
- May exhibit symptoms quicker than adults.
- Use Peds Reference or other approved source for peds dosing.

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: Dec 2021

Cold / Heat



Active Warming

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

Active Cooling

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

NS Bolus: 1,000 mL IV/IO x2 | Adult

NEMSIS: 9914023, 9914025, 9914027, 9914029, 9914031
Reviewed: Dec 2022

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

Cold / Heat Imperatives

- **Hyper**thermia is **not** the same as Fever.
  - Meds for Fever **worsen** **hyper**thermia and are contraindicated.
- **Confusion** is the hallmark of major **hyper**thermic emergencies.
  - Aggressively & actively cool anyone that is **hot & confused**.
  - A If shivering from active cooling: **Versed**® 2.5 mg IV/IO x1
- **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.
  - Provide **defib** and **ACLS meds** as per normal Medical Code.
  - Call **Medical Control** before termination of resuscitation.
- **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: **104** °F (**40** °C).
- Excessive movement of **hypo**thermic patients can cause V-Fib.
- Delay active rewarming if unable to maintain (e.g. 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: 10/21]
- Medscape Heat Stroke: https://emedicine.medscape.com/article/166320 [Ver: 7/22]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 35

NEMSIS: 9914023, 9914025, 9914027, 9914031
Reviewed: Dec 2022

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 Airway

- Wound Care
- A **NS Bolus**

Ensure Patient DECON

Consider
- Breathing, Shock
- Pain, OD / Tox

Consider Destination Triage

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

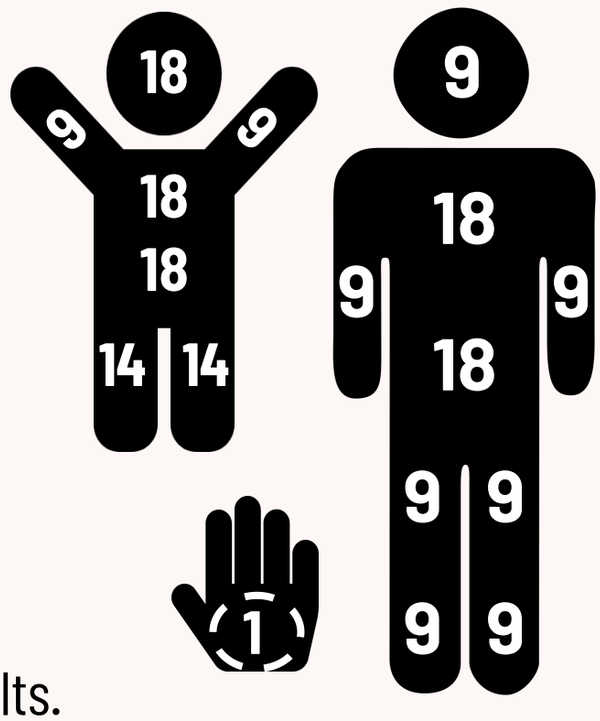
NEMSIS: 9914085, 9914095, 9914209, 9914213
Reviewed: Dec 2022

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

Burn Imperatives

- Monitor Airway closely with any facial, nasal or oral burns.
- Be aggressive with fluids for **major burns**; watch for Hypothermia.
  - Consider following ABA infusion rate guidelines if time allows.
- Remove adjacent and distal jewelry if able.
- **ALS** should monitor EKG in electrical burns.

BSA percentage
(front and back)



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

Call ER

ABA infusion rate:
BSA (%) times WEIGHT (in kg)
divide by EIGHT gives RATE.

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**.
- Consider aeromedical Destination Triage if major burn > 20% BSA.
  - There are no ABA verified burn centers near the WVEMS region.

Pediatrics

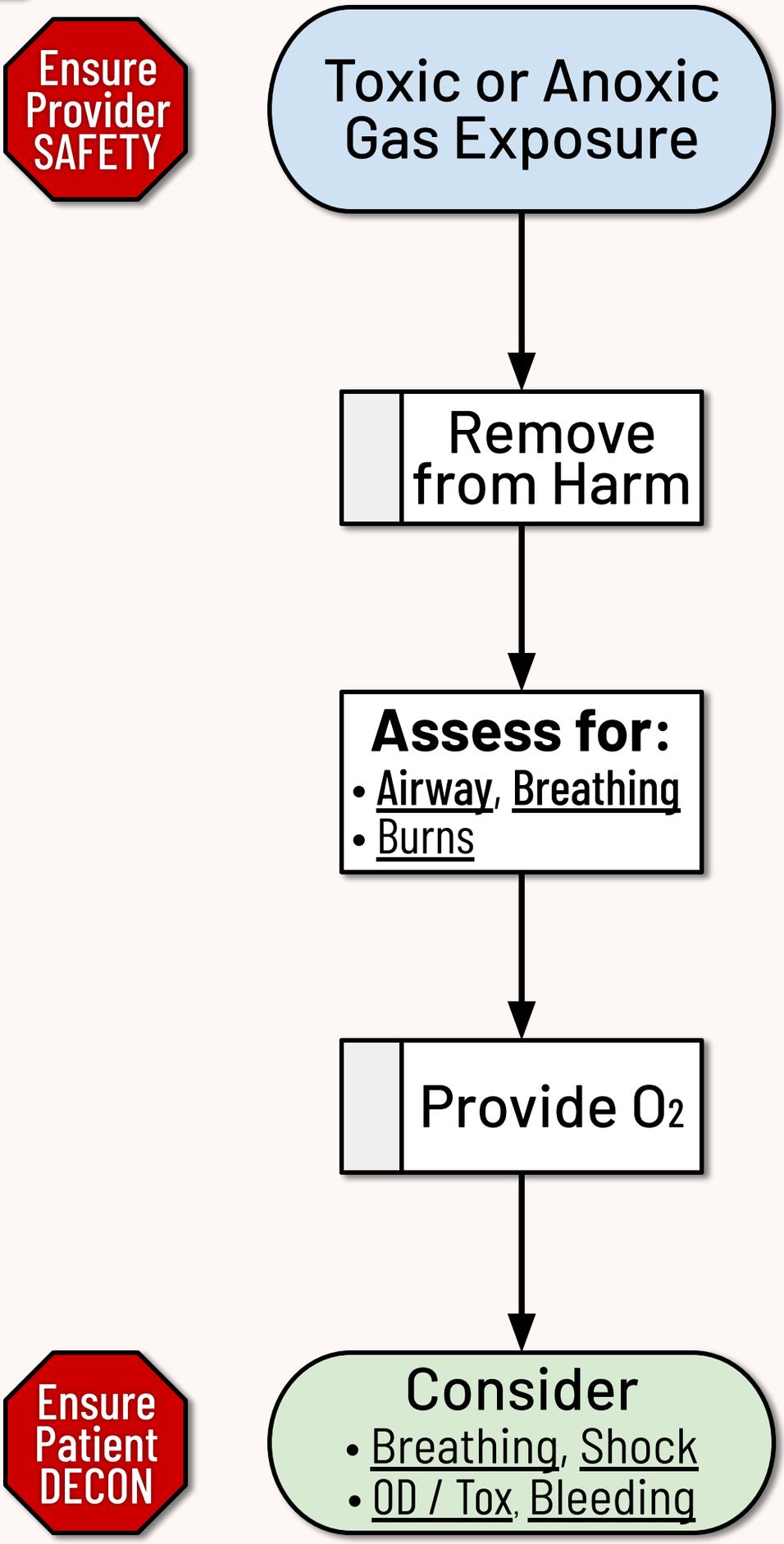
- Use Peds Reference or other approved source for peds dosing.

References

- Medscape Burns: https://emedicine.medscape.com/article/1278244 [Ver: 10/21]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 30

NEMSIS: 9914085, 9914095, 9914209, 9914213
Reviewed: Dec 2022

Inhalation



NEMSIS: 9914033, 9914167, 9914173
Reviewed: Jun 2023

Alias: 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.
- **Cyanide** can be inhaled or ingested. High risk job sites may have:
  - I **Cyanokit®** (Cyanide antidote): May use kit if indicated

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%
- Most law enforcement **riot agents** are potent respiratory irritants.
  - Common agents include **tear gas** (CS) and **pepper spray** (OC).
  - Flush eyes and move to fresh air. Beware cross-contamination.
  - There are no specific antidotes. Provide supportive care.
- 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: Jun 2023

Sting / Bite

Ensure Provider SAFETY

Animal or Insect Trauma

Assess for:
- Allergic Reaction
- Bleeding

Splint

Stinger Removal

Consider
- Pain
- Underlying Injury

NEMSIS: 9914079
Reviewed: Dec 2022

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

Sting / Bite Imperatives

- **Don't bring** animals, snakes or bugs with you to the ED.
  - Do not risk provider safety to catch or photograph.
  - Law enforcement can assist with animal control if needed.
- Remove adjacent and 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.

Notes

- Consider ice for animal bites and insect stings, avoid for snakes.
- Venomous **bites in VA**: Rattlesnake, Copperhead, and Black Widow
  - May also encounter venomous bites from **exotic pets**.
  - **Tick** bites do not usually require EMS intervention.
  - This protocol does not apply to **marine** stings or bites.
- If animal is known, consider calling **Poison Control**: 800-222-1222.

Rattlesnake

Copperhead

Black Widow

Pediatrics

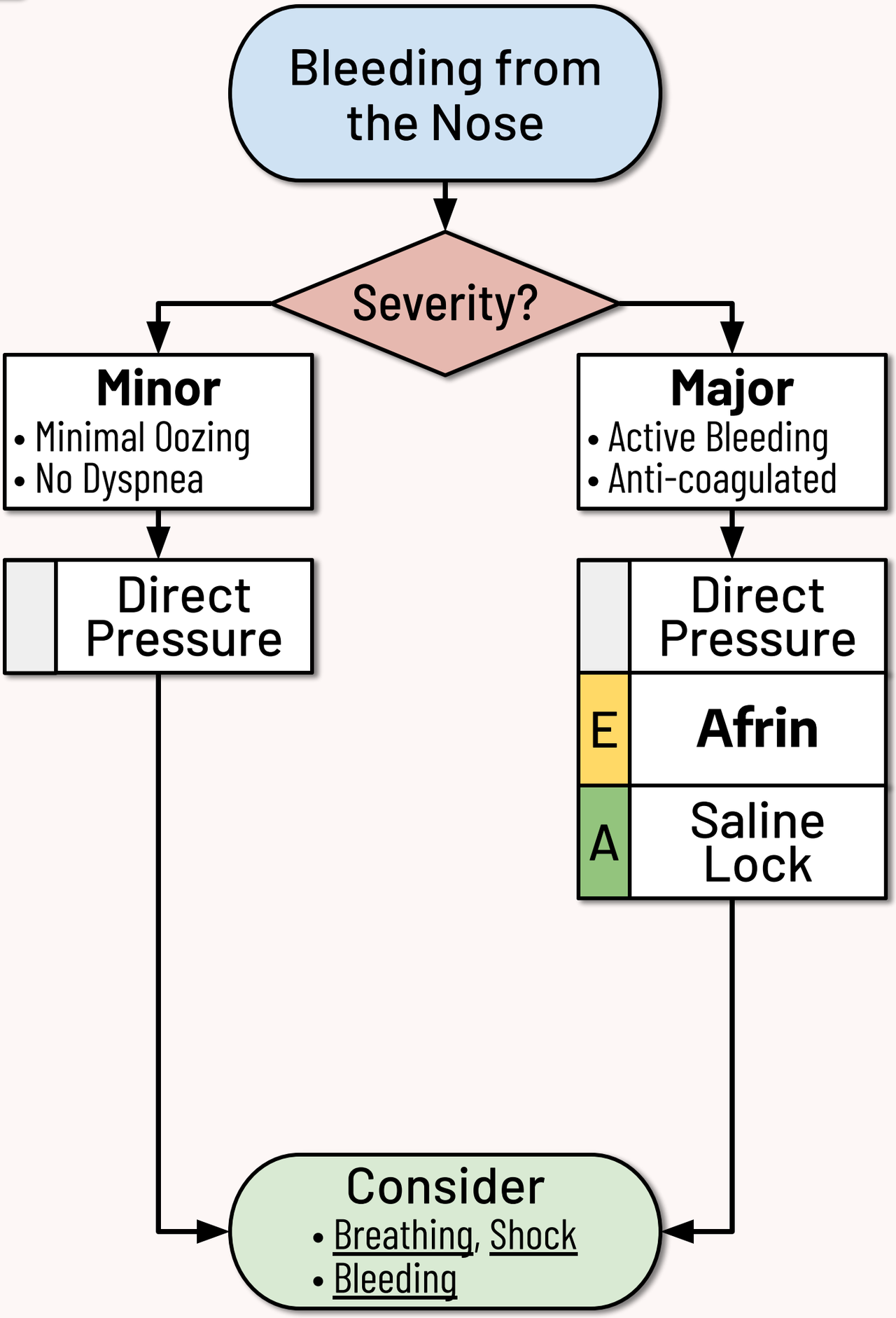
- Watch for first time Anaphylaxis.

