Welcome!

RESCUE*epc:*
Managing Acutely Ill Pediatric Patients in the Outpatient Setting

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Brought to you by:

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I am employed by PM Pediatric Care and am co-creator of RESCUE*epc*

Objectives

- Understand why the approach to emergencies in the urgent care environment is unique from current course offerings
- Introduction to the RESCUE*epc* approach
- High yield case review using the RESCUE*epc* approach
- Highlight essential concepts and clinical pearls for managing pediatric emergencies most likely to present to urgent care

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Pediatric office emergencies are not uncommon

Potentially life-threatening illnesses do occur

- **Respiratory and infectious emergencies, seizures, & dehydration are most common**

Providing urgent/emergent care until EMS arrives will be necessary at times

Stabilization of pediatric emergencies and early transfer for definitive care are critical… but how to approach this in the Urgent Care environment?

- **Which types of providers staff your clinic?**
- **What is their experience in managing critically ill children with the resources available in your setting?**
- **Who makes up your clinical support staff? What is their experience level?**

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EPP Options

Courses
BLS, PALS, ACLS, APLS, PEARS

Simulation
"mock" codes

Be Prepared!

Limitations:

PALS/APLS/ACLS – primarily focused on in-hospital care; adult courses do not address unique aspects of pediatric management

BLS – important basics covered, but not enough

PEARS – more info, but not as relevant to pediatric-trained clinicians

Simulation – a valuable tool, but needs something more

Bottom Line: Attempting to use knowledge/skills acquired these courses to manage patients in our setting often felt disconnected, poorly relevant, and not reflective of equipment, medications, personnel in our office

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We introduced a novel course that is *relevant to our setting, higher yield, and shorter/less time-intensive*

Pediatric Collective

RESCUE*epc*

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What is **RESCUE*epc***?

RE suscitation and

S tabilization of

C hildren in the

U rgent care

E nvironment

epc = **e**mergency
preparedness
course

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Advantages of RESCUE*epc*

- Far more relevant to the outpatient setting
- More practical, simplified approach
- Easy and efficient for adult medicine practitioners to complete
- All course content is reinforced through simulation scenarios
- ONE day course (only ½ day of in-person instruction)
  - Less expensive to teach & to run
  - Less time commitment for teachers & students

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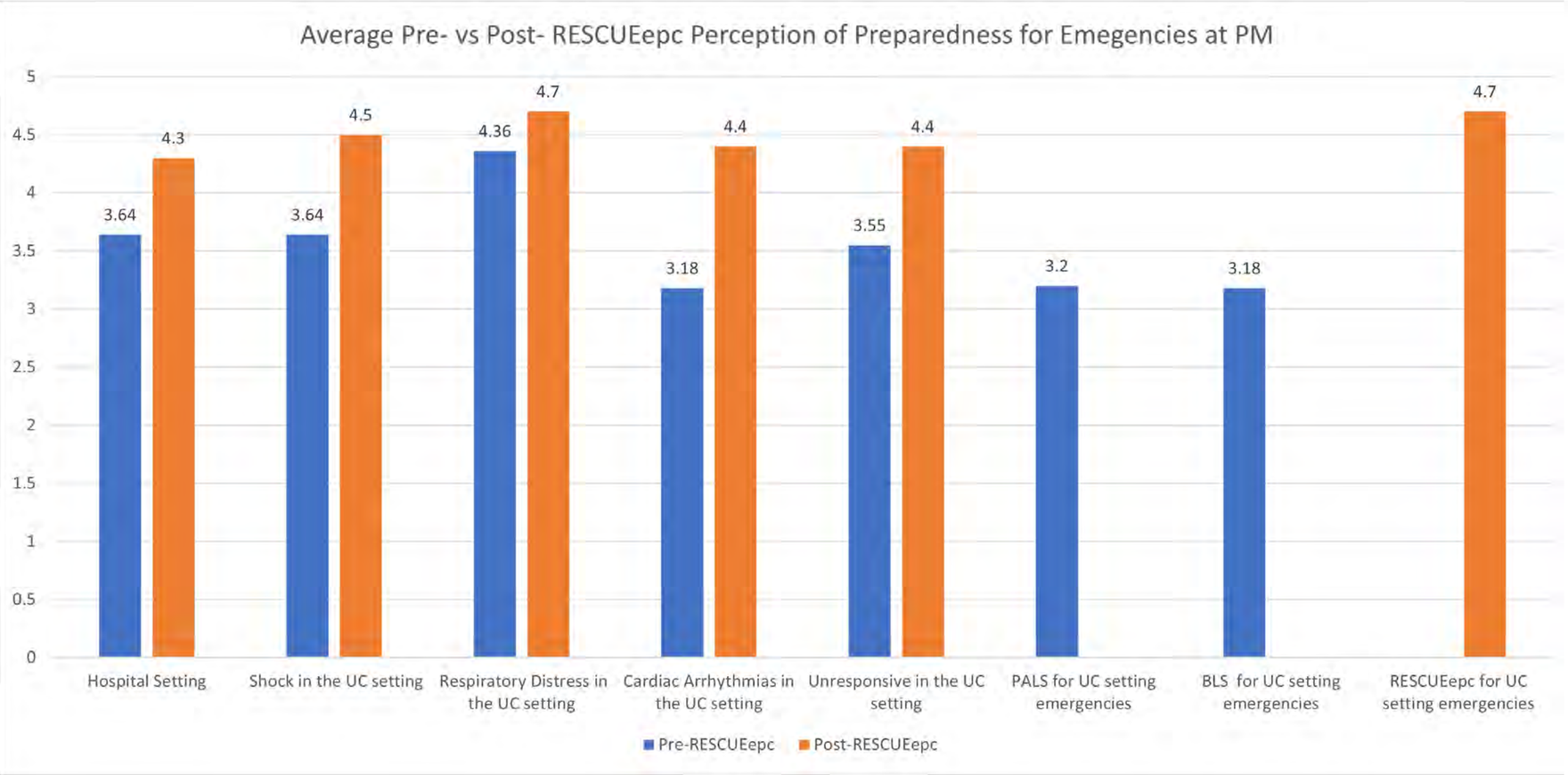
RESCUE*epc* attendees were asked (pre- and post-course) how prepared they felt to manage different types of emergencies based on their current training rated on a scale of 1-5 (1 being least prepared, 5 being most prepared)