References

- Medscape Snakebite: https://emedicine.medscape.com/article/168828 [Ver: 4/21]
- 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: Dec 2022

Epistaxis



Afrin: 1 spray	IN	Q 5 min x3	Adult

NEMSIS: 9914059
Reviewed: Feb 2023

Alias: 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
  - Encourage patient to blow clots from nose if still bleeding.

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 (ASA)
  - Coumadin® (warfarin)
  - Eliquis® (apixaban)
  - Plavix® (clopidogrel)
  - Xarelto® (rivaroxaban)
  - Effient® (prasugrel)
  - Pradaxa® (dabigatran)
  - Brilinta® (ticagrelor)
  - Lovenox® (enoxaparin)

Pediatrics

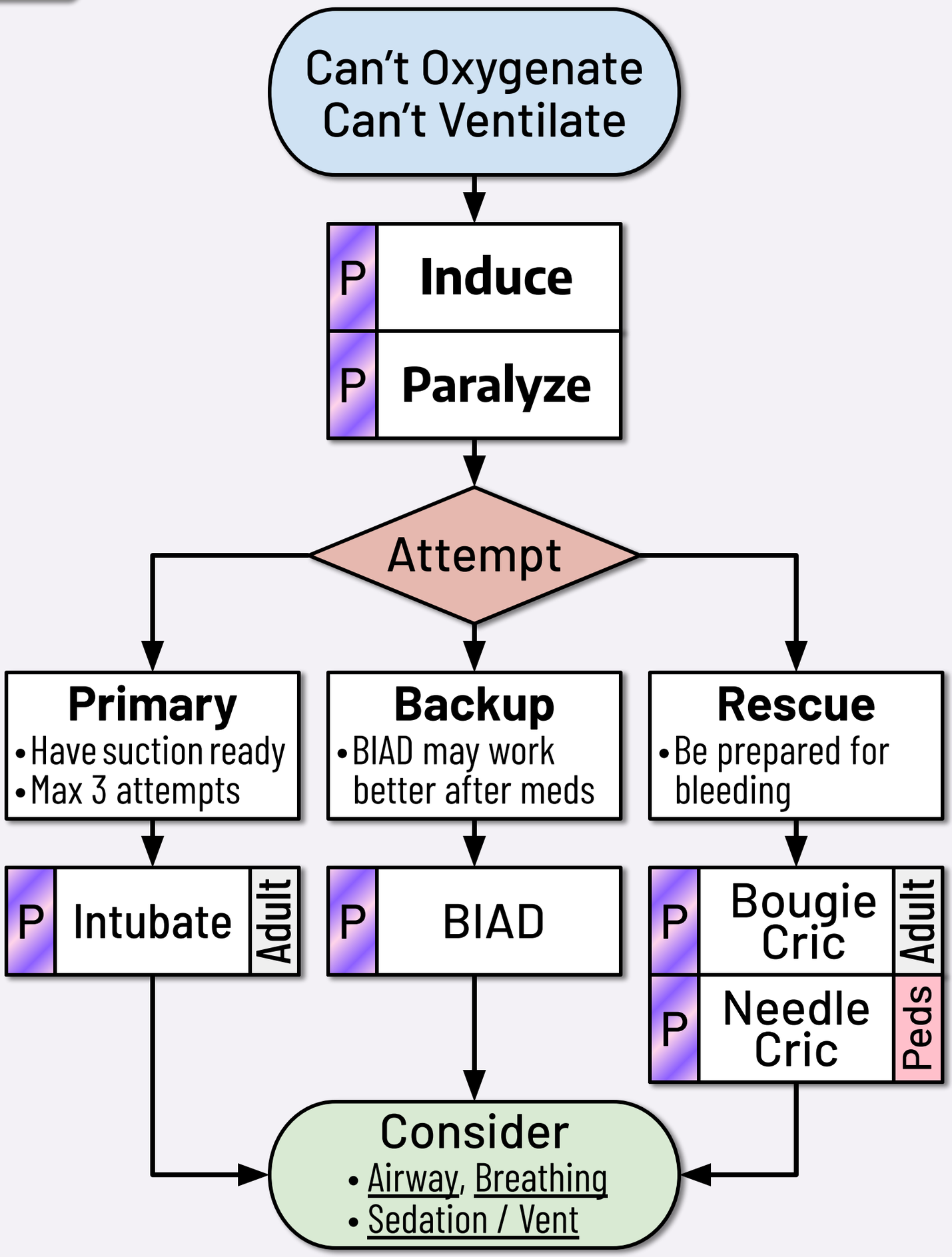
- Nose bleeds are usually from minor trauma (nose picking).
- Use Peds Reference or other approved source for peds dosing.

References

- Medscape Epistaxis: https://emedicine.medscape.com/article/764719 [Ver: 2/21]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 29

Reviewed: Feb 2023 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:	**1.5** mg/kg	IV/IO	x1

Adult Doses

NEMSIS: 9914003, 9914007
Reviewed: Jun 2023

Alias: Advanced / Difficult / Failed Airway

RSI Mandatory Prerequisites

- In the last twelve (12) mo: pass a critical care in-service training.
  - Pass **fifteen (15) high fidelity** (or human) airway experiences.
- In the last three (3) months:
  - Pass **three (3) standard** (or high fidelity) airway experiences.
- Ongoing **physician quality review** of all training & live attempts.
- At least two (2) years experience as a cleared & active paramedic.

Imperatives

- **Two (2) CC/RSI Medics** must be on scene and work together.
  - **Switch providers** after two (2) failed attempts.
- **Monitor EKG, SpO_2 and $EtCO_2$** with waveform. Try to maintain:
  - SpO_2 **above 90%**, $EtCO_2$ of **35-40** mmHg (or for ROSC: 40-50 mmHg)
- **Preoxygenate** while predicting airway difficulty. Utilize **apniec O_2**.
- May use adjunct meds (e.g. push pressors if shock index > 0.8).
- **Video Laryngoscopy** is the standard of care; **record every case**.
  - Record the monitor/vitals and your face prior to each attempt.

Medications

- **Etomidate** (Amidate®) or **Ketamine** (Ketalar®): Choose 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

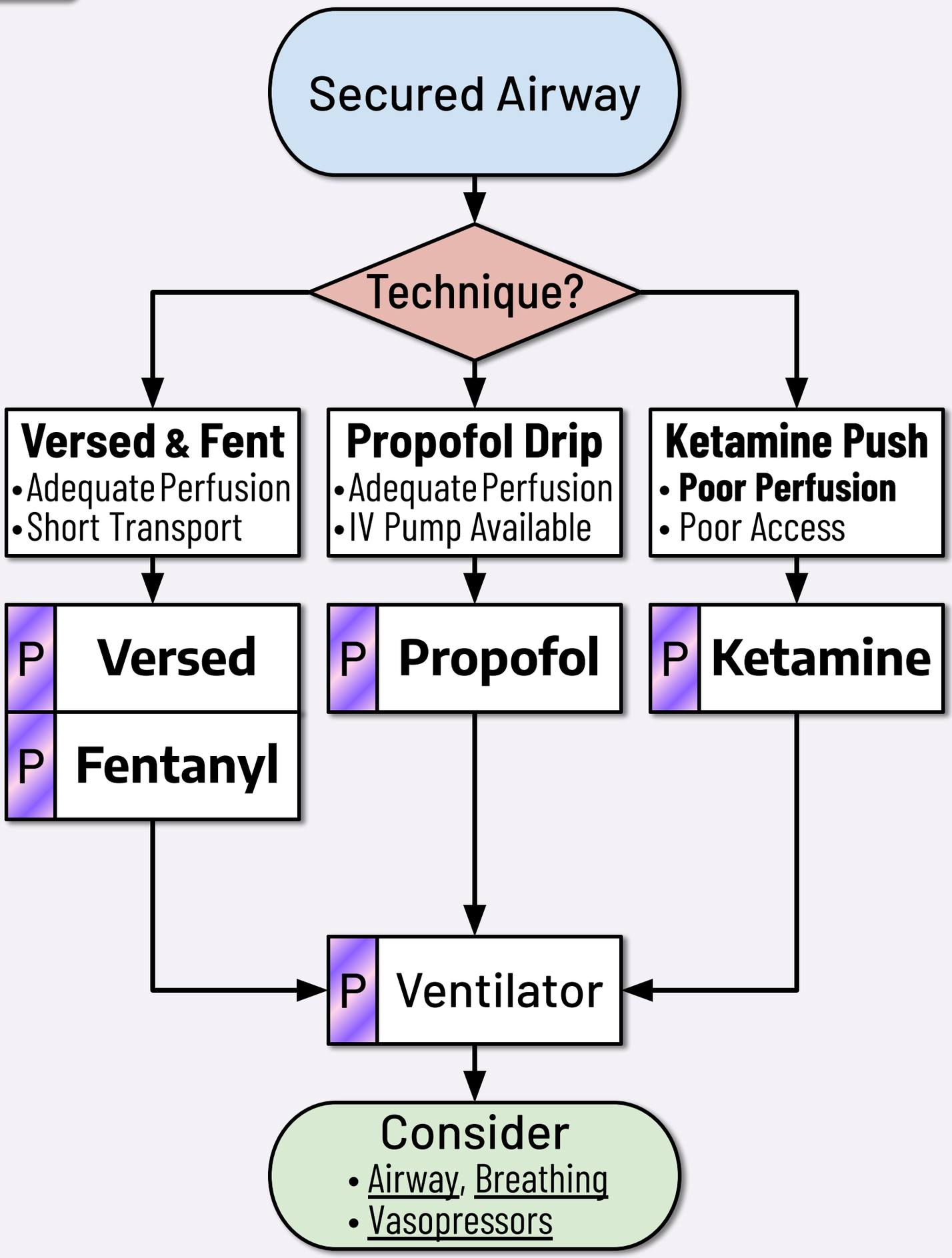
- Pediatric prehospital advanced airway is highly specialized.
- A simple **BIAD is appropriate** for almost all peds resuscitation.

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 2023

Sedation / Vent



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: 50-250 mcg/kg/min	IV/IO	Titrated Drip	

NEMSIS: 9914071
Reviewed: Jun 2023

Alias: Medically Induced Coma, Vent Management

Sedation / Vent Mandatory Prerequisites

- In the last twelve (12) mo: pass a critical care in-service training.

Imperatives

- Monitor patients **closely**. Sedation & vents are a delicate balance.
  - Use clinical sense and vital signs **including SpO_2 and $EtCO_2$**.
  - Be ready to **titrate settings** and assist with Suction and Airway.
- Use lung protective volumes w/ ventilator. Start at 6-8 mL/kg IBW.

Typical Adult Vent Settings

- Mode: **AC (V)**
- Vt: **450** mL (or 350 mL if < 6' tall)
- BPM: **12** /min
- FiO2: **100%** (may titrate down 40-60%)
- PEEP: 5 mmHg
- PIP Limit: 35 mmHg
- I:E 1:3

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 **150** mcg/kg/min.
  - **Use only with an IV pump** and an accurate patient weight.
  - Titrate to effect, aim for 30-50% **reduction** in first 30 min.
  - For elderly or debilitated: start lower (100 mcg/kg/min).
  - For peds: start higher (200 mcg/kg/min).

Pediatrics

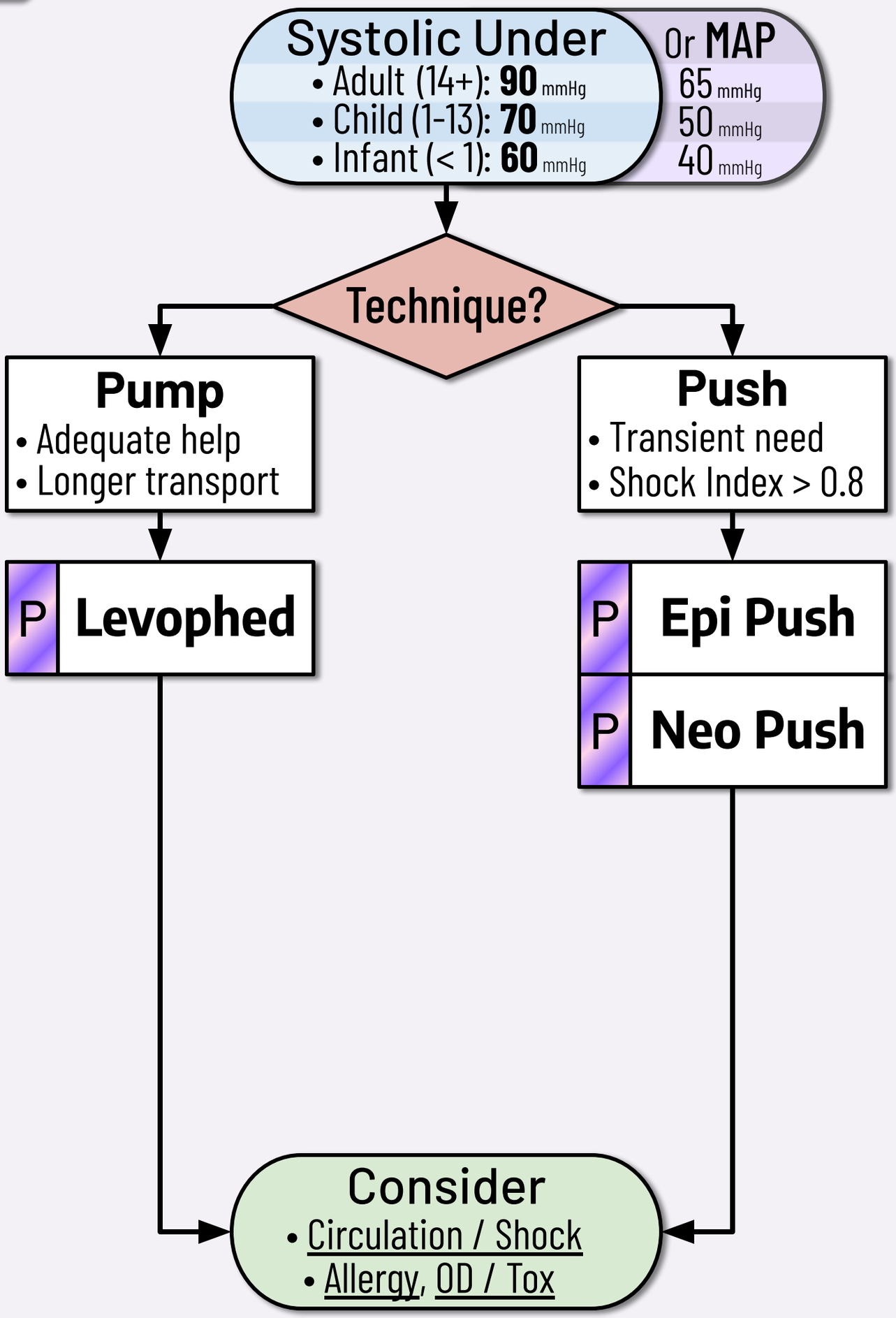
- Use Peds Reference or other approved source for peds dosing.

References

- Medscape Sedation: https://emedicine.medscape.com/article/809993 [Ver: 4/21]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 27

NEMSIS: 9914071
Reviewed: Jun 2023

Vasopressors



Levophed:	**5-20** mcg/min	IV/IO	titrated gtt	Adult Doses
Epi Push:	**5-20** mcg	IV/IO	Q 2 min	
Neo Push:	**50-200** mcg	IV/IO	Q 2 min	

NEMSIS: 9914127, 9914179
Reviewed: Oct 2022

Alias: Inotropes, Push Dose Pressors

Vasopressors Mandatory Prerequisites

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

Imperatives

- Inappropriate use of pressors can **cause harm**.
  - Double check dose calculation (beware multiple concentrations).

Medications

- **Levophed**® (norepinephrine): Good for **septic shock**.
  - Requires an accurate weight and a **pump**.
- **Epi Push** (epinephrine): Good for **anaphylactic shock**.
  - Be prepared to repeat dosing; avoid in STEMI.
- **Neo Push** (phenylephrine): Good for elevated **shock index**.

Shock Index

$$SI = \frac{Pulse}{SBP}$$

Poor Perfusion

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

Notes

- **Shock Index** is a good predictor of hypotension from RSI.
  - Be ready with push dose pressors **if Shock Index is above 0.8**

Pediatrics

- Use Peds Reference or other approved source for peds dosing.
- Titrate to age-adjusted BP (vitals also listed in Peds Reference).

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 Vasopressors: https://emedicine.medscape.com/article/2172220 [Ver: 7 / 21]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 7, 29

NEMSIS: 9914127, 9914179
Reviewed: Oct 2022

DKA / HHS

Significant Hyperglycemia
(**> 400** mg/dL)

Use Caution if Patient Refusal

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	x1
Insulin:	**10** units	IV/IO	over 1 hour
Bicarb:	**50** mEq	IV/IO	x1

Adult Doses

NEMSIS: 9914125
Reviewed: Aug 2022

Alias: 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 patient'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.
  - Avoid if you do not have a way (i-STAT) to check **K+** & **Anion Gap**.
  - Contraindicated if K+ < 3.5 mEq/L or anion gap < 24 mEq/L.
  - Must give as a drip **over 1 hour**. Keep refrigerated until use.
- **Bicarb** (Sodium Bicarbonate): contraindicated 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.
- Over aggressive fluids can **cause harm**. Start with 20 mL/kg.
- Use Peds Reference or other approved source for peds dosing.

References

- Medscape DKA: https://emedicine.medscape.com/article/118361 [Ver: 1/21]
- Medscape HHS: https://emedicine.medscape.com/article/1914705 [Ver: 5/23]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 22

Reviewed: Aug 2022 NEMSIS: 9914125

Malignant HTN

Systolic Over
- Adult (14+): **240** mmHg
- Child (1-13): **220** mmHg
- Infant (< 1): **200** mmHg

Use Caution if Patient Refusal

Severity?

Urgent
- Chest Pain, SOB
- Headache

→ Treat as Hypertension

Emergent
- Altered LOC
- Organ Damage

→ P **Lopressor**

→ P **Magnesium** If Pregnant

Consider
- Pain, Pregnancy, Seizure
- Cardiac, SOB, Stroke

Adult Doses			
Lopressor:	**5** mg	IV/IO	Q 5 min x2
Magnesium:	**4** grams	IV/IO	over 10 min

NEMSIS: 9914123
Reviewed: Feb 2023

Alias: Preeclampsia, HTN Urgency / Emergency / Crisis

Malignant HTN Mandatory Prerequisites

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

Imperatives

- Inappropriate use of antihypertensives can **cause harm**.
  - Consider & investigate for **underlying causes** of Hypertension.
- Focal neurologic deficits are more likely to be a Stroke.
  - Lowering BP during a stroke can **cause harm**.
- Use antihypertensives **only if organ damage** from HTN is likely.
  - Focus on underlying causes if organ damage is unlikely.

Medications

- **Lopressor**® (Metoprolol):
  - Aim for 20%reduction in SBP. Do not exceed 25%.
  - Contraindicated if SBP under 190 mmHg or pulse under 60 /min.
  - Call **Medical Control** if SBP remains elevated after two doses.
- **Magnesium** (sulfate): only use for **severe preeclampsia**.
  - Severe symptoms include: HTN, HA, confusion, dyspnea, edema.
  - Consider providing for **seizure prophylaxis** if SBP > 160 mmHg.

Notes

- Signs of **organ damage** from HTN may include:
  - Obvious global weakness, paralysis, seizure, encephalopathy
  - Severe headache and vomiting, mental status changes
  - Vision **loss** or blurred (not simple flashes or double vision)

Pediatrics

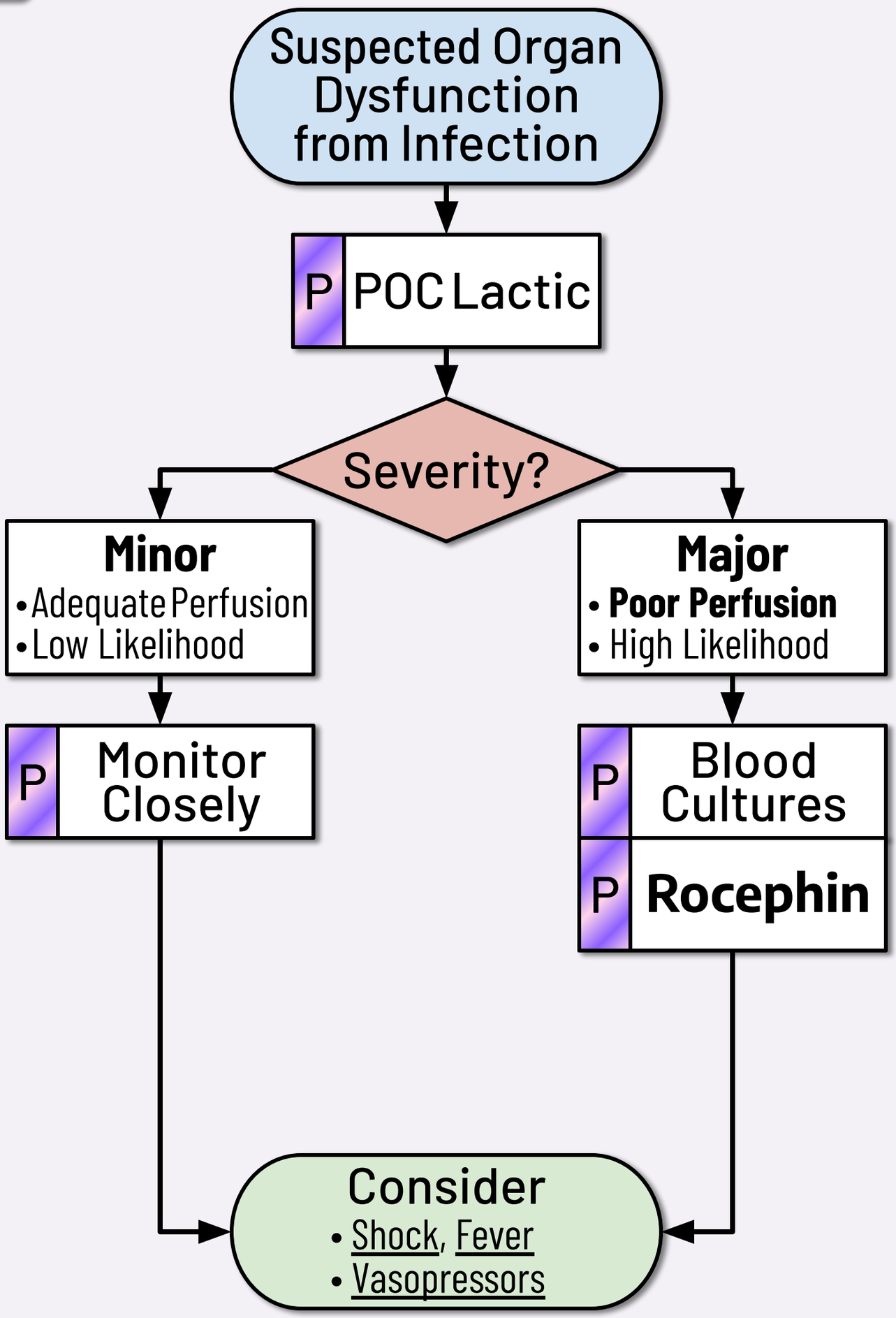
- Malignant HTN is unlikely in peds. Call **Medical Control** for advice.