They also rated (on the same 1-5 scale) how well PALS, BLS, and RESCUE*epc* prepared them to manage emergencies in the urgent care setting. PALS & BLS were rated pre-course and RESCUE*epc* was rated post-course



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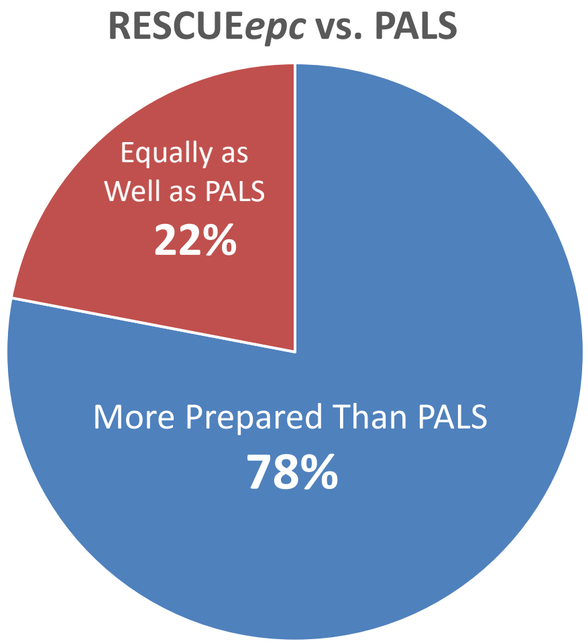

When asked to compare how well RESCUE*epc* prepared attendees to manage a critically ill patient in the urgent care setting, **100%** felt that RESCUE*epc* prepared them *equally as well or better than PALS*, with **nearly 80% (78%) reporting RESCUE*epc* to have <u>prepared them better than PALS</u>**.

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Course Description (Typically)

Target audience:

- Pediatric & non-pediatric physicians, APPs, nurses, Urgent Care Techs

Course format:

- Blended-learning approach

Course duration: 1 day

- Online modules (independent pre-coursework) – 4 hours
- Instructor-led classroom training – 4 hours

Assessment:

- Skills stations
- Simulation-based mega-codes
- Written post-test with minimum passing score of 80%

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Course Description (Today)