References

- Medscape Malignant HTN: https://emedicine.medscape.com/article/241640 [Ver: 5/20]
- Medscape Eclampsia: https://emedicine.medscape.com/article/253960 [Ver: 2/22]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 7

NEMSIS: 9914123
Reviewed: Feb 2023

Sepsis



Rocephin: **1** gram	IV/IO, IM	x1	Adult

Reviewed: Aug 2022
NEMSIS: 9914127

Alias: Severe Infection, Septic Shock

Sepsis Mandatory Prerequisites

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

- Organ Dysfunction
- Suspected Infection
- Call a **SEPSIS Alert**

Call ER

Organ Dysfunction

- Suspect if **several** of these:
  - Pulse > 90 /min, Lactic > 2 mmol/L
  - Resp > 20 /min, $EtCO_2$ < 25 mmHg
  - Temp > 100.4 °F (> 38 °C)
  - Temp < 96.8 °F (< 36 °C)
  - Decrease in mental status
  - Increased O_2 requirement

Suspect Infection

- With any **recent history** of:
  - Fever, cough, antibiotic use
  - Indwelling line / catheter
  - Open wound / decub ulcer
  - Surgery / major procedure

Imperatives

- Sepsis is life-threatening organ dysfunction caused by... infection. †
- [For possible] sepsis, we suggest measuring **blood lactate**. †
- [For] **sepsis without shock**, we recommend rapid assessment of the likelihood of infectious versus noninfectious causes... †
- [For] a **low likelihood** of infection and **without shock**, we suggest deferring antimicrobials while continuing to closely monitor... †
- [For] **septic shock** or a **high likelihood** for sepsis, we recommend administering antimicrobials immediately... †

Medications

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

Pediatrics

- It is appropriate to **defer antibiotics** (minimal evidence for peds).

References

- Surviving Sepsis Campaign: International Guidelines 2021 † [Ver:11/21]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 24

NEMSIS: 9914127
Reviewed: Aug 2022

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Reviewed: Jun 2023

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 IV attempt if meter allows.
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. May contact receiving hospital to confirm.

E May read machine Interpretation. I 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**. May start w/ 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 only during a CODE.

Reviewed: Apr 2023

Heimlich

1. Help patient **cough if able**.
2. Attempt thrusts only if choking:
   - Adult (14+): Abdominal thrusts (Use chest thrusts if obese/preg.)
   - Child (1-13): Abdominal thrusts
   - Infant (<1): 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 Nasal/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.
   - E Consider detailed trach care: remove/clean inner cannula.
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: Jun 2023

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 NIPPV

1. Explain procedure to pt.
   - Consider an NPA if tolerated.
2. Start the flow of oxygen to the mask. Set **basic mask at 7.5** cmH_2O.
   - Alternate: use CPAP or BiPAP mode on vent w/ OMD approval.
   - Start vent **CPAP at 7.5** cmH_2O and **BiPAP at 10/5** cmH_2O (IPAP/EPAP)
3. Place the mask over patient's nose and mouth.
4. Ensure adequate seal by adjusting placement and tighten straps.
5. Provide encouragement. Monitor closely for complications.
   - **Remove promptly if vomiting or unresponsive**.
   - I Consider treatment of **anxiety** to assist with compliance.
6. May titrate pressures: higher if hypoxic, lower if hypotensive.
   - Likely beneficial to use **nebulizers in-line** if indicated & able.

Reviewed: Jun 2023

Chest Compression

1. Confirm no pulse and not breathing.
2. Place hands on chest:
   - Adult (14+): Two hands w/ fingers interlaced over center of chest
   - Child (1-13): One hand over center of chest
   - Infant (<1): 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.
   E Use AED "analyze" function. I 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**.

Note: "...routine use of double sequential defib is not recommended."
2020 AHA CPR & ECC Highlights: Adult Basic & Advanced Life Support

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 manufactured device.
4. Consider admin of low-dose Lidocaine 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: Oct 2022

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.

A 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: Jun 2023

E BIAD

1. Prepare appropriately sized device:
   - Apply water-soluble lube.
   - Average adults use an **iGel #4 (green)**, or a **King #4 (red)**.
   - An iGel may be superior, but the research is not yet conclusive.
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 a balloon** is present: inflate per manufacturer's instruction.
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:
   - Peds: 2nd intercostal midclavicular
   - Adults: **4th or 5th intercostal anterior to midaxillary line**
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: Jun 2023

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.
   - Cover **burns** with sterile burn dressing.
   - 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.
   - Packing is ideal for **junctional injury** (neck, axilla, groin).
   - Do not pack skull or thorax 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.
   - E May use hemostatic packing agents (e.g. QuikClot®)
4. Re-apply **direct pressure** on top of packing.
   - Consider treatment of Pain.

Reviewed: Oct 2022

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.
   - May try gentle **self-extrication** from a vehicle (with a c-collar).
4. Once on the cot, **adjuncts may be removed** if appropriate.
   - 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. Secure above and below injury.
5. Recheck and **document distal pulse**, movement and sensation.
   - Reapply or remove the splint if any decline in distal function.

NOTE: Consider a traction splint for an 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: Dec 2022

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 and/or Anxiety from pacing as soon as appropriate.
   - 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: Feb 2023

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. Manage Neonate. (Stimulate, warm, clean, dry.)
   - May place baby on mothers chest for skin-to-skin contact.
8. Keep baby level with mom and **delay cord clamping** ~60 sec.
   - Clamp about 2-4 in. away from the baby. Cut between clamps.
   - Leave a viable stump for the ED to use (for lines & lab draws).
9. Massage mother's lower abdomen (fundal massage).
   - This should help stop postpartum bleeding.
   - A If poor perfusion: **TXA** (Tranex. Acid): 1 g IV/IO over 10 m
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
   - Prolapse: don't handle cord, relieve pressure using fingers in vagina
   - Breech: do not pull, elevate presenting part if pressing on cord

Reviewed: Apr 2023

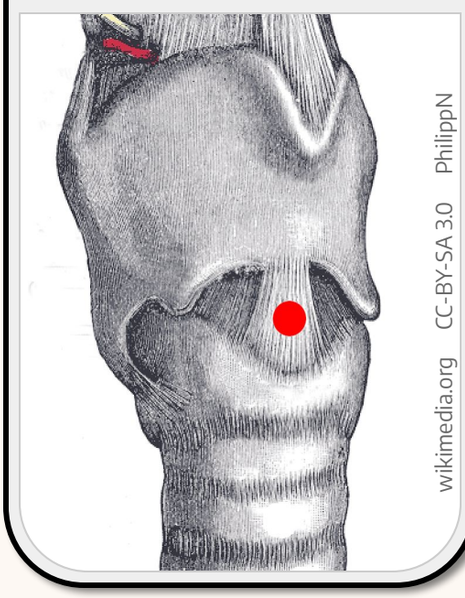
P Cric

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.
4. Use **Bougie** for adults or **Needle** for peds.

4a. **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.

4b. **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.

Cricothyroid Membrane



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

P Ventilator

1. Attach appropriate **patient circuit**.
2. Attach high pressure **oxygen hose**.
3. Inspect fresh gas / emergency air intake filters.
4. **Power on** the vent and configure operating mode & parameters.
5. Perform operational test and **attach to patient**. Monitor closely.

Typical Adult Vent Settings

- Mode: **AC (V)**
- BPM: **12** /min
- PEEP: 5 mmHg
- Vt: **450** mL (or 350 mL if < 6' tall)
- FiO2: **100%** (may titrate down 40-60%)
- PIP Limit: 35 mmHg
- I:E: 1:3

Reviewed: Jun 2023

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Reviewed: Jun 2023

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 12VAC5-31-520, 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 law enforcement intervention and provide the patient with the National Hotline, 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: Apr 2023

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: case workers/patient aides, or mental health professionals, or 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: Apr 2023

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**.
- Ask about a DNR / POST for any **hospice or palliative care** patient.
- 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 potential benefit of prolonged resuscitation against the risks of emergent transport.

- **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: Oct 2022

Ventricular Assist Devices (e.g. LVAD)

- Ventricular assist patients can quickly become very complicated.
  - Their life literally depends on complex medical machinery.
  - **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 ventricular assist device problems is complex.
  - **Do not unplug anything.**
  - Consider the advice of the patient and any trained bystanders.
  - Some devices 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.

- A ventricular assist device makes diagnosis of arrest difficult.
  - Look for other signs of life and listen for pump noise.
  - Chest compressions may harm a ventricular assist device.
  - Consider the advice of trained bystanders or the LVAD center.
  - Call **Medical Control ASAP for any unconscious LVAD** patient.

- **Bring all device 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: Feb 2023

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: Dec 2022

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.
  - **Never refuse transport**. **Never encourage a refusal**.
- 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 C,D) allows any **minor 14-17 y/o** to direct treatment **only if no responsible party** is reasonably available. This includes the ability to refuse treatment / transport.
- The Code of Virginia (§54.1-2969 G) allows **pregnant minors** to direct treatment **only relating to the delivery of their baby**.
- A responsible party (parent, guardian, medical POA etc.) may have the authority to refuse for a patient who is not eligible on their own.
- Any patient (or responsible party) who wishes to refuse must also demonstrate **capacity**. This requires them to be awake, oriented, and able to demonstrate understanding of the potential risks.
  - Patients with altered LOC lack capacity and cannot refuse.
  - Suicidal patients lack capacity and cannot refuse.
- Call **Medical Control** and enlist law enforcement 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: Apr 2023

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: the stability of the patient, **aeromedical transport** availability 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**
  - Lewis Gale **Salem** & Lewis Gale **Montgomery** & **Danville** Regional

Acute Large Vessel (LVO) Stroke

- 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 **Stroke VAN** exam.
- Appropriate WVEMS stroke hospitals (PSC, TSC, or CSC) include:
  - Carilion **Roanoke** & Lewis Gale **Salem** & **Danville** Regional

Major or Unstable Trauma

- Patients should meet trauma triage guidelines with **major injury** and / or **major mechanism** and / or **major burns** > 20% BSA.
- Appropriate WVEMS trauma hospitals (Level I or II) include:
  - Carilion **Roanoke** Memorial & Lewis Gale Hospital **Salem**

Reviewed: Apr 2023

Deceased Subjects

- EMS may occasionally encounter a deceased subject.
  - Maintain respect for the deceased and their family.
  - Always **involve law enforcement**. 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 law enforcement.
  - Law enforcement 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 law enforcement or Medical Examiner.
- In some situations law enforcement 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 and response.
  - Asystole in at least two cardiac leads with EKG gain at max.
  - **Obvious Death** or **Mortal Injury**.
- EMS may consider assisting with last rites if requested by family.

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.
  - Consider "reverse triage" if mass casualty **lightning strike**.

Reviewed: Oct 2022

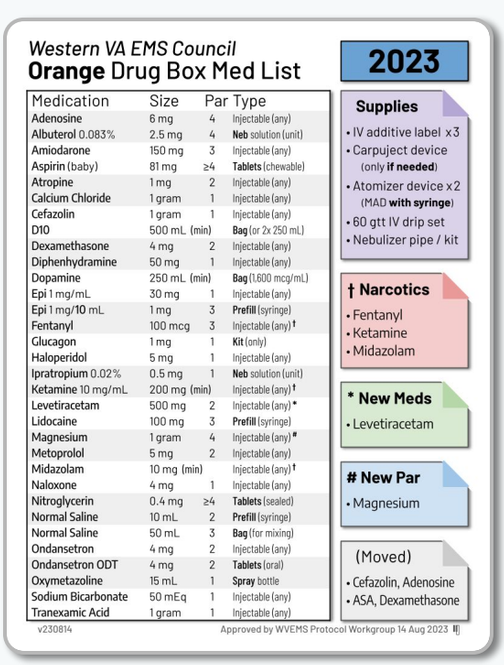
Protocol Medication Reference

115 **Adenosine** (Adenocard®)
116 **Albuterol** (Ventolin®)
117 **Ancef®** (Cefazolin)
118 **Atropine** (AtroPen®)
119 **Benadryl®** (Diphenhydramine)
120 **Calcium** (Chloride)
121 **Decadron®** (Dexamethasone)
122 **Epi, Epi Push** (Epinephrine)
123 **Epi Neb** (Epinephrine)
124 **Fentanyl** (Sublimaze®)
125 **Glucose** (Glutose 15™)
126 **Ibuprofen** (Motrin®)
127 **Keppra®** (Levetiracetam)
128 **Levophed®** (Norepinephrine)
129 **Lopressor®** (Metoprolol)
130 **Narcan®** (Naloxone)
131 **Nitro** (Nitroglycerin)
132 **Propofol** (Diprivan®)
133 **Rocuronium** (Zemuron®)
134 **TXA** (Tranexamic Acid)
135 **Versed®** (Midazolam)

Afrin® (Oxymetazoline)
Amiodarone (Pacerone®)
Aspirin (Baby ASA)
Atrovent® (Ipratropium)
Bicarb (Sodium Bicarbonate)
D10 (Dextrose 10%)
Dopamine (Intropin®)
Epi Drip (Epinephrine)
Etomidate (Amidate®)
Glucagon (Glucagen®)
Haldol® (Haloperidol)
Insulin (Humulin R®)
Ketamine (Ketalar®)
Lidocaine (Xylocaine®)
Magnesium (Sulfate)
Neo Push (Phenylephrine)
NS Bolus (0.9% Saline)
Rocephin® (Ceftriaxone)
Succinylcholine (Anectine®)
Tylenol® (Acetaminophen)
Zofran® (Ondansetron)