I have 30 minutes

- ✓RESCUE*epc* Highlights
- ✓Quintessential Cases
- ✓Pediatric Pearls

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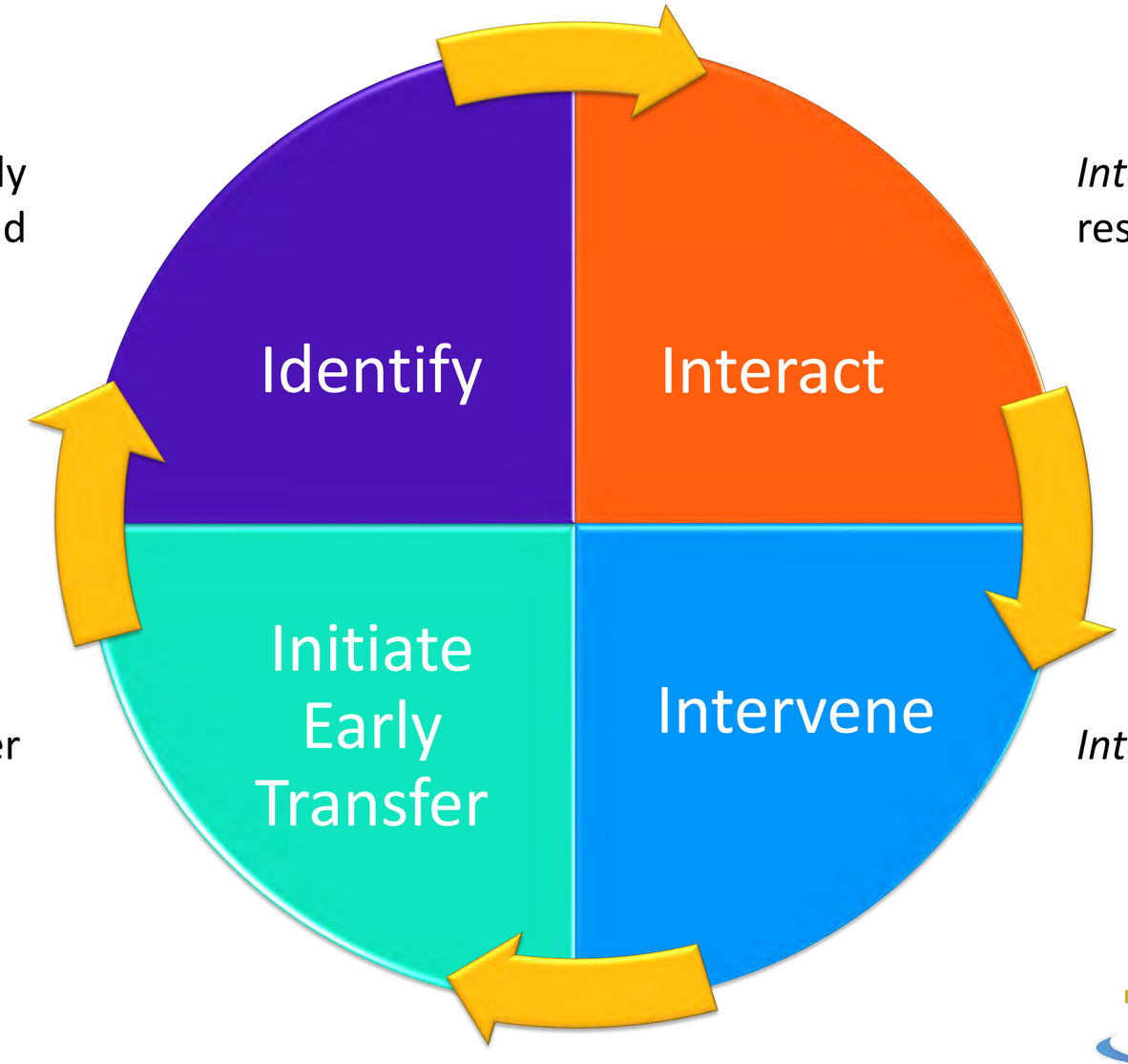
I^4 RESCUE Cycle: Overview

Identify a critically ill child

Interact with staff to mobilize resources



Initiate early transfer

Interventions in the UC setting

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The Specifics: RESCUE Protocol

Initial Impression

PAT

Mobilize Resources

- Alert provider and team
- Obtain necessary equipment

Critical Interventions

- Primary Assessment (Survey) & Vitals:
  - Airway
  - Breathing
  - Circulation
- Secondary Assessment (Survey)

Directed Interventions

For Example:

- Resp
  - Albuterol/Ipratropium
  - Racemic Epinephrine
  - Dexamethasone
- Shock
  - Normal Saline
- Cardiac
  - Adenosine
  - Epinephrine

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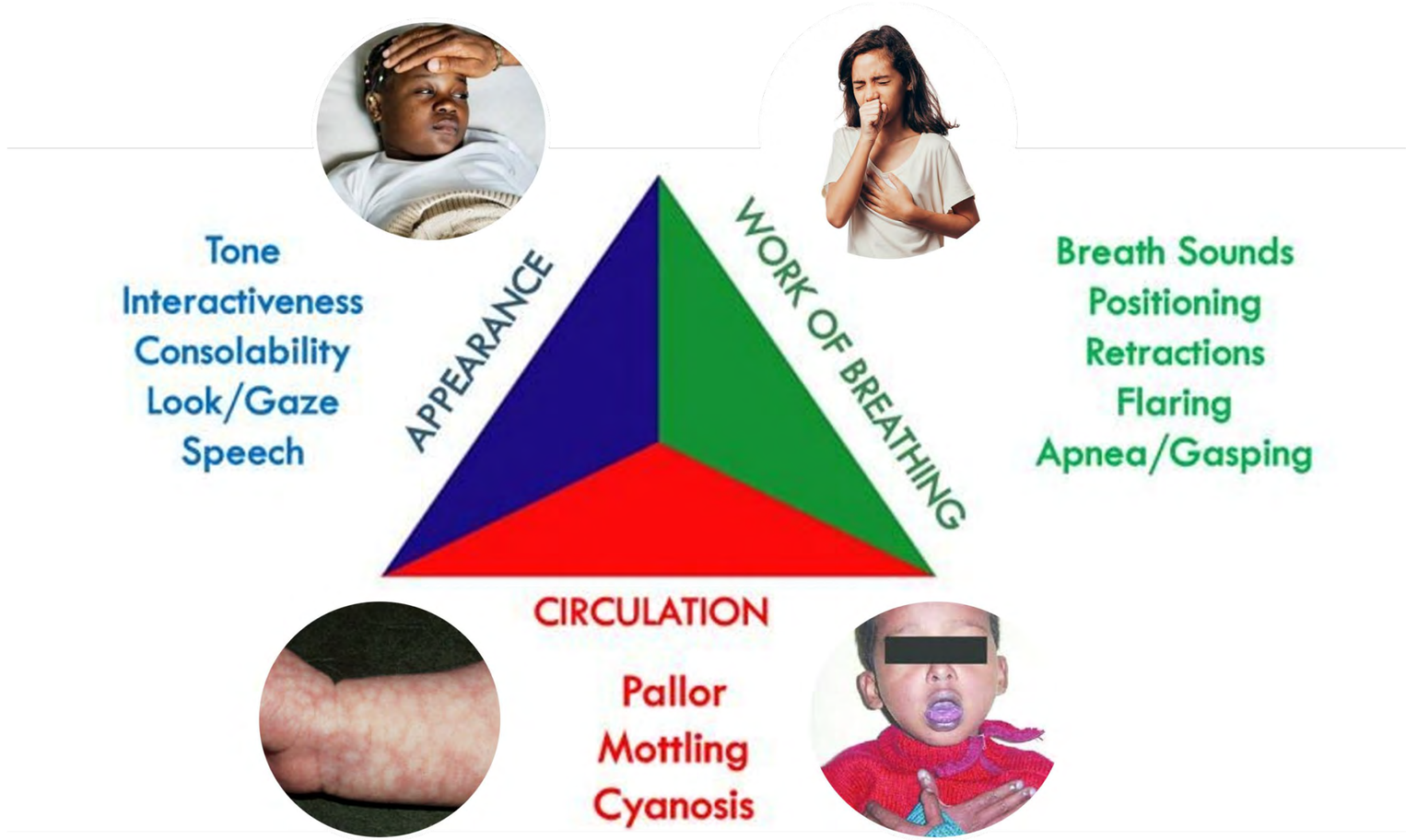
Identify

RESCUE Protocol

Initial Impression

Pediatric Assessment Triangle



Source: Azouz H, Gerrits P, Surhigh J, Kalladi Puthanpurayil S. COVID-19 in an Infant with Congenital Adrenal Hyperplasia: A Case Report. *Glob Pediatr Health*. 2020 Oct 5;7. doi: 10.1177/2333794X20958933

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Identify

Initial Impression: PAT

STABLE

RESPIRATORY DISTRESS → FAILURE

CNS/METABOLIC

COMPENSATED → HYPOTENSIVE SHOCK

CARDIOPULMONARY FAILURE

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RESCUE Protocol

Initial Impression

PAT

Mobilize Resources

- Alert provider and team
- Obtain necessary equipment

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Interact

Team Roles in the Urgent Care Setting

Full Team Roles

Front Desk Associate
- Identify critically ill patient on arrival and alert team
- Can help transfer patient to treatment room
- Activate EMS or 911 once prompted by provider
- Complete EMS call sheet
- Alert other patients that there may be a delay in care