WVEMS Drug Box

- WVEMS provides a standardized drug box that contains many of the medications used in these protocols. Agencies may use the drug box when available, but must follow the Drug Box Policy.
- **2023** Box Layout:



Western VA EMS Council
Orange Drug Box Med List

2023

Medication	Size	Par	Type
Adenosine	6 mg	4	Injectable (any)
Albuterol 0.083%	2.5 mg	4	**Neb** solution (unit)
Amiodarone	150 mg	3	Injectable (any)
Aspirin (baby)	81 mg	≥4	**Tablets** (chewable)
Atropine	1 mg	2	Injectable (any)
Calcium Chloride	1 gram	1	Injectable (any)
Cefazolin	1 gram	1	Injectable (any)
D10	500 mL (min)		**Bag** (or 2x 250 mL)
Dexamethasone	4 mg	2	Injectable (any)
Diphenhydramine	50 mg	1	Injectable (any)
Dopamine	250 mL (min)		**Bag** (1,600 mcg/mL)
Epi 1 mg/mL	30 mg	1	Injectable (any)
Epi 1 mg/10 mL	1 mg	3	**Prefill** (syringe)
Fentanyl	100 mcg	3	Injectable (any) †
Glucagon	1 mg	1	**Kit** (only)
Haloperidol	5 mg	1	Injectable (any)
Ipratropium 0.02%	0.5 mg	1	**Neb** solution (unit)
Ketamine 10 mg/mL	200 mg (min)		Injectable (any) †
Levetiracetam	500 mg	2	Injectable (any) *
Lidocaine	100 mg	3	**Prefill** (syringe)
Magnesium	1 gram	4	Injectable (any) #
Metoprolol	5 mg	2	Injectable (any)
Midazolam	10 mg (min)		Injectable (any) †
Naloxone	4 mg	1	Injectable (any)
Nitroglycerin	0.4 mg	≥4	**Tablets** (sealed)
Normal Saline	10 mL	2	**Prefill** (syringe)
Normal Saline	50 mL	3	**Bag** (for mixing)
Ondansetron	4 mg	2	Injectable (any)
Ondansetron ODT	4 mg	2	**Tablets** (oral)
Oxymetazoline	15 mL	1	**Spray** bottle
Sodium Bicarbonate	50 mEq	1	Injectable (any)
Tranexamic Acid	1 gram	1	Injectable (any)

Supplies
- IV additive label x3
- Carpuject device (only **if needed**)
- Atomizer device x2 (MAD **with syringe**)
- 60 gtt IV drip set
- Nebulizer pipe / kit

† Narcotics
- Fentanyl
- Ketamine
- Midazolam

*** New Meds**
- Levetiracetam

 # New Par
- Magnesium

(Moved)
- Cefazolin, Adenosine
- ASA, Dexamethasone

v230814

Approved by WVEMS Protocol Workgroup 14 Aug 2023

Reviewed: Feb 2023

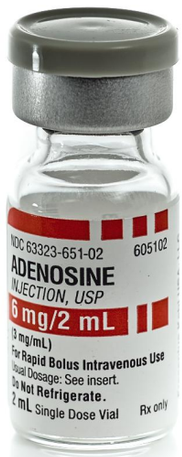
Adenosine — Adenocard®

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: Feb 2023

Albuterol — Ventolin®

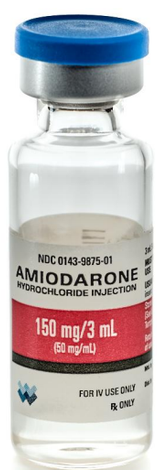
Use
- Tx: Wheezing, Hyperkalemia
- Adults: **2.5 mg** neb
- Peds: 0.15 mg/kg

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

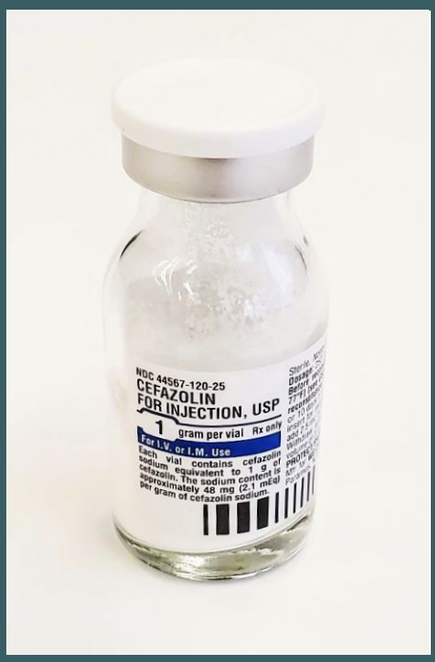
Notes
- Protocols: Tachycardia, Medical CODE
- Dilute in NS and **give over 10 min if non-emergent**
- Antiarrhythmic: Class III - Onset: mins - Duration: hours
- https://reference.medscape.com/drug/342296

Reviewed: Feb 2023

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**: w/ 3 mL NS for IM; dilute in 10 mL for IV/IO
- 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: Feb 2023

Atropine — AtroPen®

Use

- Tx: Brady, Organophosphate OD
- Adults: **1 mg** IV/IO (brady)
- Peds: 0.02 mg/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: Feb 2023

Benadryl® Diphenhydramine

Use

- Tx: Allergic Reactions, Dystonia
- Adults: **25 mg** IV/IO, IM, 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, Psychiatric
- 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: Apr 2023

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
- Dilute in 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

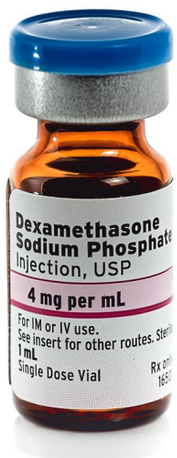
- Protocols: Diabetic
- Glucose Monosaccharide - Onset: mins - Duration: 40 min
- https://reference.medscape.com/drug/342705

Reviewed: Feb 2023

Decadron® — Dexamethasone

Use

- Tx: Inflammation
- Adults: **8 mg** IV/IO, IM, 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: Feb 2023

Epi, Epi Push — Epinephrine, EpiPen®

Use
- Tx: Shock, Brady, Arrest, Anaphylaxis
- Adults: **1 mg** IV/IO (CODE)
- Peds: 0.01 mg/kg (Brady, CODE)
- Smaller doses: Allergy, Push Pressor

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, Vasopressors
- See also: **Epi Drip** (below) for Circulation / Shock
- Adrenergic: α, ß agonist - Onset: 1 min - Duration: varies
- 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** (above) for Brady, CODE, Allergy, Neonate
- Adrenergic: α, ß agonist - Onset: 1 min
- https://reference.medscape.com/drug/342437

Reviewed: Feb 2023

Epi Neb — Epinephrine, Adrenalin

Use

- Tx: Dyspnea, Asthma, Croup
- Adults: **5 mg Nebulized** (5 mL)
- Peds: 0.5 mg/kg Neb (max 5 mL)
- Use **multidose conc.** (1 mg/mL)

Caution

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

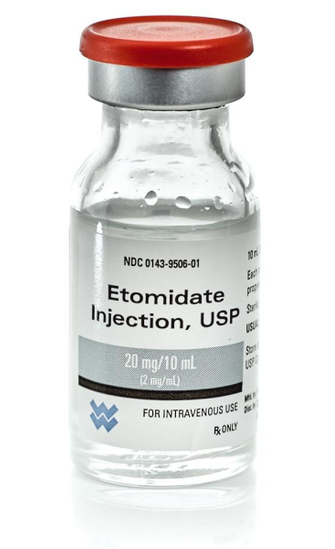
Notes

- Protocols: Dyspnea
- See also: **Epi** and **Epi Drip** (above) for CODE, etc.
- Adrenergic: α, ß agonist - Onset: 1 min
- https://reference.medscape.com/drug/342437

Etomidate — Amidate®

Use

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



Caution

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

Notes

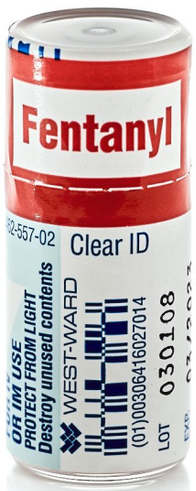
- Protocols: Intubation / RSI
- Central Hypnotic - Onset: seconds - Duration: minutes
- https://reference.medscape.com/drug/343098

Reviewed: Feb 2023

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 / Vent
- Opioid: μ-agonist - Onset: seconds - Duration: 45 min
- https://reference.medscape.com/drug/343311

Glucagon — Glucagen®

Use

- Tx: Hypoglycemia, ß-blocker OD
- Adults: **1 mg** IM
- 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: Feb 2023

Glucose — Oral Glucose, Glutose 15™

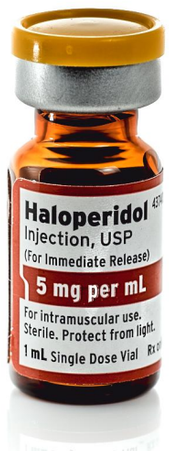
Use
- Tx: Hypoglycemia
- Adults: **15 g** PO
- Peds: 0.5 g/kg

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: Psychiatric
- Antipsychotic: dopa blocker - Onset: 10 m - Duration: 18 h
- https://reference.medscape.com/drug/342974

Reviewed: Feb 2023

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 units/kg
- Dilute in NS and **give over 1 hour**

Caution

- Avoid if K+ < 3.5 mEq/L
- Avoid if anion gap < 24 mEq/L
- PMH: hypokalemia
- May cause: hypoglycemia
- **Preg B**: likely safe

Notes

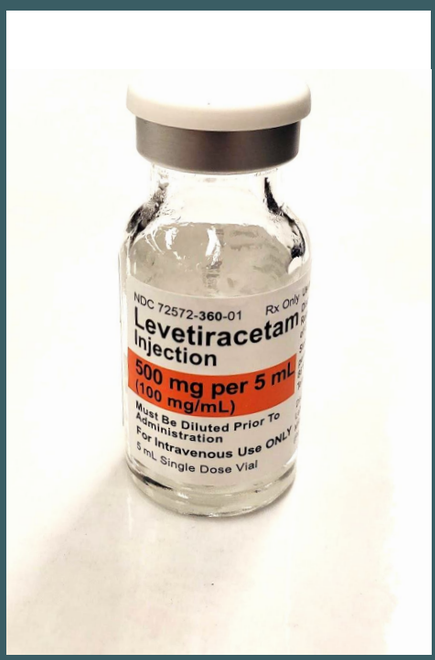
- Protocols: DKA / HHS
- Hormone - Onset: 30 minutes - Duration: hours
- https://reference.medscape.com/drug/999007

Reviewed: Feb 2023

Keppra® — Levetiracetam

Use
- Tx: Status Epilepticus, Seizures
- Adults: **1,000 mg** IV/IO
- Peds: 10 mg/kg (6 y/o and older)
- Dilute in NS and **give over 10 min**

Caution
- PMH: paranoid psychosis
- May cause: fatigue, weakness
- May cause: hypertension, headache
- **Preg C**: safety not established



Notes
- Protocols: Seizure
- Novel Antiepileptic - Peak: 1 hour - Half-life: 6-8 hours
- https://reference.medscape.com/drug/343013

Ketamine — Ketalar®

Use
- Tx: Severe Pain, Discomfort
- Adults: **20 mg** IV/IO, IM/IN (pain)
- Peds: 0.25 - 0.5 mg/kg
- Higher doses for Critical Care

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

Notes
- Protocols: Pain, Med ROSC, Trauma ROSC, RSI, Sedation
- Dilute in NS and **give over 10 min if used IV/IO for pain**
- Dissociative anesthetic - Onset: 30 s - Duration: minutes
- https://reference.medscape.com/drug/343099

Reviewed: Feb 2023

Levophed® — Norepinephrine

Use

- Tx: Hypotension, Septic Shock
- Adults: **5 - 20** mcg/min IV/IO
- Peds: 0.05 mcg/kg/min
- **Dilute 4 mg in 1 L**, titrate to effect

Caution

- **Beware extravasation**
- PMH: CAD, HTN, MAOI meds
- May cause: HTN, arrhythmia
- May cause: anxiety, flushing
- **Preg C**: safety not established