Nurse/UC Tech
- Assist in transfer of patient to treatment room
- Establish IV access (if needed)
- Draw up and deliver medications / IVF

XRT
- Clear treatment room (if occupied)
- Record all pertinent data and medications given
- Can obtain vitals
- Assume Reception or MA duties if one not present

MA
- Locate and bring code cart to resuscitation
- Assist in procedures when needed
- Can locate and obtain equipment if needed
- Alert other patients in office that there may be a delay in care during emergency
- Can obtain vitals

Provider
- **Team leader** – all communication routes through the team leader
- Initial assessment and alert staff to notify if EMS is needed
- Direct and administer care
- Will incorporate nursing roles if nurse not present

Small Team Roles

Front Desk Associate/MA/XRT
- Identify and alert team to critically ill patient
- Helps to transfer patient to treatment room
- Notify other patients of critical patient and delay
- Bring code cart, O_2, other equipment
- Can assist with vitals
- Complete EMS call sheet and activate EMS

Nurse/UC Tech
- IV/IO Access, draw up meds
- Clears treatment room if needed
- Records
- Obtain vitals
- Can help with equipment
- Complete EMS call sheet and activate EMS (or MA)

Provider
- **Team Leader** – All communication routed through team leader, medical decision making and administering care
- Initial Assessment – ABCs
- Incorporate nursing roles if no nurse present (draw up and administer medications, direct O_2, assist with IV/IO if needed)
- Alert staff to notify EMS if needed

Knowing roles is crucial to minimizing errors and anxiety

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Interact

Mobilize Personnel

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Interact

Mobilize Equipment

Vitals Cart	**Glucometer, IV pole** Consider manual BP cuff, portable pulse oximeter, rectal thermometer, as needed
Code Cart	**AED** **Suction** **Critical Care Guide** Consider Anaphylaxis Kit, EKG, if appropriate
Oxygen Supplies	**Oxygen tank** **BVM** **Oxygen masks, nasal cannula** Consider nebulizer, if needed

Intervene

RESCUE Protocol

Initial Impression

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Critical Interventions

- Primary Assessment (Survey) & Vitals:
  - Airway
  - Breathing
  - Circulation
- Secondary Assessment (Survey)

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Intervene

Critical Interventions: ABCs

Critical priorities that MUST happen first:

Airway	Position, suction, NPA
Breathing	O_2 via NC, simple FM, NRB, BVM
Circulation	IV/IO access, fluid resuscitation

Intervene

Secondary Assessment: Obtain Focused History

S	Signs and symptoms
A	Allergies
M	Medications
P	Past medical history
L	Last meal
E	Events leading up to incident

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Intervene

RESCUE Protocol

Initial Impression

PAT

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- Alert provider and team
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Critical Interventions

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- Secondary Assessment (Survey)

Directed Interventions

For Example:

- Resp
  - Albuterol/Ipratropium
  - Racemic Epinephrine
  - Dexamethasone
- Shock
  - Normal Saline
- Cardiac
  - Adenosine
  - Epinephrine

These first 3 steps will be the same for all critically ill patients, regardless of etiology

At this stage, the underlying cause may become apparent & directed interventions should be initiated

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Directed Interventions

Directed interventions for specific etiologies are discussed in detail in their corresponding modules

- Respiratory
- Shock
- Cardiac
- Unresponsive/Seizure Patient

Shock

↑Heart Rate
+/- ↓Blood Pressure
+/- ↑Capillary Refill
+/- AMS, pallor

Click each ↗ to view more details

Initial Impression

Pediatric Assessment Triangle

Mobilize Resources

Alert provider and team

Obtain necessary equipment

Critical Interventions

Primary Assessment (Survey) & Vitals:

- Airway
- Breathing
- Circulation

Secondary Assessment (Survey)

Directed Interventions

Hypovolemic Shock

Hx of V/D
Poor PO
Trauma

- Consider CMP, CBC, dextrose
- NS bolus 20mL/kg, (max 1L) wide open, consider ondansetron, dextrose bolus PRN
- Repeat vitals and reassess frequently (q5-15 min); repeat NS bolus (up to 3x) until improved vitals/exam
- CONSIDER EARLY TRANSFER
  If hypotensive shock or poor response to above