Notes

- Protocols: Vasopressors
- **Dilute in D5W** if available (NS is OK, but will lose potency)
- Adrenergic: ß, α agonist - Onset: 1 min - Duration: 1 min
- https://reference.medscape.com/drug/342443

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

Reviewed: Feb 2023

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: Malignant HTN
- ß-blocker - Onset: minutes - Duration: hours
- https://reference.medscape.com/drug/342360

Magnesium — Magnesium Sulfate

Use

- Tx: VT/VF, Dyspnea, Eclampsia
- Adults: **2-4 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, Seizure, Malig. HTN
- Dilute in NS and **give over 10 min if non-emergent**
- Electrolyte - Onset: seconds - Duration: hours
- https://reference.medscape.com/drug/344444

Reviewed: Feb 2023

Narcan® — Naloxone

Use

- Tx: Opiate OD
- Adults: **0.4 - 4 mg** IV/IO, IM/N
- 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

Neo Push — Phenylephrine

Use

- Tx: Hypotension, Shock Index > 0.8
- Adults: **50 - 200** mcg IV/IO
- Peds: 5 - 20 mcg/kg
- 0-1 y/o: safety not established

Caution

- **Beware extravasation**
- PMH: heart block, CHF
- May cause: HTN, **bradycardia**
- May cause: anxiety, flushing
- **Preg**: safety not established

Notes

- Protocols: Vasopressors
- **Must dilute in NS** to concentration of 100 mcg/mL
- Adrenergic: α agonist - Onset: 10 min - Duration: 15 min
- https://reference.medscape.com/drug/342444

Reviewed: Feb 2023

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
  Major Trauma / CODE, Crush, Cold/Heat, Burn, DKA/HHS
- Sterile H_2O & NaCl - Onset: seconds - Duration: varies
- https://www.rxlist.com/normal-saline-drug.htm

Reviewed: Feb 2023

Propofol — Diprivan®

Use

- Tx: Sedation
- Adults: **0.1 mg/kg/min** IV/IO
- Peds: 0.2 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 / Vent
- 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 2% Lido for IM
- Antibiotic: 3rd Gen Ceph - Onset: minutes - Duration: hours
- https://reference.medscape.com/drug/342510

Reviewed: Feb 2023

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: **1.5 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: Feb 2023

TXA — Tranexamic Acid

Use

- Tx: Bleeding
- Adults: **1 gram** IV/IO
- Peds: 10 - 25 mg/kg
- Dilute in NS and **give over 10 min**

Caution

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

Notes

- Protocols: Bleeding, Pregnancy / Delivery, OB Procedures
- 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: end stage liver disease
- **Preg B**: likely safe

Notes

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

Reviewed: Feb 2023

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, Cold / Heat
- Critical Care: Sedation / Vent
- Benzo: GABA agonist - Onset: 3 minutes - Duration: 1 hour
- https://reference.medscape.com/drug/342907

Zofran® — Ondansetron

Use

- Tx: Nausea, Vomiting
- Adults: **4 mg** IV/IO, IM/IN, PO
- 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 **ODT for PO**
- 5-HT3 antagonist - Onset: seconds - Duration: hours
- https://reference.medscape.com/drug/342052

Reviewed: Feb 2023

HANDTEVY
Pediatric Emergency Standards

- WVEMS uses the **Handtevy** Standard.
  - **Age is the primary** reference.
  - This allows **preparation en route**.
- Length / color tape is also an option.
  - Use tape if very small / very large.
  - Use tape if age is unknown.
- Weight based dosing is secondary.
  - Many meds are **dosed by IBW**.
  - Estimating weight is not advised.
- Vitals may be lower while sleeping.

137	Premie
138	0-3 mo
139	4-5 mo
140	6-11 mo
141	**1** year
142	**2** years
143	**3** years
144	**4** years
145	**5** years
146	**6** years
147	**7** years
148	**8** years
149	**9** years
150	**10** years
151	**11** years
152	**12** years
153	**13** years

E EMT Peds Dosing

- Peds med math is **not in EMT scope**.
- May give regular adult dose for ages:
  - **Afrin**® (oxymetazoline): ≥ 6 y/o
  - **Albuterol** (Ventolin®): ≥ 2 y/o
  - **Atrovent**® (ipratropium): ≥ 5 y/o
  - **Glucagon** (Glucagen®): ≥ 5 y/o
  - **Oral Glucose** (Glutose®): ≥ 2 y/o
  - **Narcan**® (naloxone): all ages
  - **Zofran ODT**®: ≥ 11 y/o
- May give **EpiPen Jr**® for 3-8 y/o, or adult **EpiPen**® for ≥ 9 y/o.
  - May also use color coded / dose limiting administration systems.
- May **follow the directions** on the OTC box and give OTC doses of:
  - **Benadryl**, **Ibuprofen**, and **Tylenol**

References

- PALS: https://www.ahajournals.org/doi/10.1161/CIR.0000000000000901 [Ver: 2020]
- Handtevy - Pediatric Emergency Standards: https://handtevy.com [Ver: 5/22]
- Limmer D, O'Keefe MF. *Emergency Care* 14th Ed. Chapter 18

Reviewed: Apr 2023

GRAY Premie

0 - 7 lbs 0 - 3 kg

Normal Vitals	P: **120 - 170** /min	R: **40 - 70** /min	SBP: **55 - 90** mmHg

Resuscitation

Defib: 4 → 8 J

Prefill (1/10) **Epi: 0.2 mL**

Prefill (2%) **Lido: 0.1 → 0.1 mL**

Common

NS Bolus:	40 mL
Afrin:	*< do not use >*
Albuterol:	0.42 mg
Ancef:	*< do not use >*
Atrovent:	0.25 mg
Benadryl:	*< do not use >*
D10:	10 mL
Decadron:	1.2 mg
Epi (allergy):	0.02 mg
Epi (brady/code):	0.02 mg
Epi Neb:	1 mg
Fentanyl:	*< do not use >*
Glucose:	*< do not use >*
Ibuprofen:	*< do not use >*
Keppra:	*< do not use >*
Ketamine (pain):	*< do not use >*
Narcan:	0.02 mg
Tylenol:	32 mg
TXA:	50 mg
Versed:	*< do not use >*
Zofran:	*< do not use >*

Misc

IV Cath:	24 g (yellow)
King Airway:	#0 (clear)
iGel Airway:	#1 (pink)
Pacing Rate:	145 /min
Cardioversion:	2 → 4 J

Less Common

Adenosine:	0.3 mg
Amiodarone:	10 mg
Atropine:	0.1 mg
Bicarbonate:	2 mEq
Calcium:	40 mg
Dopamine:	drop every 60 s
Glucagon:	0.5 mg
Haldol:	*< do not use >*
Lidocaine (IO):	*< do not use >*
Magnesium:	100 mg
Epi Push:	2 mcg
Etomidate:	*< do not use >*
Insulin:	0.2 units
Ketamine (RSI):	*< do not use >*
Levophed:	0.1 mcg/min
Neo Push:	20 mcg
Rocephin:	100 mg
Rocuronium:	*< do not use >*
Succinylcholine:	4 mg

Reviewed: Apr 2023

GRAY 0-3 MO

8 - 12 lbs 4 - 5 kg

Normal Vitals	P: **100 - 160** /min	R: **30 - 60** /min	SBP: **60 - 100** mmHg

Resuscitation

Defib: 8 → 15 J

Prefill (1/10) **Epi: 0.4 mL**

Prefill (2%) **Lido: 0.2 → 0.1 mL**

Common

NS Bolus:	80 mL
Afrin:	*< do not use >*
Albuterol:	0.83 mg
Ancef:	*< do not use >*
Atrovent:	0.25 mg
Benadryl:	*< do not use >*
D10:	20 mL
Decadron:	2.4 mg
Epi (allergy):	0.04 mg
Epi (brady/code):	0.04 mg
Epi Neb:	2 mg
Fentanyl:	5 mcg
Glucose:	*< do not use >*
Ibuprofen:	*< do not use >*
Keppra:	*< do not use >*
Ketamine (pain):	*< do not use >*
Narcan:	0.04 mg
Tylenol:	64 mg
TXA:	100 mg
Versed:	*< do not use >*
Zofran:	*< do not use >*

Misc

IV Cath:	24 g (yellow)
King Airway:	#0 (clear)
iGel Airway:	#1 (pink)
Pacing Rate:	130 /min
Cardioversion:	4 → 8 J

Less Common

Adenosine:	0.3 mg
Amiodarone:	20 mg
Atropine:	0.1 mg
Bicarbonate:	4 mEq
Calcium:	80 mg
Dopamine:	drop every 60 s
Glucagon:	0.5 mg
Haldol:	*< do not use >*
Lidocaine (IO):	*< do not use >*
Magnesium:	200 mg
Epi Push:	2 mcg
Etomidate:	*< do not use >*
Insulin:	0.4 units
Ketamine (RSI):	*< do not use >*
Levophed:	0.2 mcg/min
Neo Push:	20 mcg
Rocephin:	200 mg
Rocuronium:	*< do not use >*
Succinylcholine:	8 mg

Reviewed: Apr 2023

PINK

13 - 16 lbs 6 - 7 kg

4-5 MO

Normal Vitals P: **105 - 160** /min R: **30 - 60** /min SBP: **70 - 100** mmHg

Resuscitation

Defib: 10 → 20 J

Prefill (1/10) **Epi: 0.6 mL**

Prefill (2%) **Lido: 0.4 → 0.2 mL**

Common

NS Bolus:	120 mL
Afrin:	*< do not use >*
Albuterol:	1.25 mg
Ancef:	200 mg
Atrovent:	0.25 mg
Benadryl:	5 mg
D10:	30 mL
Decadron:	3.6 mg
Epi (allergy):	0.06 mg
Epi (brady/code):	0.06 mg
Epi Neb:	3 mg
Fentanyl:	5 mcg
Glucose:	*< do not use >*
Ibuprofen:	*< do not use >*
Keppra:	*< do not use >*
Ketamine (pain):	2 mg
Narcan:	0.06 mg
Tylenol:	80 mg
TXA:	150 mg
Versed:	0.5 mg
Zofran:	0.6 mg

Misc

IV Cath:	24 g (yellow)
King Airway:	#1 (white)
iGel Airway:	#1.5 (blue)
Pacing Rate:	130 /min
Cardioversion:	6 → 10 J

Less Common

Adenosine:	0.6 mg
Amiodarone:	30 mg
Atropine:	0.12 mg
Bicarbonate:	6 mEq
Calcium:	120 mg
Dopamine:	drop every 60 s
Glucagon:	0.5 mg
Haldol:	*< do not use >*
Lidocaine (IO):	*< do not use >*
Magnesium:	300 mg
Epi Push:	4 mcg
Etomidate:	*< do not use >*
Insulin:	0.6 units
Ketamine (RSI):	12 mg
Levophed:	0.3 mcg/min
Neo Push:	40 mcg
Rocephin:	300 mg
Rocuronium:	6 mg
Succinylcholine:	12 mg

Reviewed: Apr 2023

RED 6-11 MO

17 - 20 lbs 8 - 9 kg

Normal Vitals	P: **110 - 160** /min	R: **24 - 38** /min	SBP: **70 - 100** mmHg

Resuscitation

Defib: 15 → 30 J

Prefill (1/10) **Epi: 0.8 mL**

Prefill (2%) **Lido: 0.4 → 0.2 mL**

Common

NS Bolus:	160 mL
Afrin:	*< do not use >*
Albuterol:	1.25 mg
Ancef:	266 mg
Atrovent:	0.25 mg
Benadryl:	5 mg
D10:	40 mL
Decadron:	4.8 mg
Epi (allergy):	0.08 mg
Epi (brady/code):	0.08 mg
Epi Neb:	4 mg
Fentanyl:	5 mcg
Glucose:	*< do not use >*
Ibuprofen:	80 mg
Keppra:	*< do not use >*
Ketamine (pain):	2 mg
Narcan:	0.08 mg
Tylenol:	112 mg
TXA:	200 mg
Versed:	0.5 mg
Zofran:	0.8 mg

Misc

IV Cath:	24 g (yellow)
King Airway:	#1 (white)
iGel Airway:	#1.5 (blue)
Pacing Rate:	135 /min
Cardioversion:	8 → 15 J