Distributive Shock

Allergic reaction
Bounding pulses
Fever
Warm

- Consider CMP, CBC, dextrose, cultures if sepsis suspected
- NS bolus 20mL/kg wide open, max of 80mL/kg
- Ceftriaxone 75-100 mg/kg IM/IV (max 1g) if sepsis, & give EARLY
- Epi IM (1mg/mL) 0.5 mg <30kg; 0.3mg if >30kg, if anaphylaxis
- Repeat vitals and reassess frequently (q5-15 min); repeat bolus (up to 3X) until improved, antipyretics PRN
- CONSIDER EARLY TRANSFER
  If no improvement, ↓BP, or need to repeat Epi if anaphylaxis

Cardiogenic Shock

Possible ↑ respiratory effort
↑↑ HR
Cold
Mottled
Palpable liver edge
JVD
Crackle
Murmur

- If SVT suspected, vagal maneuvers (ice, bearing down, etc.)
- Adenosine 0.1mg/kg (max 6mg first dose); 0.2mg/kg (max 12 mg) for 2nd /3rd dose PRN, rapid IV push
- NS bolus (10mL/kg) over 30 min - LOW AND SLOW
- Repeat vitals and reassess frequently (q5-15min); repeat bolus (up to 3X) until improved vitals/exam
- IMMEDIATE TRANSFER

Obstructive Shock

Absent BS
Muffled heart sounds
↑ respiratory effort
Chest pain
+/- tracheal deviation
History of trauma

- If tracheal deviation, needle decompression, O_2 & IV/IO access, DO NOT attempt CXR
- Obtain IV access and consider IVF
- IMMEDIATE TRANSFER

Shock Algorithm

Pediatric Collective | RESCUE*epc*

Cardiac Arrhythmia

↓/↑ Heart Rate
Pallor/Cyanosis
Dyspnea
Chest Discomfort
(Pre)Syncope
AMS

If unresponsive:
Check pulse
Initiate CPR if pulseless
Attach AED and follow
Unresponsive Patient Pathway

Initial Impression

Pediatric Assessment Triangle

Mobilize Resources

Alert provider and team

Obtain necessary equipment

Critical Interventions

Primary Assessment (Survey) & Vitals:
- Airway
- Breathing
- Circulation

Secondary Assessment (Survey)

Click each ↗ to view more details

↓ HR (<60)

Asymptomatic Normal Perfusion → **Stable Bradycardia**
- Consider EKG
- Normal EKG = No intervention
- TRANSFER for 2° Type II or 3° heart block
- Any other abnormal EKG = Cardiology follow-up

Symptomatic Impaired Perfusion → **Unstable Bradycardia**
- ↓ BP, ↓ SpO_2 with AMS = Initiate CPR & attach AED
- Epinephrine 0.01 mg/kg (0.1 mg/mL) IV q 3-5 min
- Address possible causes (H's and T's)
- TRANSFER

↑ HR for age

<180 (<220 infant) Normal Perfusion → **Likely Sinus Tachycardia**
- If no identifiable cause or HR disproportionately high, perform EKG
- Intervene accordingly & reassess

>180 (>220 infant) Normal Perfusion → **Possible Stable SVT (vs Stable Ventricular Tachycardia)**
- Obtain EKG
- See **SVT Management**
- IMMEDIATE TRANSFER

>180 (>220 infant) Impaired Perfusion → **Unstable Tachycardia**
- Perform EKG AFTER ABC's established & transfer initiated.
- If SVT, see **SVT Management**
- IMMEDIATE TRANSFER