Less Common

Adenosine:	0.9 mg
Amiodarone:	40 mg
Atropine:	0.16 mg
Bicarbonate:	8 mEq
Calcium:	160 mg
Dopamine:	drop every 30 s
Glucagon:	0.5 mg
Haldol:	*< do not use >*
Lidocaine (IO):	*< do not use >*
Magnesium:	400 mg
Epi Push:	4 mcg
Etomidate:	*< do not use >*
Insulin:	0.8 units
Ketamine (RSI):	16 mg
Levophed:	0.4 mcg/min
Neo Push:	40 mcg
Rocephin:	400 mg
Rocuronium:	8 mg
Succinylcholine:	16 mg

Reviewed: Apr 2023

PURPLE

21 - 25 lbs 10 - 11 kg

1 YR

Normal Vitals	P: **90 - 150** /min	R: **22 - 30** /min	SBP: **72 - 105** mmHg

Resuscitation

Defib: 20 → 50 J

Prefill (1/10) **Epi: 1 mL**

Prefill (2%) **Lido: 0.6 → 0.3 mL**

Common

NS Bolus:	200 mL
Afrin:	*< do not use >*
Albuterol:	1.25 mg
Ancef:	333 mg
Atrovent:	0.25 mg
Benadryl:	10 mg
D10:	50 mL
Decadron:	6 mg
Epi (allergy):	0.1 mg
Epi (brady/code):	0.1 mg
Epi Neb:	5 mg
Fentanyl:	5 mcg
Glucose:	*< do not use >*
Ibuprofen:	100 mg
Keppra:	*< do not use >*
Ketamine (pain):	3 mg
Narcan:	0.1 mg
Tylenol:	144 mg
TXA:	200 mg
Versed:	1 mg
Zofran:	1 mg

Misc

IV Cath:	22 g (blue)
King Airway:	#1 (white)
iGel Airway:	#1.5 (blue)
Pacing Rate:	120 /min
Cardioversion:	10 → 20 J

Less Common

Adenosine:	0.9 mg
Amiodarone:	50 mg
Atropine:	0.2 mg
Bicarbonate:	10 mEq
Calcium:	200 mg
Dopamine:	drop every 30 s
Glucagon:	0.5 mg
Haldol:	*< do not use >*
Lidocaine (IO):	*< do not use >*
Magnesium:	500 mg
Epi Push:	6 mcg
Etomidate:	*< do not use >*
Insulin:	1 unit
Ketamine (RSI):	20 mg
Levophed:	0.5 mcg/min
Neo Push:	60 mcg
Rocephin:	500 mg
Rocuronium:	10 mg
Succinylcholine:	20 mg

Reviewed: Apr 2023

YELLOW

26 - 31 lbs 12 - 14 kg

2 YR

Normal Vitals	P: **85 - 140** /min	R: **22 - 30** /min	SBP: **74 - 110** mmHg

Resuscitation

Defib: 20 → 50 J

Prefill (1/10) **Epi: 1.2 mL**

Prefill (2%) **Lido: 0.6 → 0.3 mL**

Common

NS Bolus:	250 mL
Afrin:	*< do not use >*
Albuterol:	2.5 mg
Ancef:	400 mg
Atrovent:	0.25 mg
Benadryl:	10 mg
D10:	60 mL
Decadron:	7.2 mg
Epi (allergy):	0.12 mg
Epi (brady/code):	0.12 mg
Epi Neb:	5 mg
Fentanyl:	10 mcg
Glucose:	15 grams
Ibuprofen:	120 mg
Keppra:	*< do not use >*
Ketamine (pain):	3 mg
Narcan:	0.12 mg
Tylenol:	176 mg
TXA:	300 mg
Versed:	1 mg
Zofran:	1.2 mg

Misc

IV Cath:	22 g (blue)
King Airway:	#2 (green)
iGel Airway:	#2 (gray)
Pacing Rate:	110 /min
Cardioversion:	10 → 20 J

Less Common

Adenosine:	1.2 mg
Amiodarone:	60 mg
Atropine:	0.24 mg
Bicarbonate:	12 mEq
Calcium:	240 mg
Dopamine:	drop every 30 s
Glucagon:	0.5 mg
Haldol:	*< do not use >*
Lidocaine (IO):	2 mg
Magnesium:	600 mg
Epi Push:	6 mcg
Etomidate:	*< do not use >*
Insulin:	1.2 unit
Ketamine (RSI):	24 mg
Levophed:	0.6 mcg/min
Neo Push:	60 mcg
Rocephin:	600 mg
Rocuronium:	12 mg
Succinylcholine:	24 mg

Reviewed: Apr 2023

WHITE

32 - 36 lbs 15 - 16 kg

3 YR

Normal Vitals P: **85 - 140** /min R: **22 - 30** /min SBP: **76 - 115** mmHg

Resuscitation

Defib: **30 → 70 J**

Prefill (1/10) **Epi**: **1.5 mL**

Prefill (2%) **Lido**: **0.8 → 0.4 mL**

Common

NS Bolus: 300 mL

Afrin: *< do not use >*

Albuterol: 2.5 mg

Ancef: 500 mg

Atrovent: 0.25 mg

Benadryl: 15 mg

D10: 75 mL

Decadron: 8 mg

Epi (allergy): 0.15 mg

Epi (brady/code): 0.15 mg

Epi Neb: 5 mg

Fentanyl: 10 mcg

Glucose: 15 grams

Ibuprofen: 140 mg

Keppra: *< do not use >*

Ketamine (pain): 4 mg

Narcan: 0.14 mg

Tylenol: 224 mg

TXA: 350 mg

Versed: 1 mg

Zofran: 1.6 mg

Misc

IV Cath: 22 g (blue)

King Airway: #2 (green)

iGel Airway: #2 (gray)

Pacing Rate: 110 /min

Cardioversion: 15 → 30 J

Less Common

Adenosine: 1.5 mg

Amiodarone: 75 mg

Atropine: 0.3 mg

Bicarbonate: 15 mEq

Calcium: 300 mg

Dopamine: drop every 20 s

Glucagon: 0.5 mg

Haldol: *< do not use >*

Lidocaine (IO): 2 mg

Magnesium: 750 mg

Epi Push: 8 mcg

Etomidate: *< do not use >*

Insulin: 1.6 unit

Ketamine (RSI): 30 mg

Levophed: 0.8 mcg/min

Neo Push: 80 mcg

Rocephin: 666 mg

Rocuronium: 15 mg

Succinylcholine: 30 mg

Reviewed: Apr 2023

WHITE

37 - 42 lbs 17 - 19 kg

4 YR

Normal Vitals P: **75 - 120** /min R: **22 - 26** /min SBP: **78 - 115** mmHg

Resuscitation

Defib: 30 → 70 J

Prefill (1/10) **Epi: 1.7 mL**

Prefill (2%) **Lido: 1 → 0.5 mL**

Common

NS Bolus: 350 mL

Afrin: *< do not use >*

Albuterol: 2.5 mg

Ancef: 566 mg

Atrovent: 0.25 mg

Benadryl: 15 mg

D10: 85 mL

Decadron: 8 mg

Epi (allergy): 0.17 mg

Epi (brady/code): 0.17 mg

Epi Neb: 5 mg

Fentanyl: 10 mcg

Glucose: 15 grams

Ibuprofen: 160 mg

Keppra: *< do not use >*

Ketamine (pain): 5 mg

Narcan: 0.16 mg

Tylenol: 256 mg

TXA: 400 mg

Versed: 1.5 mg

Zofran: 2 mg

Misc

IV Cath: 22 g (blue)

King Airway: #2 (green)

iGel Airway: #2 (gray)

Pacing Rate: 95 /min

Cardioversion: 15 → 30 J

Less Common

Adenosine: 1.8 mg

Amiodarone: 85 mg

Atropine: 0.35 mg

Bicarbonate: 17 mEq

Calcium: 350 mg

Dopamine: drop every 20 s

Glucagon: 0.5 mg

Haldol: *< do not use >*

Lidocaine (IO): 2 mg

Magnesium: 850 mg

Epi Push: 10 mcg

Etomidate: *< do not use >*

Insulin: 1.8 unit

Ketamine (RSI): 35 mg

Levophed: 0.9 mcg/min

Neo Push: 100 mcg

Rocephin: 833 mg

Rocuronium: 17 mg

Succinylcholine: 34 mg

Reviewed: Apr 2023

BLUE

43 - 47 lbs 20 - 21 kg

5 YR

Normal Vitals	P: **70 - 115** /min	R: **20 - 24** /min	SBP: **80 - 115** mmHg

Resuscitation

Defib: 50 → 85 J

Prefill (1/10) **Epi: 2 mL**

Prefill (2%) **Lido: 1 → 0.5 mL**

Common

NS Bolus:	400 mL
Afrin:	*< do not use >*
Albuterol:	2.5 mg
Ancef:	666 mg
Atrovent:	0.5 mg
Benadryl:	20 mg
D10:	100 mL
Decadron:	8 mg
Epi (allergy):	0.2 mg
Epi (brady/code):	0.2 mg
Epi Neb:	5 mg
Fentanyl:	10 mcg
Glucose:	15 grams
Ibuprofen:	200 mg
Keppra:	*< do not use >*
Ketamine (pain):	6 mg
Narcan:	0.2 mg
Tylenol:	288 mg
TXA:	500 mg
Versed:	2 mg
Zofran:	2 mg

Misc

IV Cath:	20 g (pink)
King Airway:	#2 (green)
iGel Airway:	#2 (gray)
Pacing Rate:	90 /min
Cardioversion:	20 → 50 J

Less Common

Adenosine:	2.1 mg
Amiodarone:	100 mg
Atropine:	0.4 mg
Bicarbonate:	20 mEq
Calcium:	400 mg
Dopamine:	drop every 15 s
Glucagon:	1 mg
Haldol:	*< do not use >*
Lidocaine (IO):	2 mg
Magnesium:	1 gram
Epi Push:	10 mcg
Etomidate:	*< do not use >*
Insulin:	2 unit
Ketamine (RSI):	40 mg
Levophed:	1.0 mcg/min
Neo Push:	100 mcg
Rocephin:	1 gram
Rocuronium:	20 mg
Succinylcholine:	40 mg

Reviewed: Apr 2023

BLUE

48 - 54 lbs 22 - 24 kg

6 YR

Normal Vitals	P: **70 - 115** /min	R: **20 - 24** /min	SBP: **82 - 120** mmHg

Resuscitation

Defib: 50 → 85 J

Prefill (1/10) **Epi: 2.2 mL**

Prefill (2%) **Lido: 1.2 → 0.6 mL**

Common

NS Bolus:	440 mL
Afrin:	1 spray
Albuterol:	2.5 mg
Ancef:	733 mg
Atrovent:	0.5 mg
Benadryl:	20 mg
D10:	100 mL
Decadron:	8 mg
Epi (allergy):	0.22 mg
Epi (brady/code):	0.22 mg
Epi Neb:	5 mg
Fentanyl:	15 mcg
Glucose:	15 grams
Ibuprofen:	220 mg
Keppra:	220 mg
Ketamine (pain):	6 mg
Narcan:	0.22 mg
Tylenol:	320 mg
TXA:	550 mg
Versed:	2 mg
Zofran:	2.2 mg

Misc

IV Cath:	20 g (pink)
King Airway:	#2 (green)
iGel Airway:	#2 (gray)
Pacing Rate:	90 /min
Cardioversion:	20 → 50 J

Less Common

Adenosine:	2.1 mg
Amiodarone:	110 mg
Atropine:	0.45 mg
Bicarbonate:	22 mEq
Calcium:	450 mg
Dopamine:	drop every 15 s
Glucagon:	1 mg
Haldol:	2.5 mg
Lidocaine (IO):	4 mg
Magnesium:	1.1 grams
Epi Push:	10 mcg
Etomidate:	*< do not use >*
Insulin:	2.2 unit
Ketamine (RSI):	45 mg
Levophed:	1.1 mcg/min
Neo Push:	100 mcg
Rocephin:	1 gram
Rocuronium:	22 mg
Succinylcholine:	44 mg

Reviewed: Apr 2023

ORANGE

55 - 58 lbs 25 - 26 kg

7 YR

Normal Vitals	P: **70 - 110** /min	R: **16 - 22** /min	SBP: **84 - 120** mmHg

Resuscitation

Defib: 50 → 100 J

Prefill (1/10) **Epi: 2.5 mL**

Prefill (2%) **Lido: 1.4 → 0.7 mL**

Common

NS Bolus	500 mL
Afrin	1 spray
Albuterol	2.5 mg
Ancef	833 mg
Atrovent	0.5 mg
Benadryl	25 mg
D10	100 mL
Decadron	8 mg
Epi (allergy)	0.25 mg
Epi (brady/code)	0.25 mg
Epi Neb	5 mg
Fentanyl	15 mcg
Glucose	15 grams
Ibuprofen	240 mg
Keppra	250 mg
Ketamine (pain)	7 mg
Narcan	0.24 mg
Tylenol	352 mg
TXA	600 mg
Versed	2.5 mg
Zofran	2.4 mg

Misc

IV Cath	20 g (pink)
King Airway	#2.5 (orange)
iGel Airway	#2.5 (white)
Pacing Rate	90 /min
Cardioversion	30 → 50 J

Less Common

Adenosine	2.4 mg
Amiodarone	125 mg
Atropine	0.5 mg
Bicarbonate	25 mEq
Calcium	500 mg
Dopamine	drop every 12 s
Glucagon	1 mg
Haldol	2.5 mg
Lidocaine (IO)	4 mg
Magnesium	1.25 grams
Epi Push	10 mcg
Etomidate	*< do not use >*
Insulin	2.6 unit
Ketamine (RSI)	50 mg
Levophed	1.3 mcg/min
Neo Push	100 mcg
Rocephin	1 gram
Rocuronium	25 mg
Succinylcholine	50 mg

Reviewed: Apr 2023

ORANGE

59 - 65 lbs 27 - 29 kg

8 YR

Normal Vitals	P: **70 - 110** /min	R: **16 - 22** /min	SBP: **86 - 120** mmHg

Resuscitation

	Defib: 50 → 100 J
Prefill (1/10)	**Epi: 2.7 mL**
Prefill (2%)	**Lido: 1.4 → 0.7 mL**

Common

NS Bolus:	540 mL
Afrin:	1 spray
Albuterol:	2.5 mg
Ancef:	900 mg
Atrovent:	0.5 mg
Benadryl:	25 mg
D10:	100 mL
Decadron:	8 mg
Epi (allergy):	0.27 mg
Epi (brady/code):	0.27 mg
Epi Neb:	5 mg
Fentanyl:	15 mcg
Glucose:	15 grams
Ibuprofen:	260 mg
Keppra:	270 mg
Ketamine (pain):	8 mg
Narcan:	0.26 mg
Tylenol:	384 mg
TXA:	650 mg
Versed:	2.5 mg
Zofran:	2.6 mg

Misc

IV Cath:	20 g (pink)
King Airway:	#2.5 (orange)
iGel Airway:	#2.5 (white)
Pacing Rate:	90 /min
Cardioversion:	30 → 50 J

Less Common

Adenosine:	2.7 mg
Amiodarone:	135 mg
Atropine:	0.5 mg
Bicarbonate:	27 mEq
Calcium:	550 mg
Dopamine:	drop every 12 s
Glucagon:	1 mg
Haldol:	2.5 mg
Lidocaine (IO):	4 mg
Magnesium:	1.35 grams
Epi Push:	10 mcg
Etomidate:	*< do not use >*
Insulin:	2.8 unit
Ketamine (RSI):	55 mg
Levophed:	1.4 mcg/min
Neo Push:	100 mcg
Rocephin:	1 gram
Rocuronium:	27 mg
Succinylcholine:	54 mg

Reviewed: Apr 2023

GREEN

66 - 76 lbs 30 - 34 kg

9 YR

Normal Vitals	P: **65** - **105** /min	R: **16** - **22** /min	SBP: **88** - **120** mmHg

Resuscitation

Defib:	**70 → 120 J**
Prefill (1/10) **Epi**:	**3 mL**
Prefill (2%) **Lido**:	**1.6 → 0.8 mL**

Common

NS Bolus:	600 mL
Afrin:	1 spray
Albuterol:	2.5 mg
Ancef:	1 gram
Atrovent:	0.5 mg
Benadryl:	25 mg
D10:	100 mL
Decadron:	8 mg
Epi (allergy):	0.3 mg
Epi (brady/code):	0.3 mg
Epi Neb:	5 mg
Fentanyl:	15 mcg
Glucose:	15 grams
Ibuprofen:	300 mg
Keppra:	300 mg
Ketamine (pain):	9 mg
Narcan:	0.28 mg
Tylenol:	448 mg
TXA:	750 mg
Versed:	2.5 mg
Zofran:	3 mg

Misc

IV Cath:	18 g (green)
King Airway:	#2.5 (orange)
iGel Airway:	#2.5 (white)
Pacing Rate:	85 /min
Cardioversion:	30 → 70 J

Less Common

Adenosine:	3 mg
Amiodarone:	150 mg
Atropine:	0.5 mg
Bicarbonate:	30 mEq
Calcium:	600 mg
Dopamine:	drop every 10 s
Glucagon:	1 mg
Haldol:	3 mg
Lidocaine (IO):	4 mg
Magnesium:	1.5 grams
Epi Push:	10 mcg
Etomidate:	*< do not use >*
Insulin:	3 units
Ketamine (RSI):	60 mg
Levophed:	1.5 mcg/min
Neo Push:	100 mcg
Rocephin:	1 gram
Rocuronium:	30 mg
Succinylcholine:	60 mg

Reviewed: Apr 2023

GREEN

77 - 87 lbs 35 - 39 kg

10 YR

Normal Vitals	P: **60 - 100** /min	R: **16 - 22** /min	SBP: **90 - 120** mmHg

Resuscitation

Defib:	**70 → 150 J**
Prefill (1/10) **Epi**:	**3.5 mL**
Prefill (2%) **Lido**:	**1.8 → 0.9 mL**

Common

NS Bolus:	700 mL
Afrin:	1 spray
Albuterol:	2.5 mg
Ancef:	1 gram
Atrovent:	0.5 mg
Benadryl:	25 mg
D10:	100 mL
Decadron:	8 mg
Epi (allergy):	0.3 mg
Epi (brady/code):	0.35 mg
Epi Neb:	5 mg
Fentanyl:	20 mcg
Glucose:	15 grams
Ibuprofen:	340 mg
Keppra:	350 mg
Ketamine (pain):	10 mg
Narcan:	0.36 mg
Tylenol:	480 mg
TXA:	850 mg
Versed:	2.5 mg
Zofran:	3.4 mg

Misc

IV Cath:	18 g (green)
King Airway:	#3 (yellow)
iGel Airway:	#3 (yellow)
Pacing Rate:	80 /min
Cardioversion:	30 → 70 J

Less Common

Adenosine:	3.6 mg
Amiodarone:	150 mg
Atropine:	0.5 mg
Bicarbonate:	35 mEq
Calcium:	700 mg
Dopamine:	drop every 9 s
Glucagon:	1 mg
Haldol:	3.5 mg
Lidocaine (IO):	6 mg
Magnesium:	1.75 grams
Epi Push:	10 mcg
Etomidate:	10 mg
Insulin:	3.4 units
Ketamine (RSI):	70 mg
Levophed:	1.8 mcg/min
Neo Push:	100 mcg
Rocephin:	1 gram
Rocuronium:	35 mg
Succinylcholine:	70 mg

Reviewed: Apr 2023

GREEN

88 - 109 lbs 40 - 49 kg

11 YR

Normal Vitals	P: **60 - 100** /min	R: **16 - 22** /min	SBP: **90 - 120** mmHg

Resuscitation

	Defib: 85 → 150 J
Prefill (1/10)	**Epi: 4 mL**
Prefill (2%)	**Lido: 2 → 1 mL**

Common

NS Bolus:	800 mL
Afrin:	1 spray
Albuterol:	2.5 mg
Ancef:	1 gram
Atrovent:	0.5 mg
Benadryl:	25 mg
D10:	100 mL
Decadron:	8 mg
Epi (allergy):	0.3 mg
Epi (brady/code):	0.4 mg
Epi Neb:	5 mg
Fentanyl:	20 mcg
Glucose:	15 grams
Ibuprofen:	400 mg
Keppra:	400 mg
Ketamine (pain):	12 mg
Narcan:	0.4 mg
Tylenol:	480 mg
TXA:	1 gram
Versed:	2.5 mg
Zofran:	4 mg

Misc

IV Cath:	18 g (green)
King Airway:	#3 (yellow)
iGel Airway:	#3 (yellow)
Pacing Rate:	80 /min
Cardioversion:	50 → 85 J

Less Common

Adenosine:	3.9 mg
Amiodarone:	150 mg
Atropine:	0.5 mg
Bicarbonate:	40 mEq
Calcium:	800 mg
Dopamine:	drop every 8 s
Glucagon:	1 mg
Haldol:	4 mg
Lidocaine (IO):	6 mg
Magnesium:	2 grams
Epi Push:	10 mcg
Etomidate:	12 mg
Insulin:	4 units
Ketamine (RSI):	80 mg
Levophed:	2.0 mcg/min
Neo Push:	100 mcg
Rocephin:	1 gram
Rocuronium:	40 mg
Succinylcholine:	80 mg

Reviewed: Apr 2023

GREEN 12 YR

110 - 131 lbs 50 - 59 kg

Normal Vitals	P: **60 - 100** /min	R: **16 - 22** /min	SBP: **90 - 120** mmHg

Resuscitation

Defib:	**100 → 200 J**
Prefill (1/10) **Epi**:	**5 mL**
Prefill (2%) **Lido**:	**2.6 → 1.3 mL**

Common

NS Bolus:	1,000 mL
Afrin:	1 spray
Albuterol:	2.5 mg
Ancef:	1 gram
Atrovent:	0.5 mg
Benadryl:	25 mg
D10:	100 mL
Decadron:	8 mg
Epi (allergy):	0.3 mg
Epi (brady/code):	0.5 mg
Epi Neb:	5 mg
Fentanyl:	25 mcg
Glucose:	15 grams
Ibuprofen:	400 mg
Keppra:	500 mg
Ketamine (pain):	15 mg
Narcan:	0.4 mg
Tylenol:	480 mg
TXA:	1 gram
Versed:	2.5 mg
Zofran:	4 mg

Misc

IV Cath:	18 g (green)
King Airway:	#3 (yellow)
iGel Airway:	#3 (yellow)
Pacing Rate:	80 /min
Cardioversion:	50 → 100 J

Less Common

Adenosine:	5.1 mg
Amiodarone:	150 mg
Atropine:	0.5 mg
Bicarbonate:	50 mEq
Calcium:	1 gram
Dopamine:	drop every 6 s
Glucagon:	1 mg
Haldol:	5 mg
Lidocaine (IO):	8 mg
Magnesium:	2 grams
Epi Push:	10 mcg
Etomidate:	15 mg
Insulin:	5 units
Ketamine (RSI):	100 mg
Levophed:	2.5 mcg/min
Neo Push:	100 mcg
Rocephin:	1 gram
Rocuronium:	50 mg
Succinylcholine:	100 mg

Reviewed: Apr 2023

GREEN

132-153 lbs 60 - 69 kg

13 YR

Normal Vitals	P: **60 - 100** /min	R: **16 - 22** /min	SBP: **90 - 120** mmHg

Resuscitation

	Defib: 120 → 200 J
Prefill (1/10)	**Epi: 6 mL**
Prefill (2%)	**Lido: 3 → 1.5 mL**

Common

NS Bolus:	1,000 mL
Afrin:	1 spray
Albuterol:	2.5 mg
Ancef:	1 gram
Atrovent:	0.5 mg
Benadryl:	25 mg
D10:	100 mL
Decadron:	8 mg
Epi (allergy):	0.3 mg
Epi (brady/code):	0.6 mg
Epi Neb:	5 mg
Fentanyl:	30 mcg
Glucose:	15 grams
Ibuprofen:	400 mg
Keppra:	500 mg
Ketamine (pain):	18 mg
Narcan:	0.4 mg
Tylenol:	480 mg
TXA:	1 gram
Versed:	2.5 mg
Zofran:	4 mg

Misc

IV Cath:	18 g (green)
King Airway:	#3 (yellow)
iGel Airway:	#4 (green)
Pacing Rate:	80 /min
Cardioversion:	50 → 100 J

Less Common

Adenosine:	6 mg
Amiodarone:	150 mg
Atropine:	0.5 mg
Bicarbonate:	50 mEq
Calcium:	1 gram
Dopamine:	drop every 5 s
Glucagon:	1 mg
Haldol:	5 mg
Lidocaine (IO):	10 mg
Magnesium:	2 grams
Epi Push:	10 mcg
Etomidate:	18 mg
Insulin:	6 units
Ketamine (RSI):	100 mg
Levophed:	3 mcg/min
Neo Push:	100 mcg
Rocephin:	1 gram
Rocuronium:	60 mg
Succinylcholine:	100 mg

Reviewed: Apr 2023

##

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A

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