Directed Interventions

Cardiac Arrhythmia Algorithm

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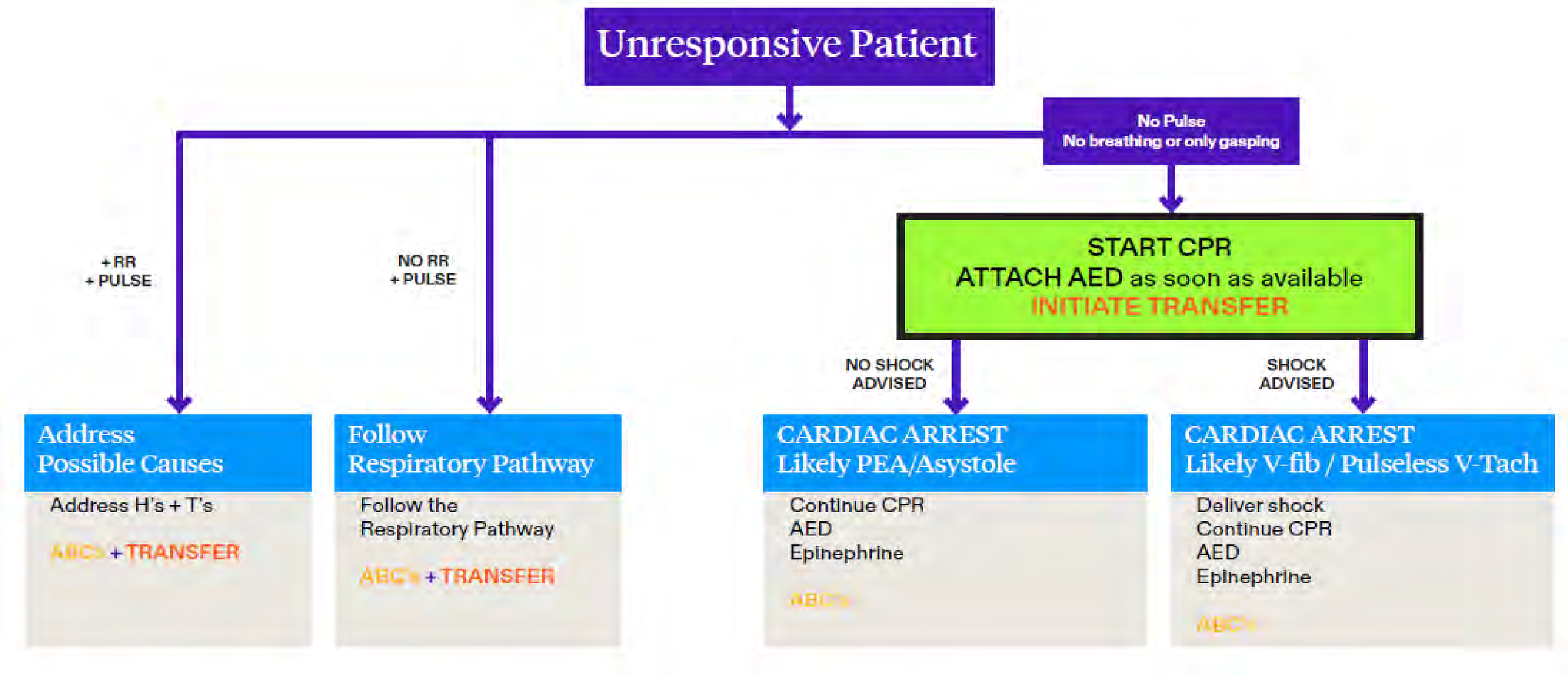

Unresponsive Patient Algorithm

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Initiate Early Transfer

Determine disposition in a timely manner

Better outcomes with early transfer

Activate early, especially for signs of impending cardiorespiratory failure

Reassessment

Improved appearance? Improved effort? Improved vitals?

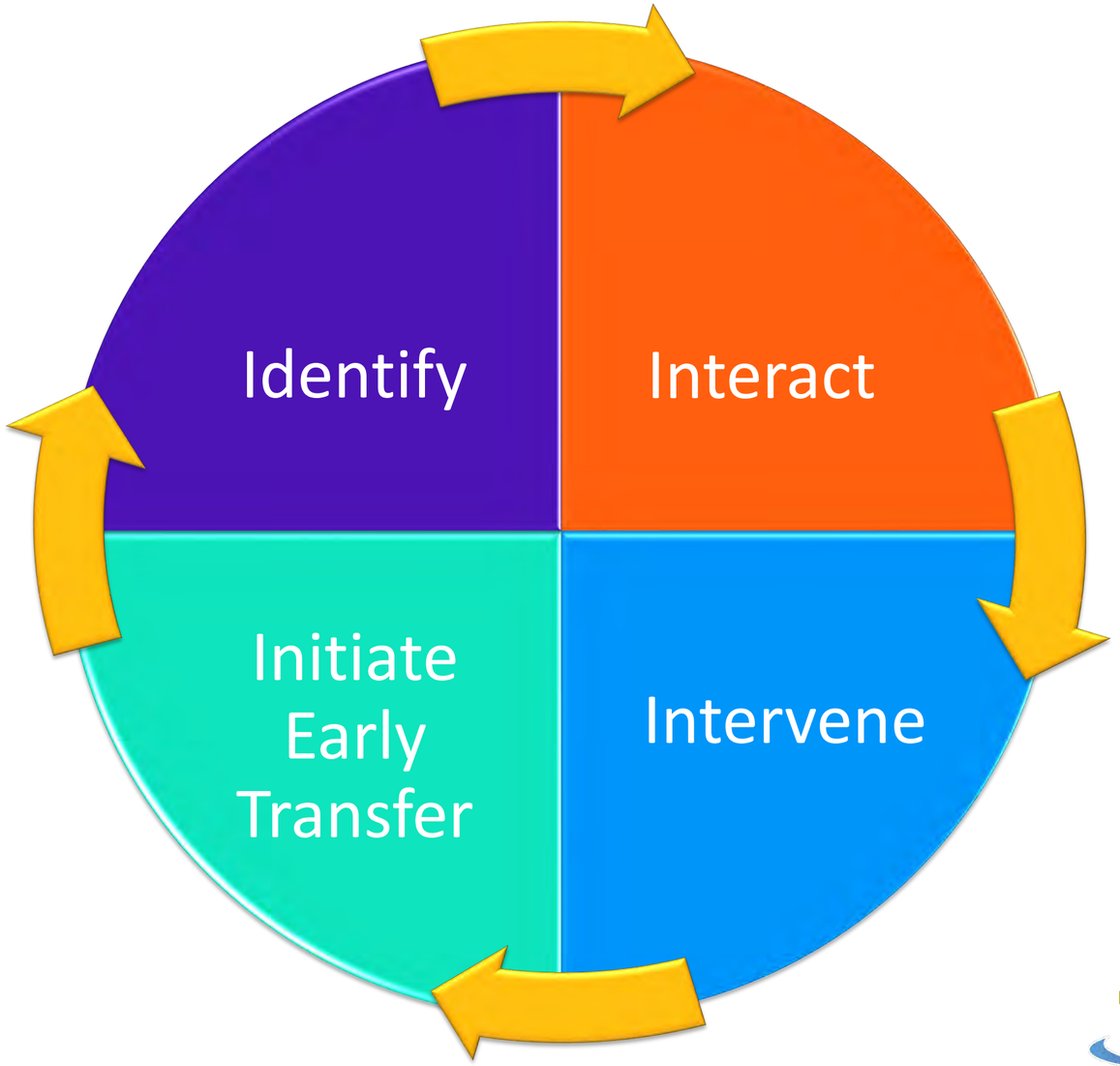
Appropriate resource allocation and office capability

"What is the likelihood that I will be able to fix this patient & send them home?"

"Just because I *can* manage this patient, does it mean I should?"

When in doubt, send them out!

I^4 RESCUE Cycle



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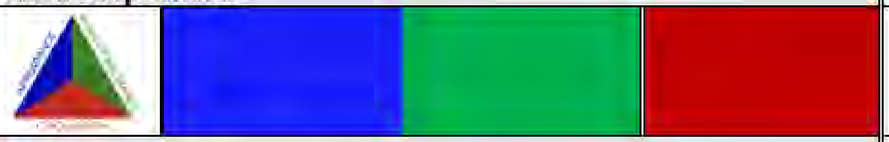
Ingraining the Habit

Identify	Initial Impression 	Identify
Interact	Vitals T: P: RR: SpO2 Request: BP: Wt:	Interact
Intervene	ABC's: Primary Assessment A B C D AVPU: E	Critical Interventions
	Secondary Assessment S A M P L I	Directed Interventions Reassessment (if asked): P: RR: SpO2 Exam:
Disposition/ Transfer	Early Transfer	Recognizes Indications for Early Transfer

Case 1

6 year old male with difficulty breathing for the last 6 hours in the setting of URI symptoms for 2 days

Scenario: 6 year old male with difficulty breathing for the last 6 hours in the setting of URI symptoms for 2 days

Identify	Initial Impression	Identify
Interact	Vitals	Interact
Intervene	ABC's: Primary Assessment A B C D E	Critical Interventions
	Secondary Assessment S A M P L E	Directed Interventions
Initiate Early Transfer	Early Transfer	Recognize Indications for Early Transfer

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Pediatric Pearls: Asthma/RAD

- Beware of the “Happy Wheezer”
- V/Q mismatch during recruitment after bronchodilators can cause transient dip in SpO_2
- Drops in heart rate, respirations, and SpO_2 with decreased activity can be an ominous sign for impending failure
- Nebulizers can be scary: Allow parents to assist, blow-by
- Inhaler with spacer vs nebulized bronchodilator
- Dexamethasone over prednisolone
- Severity tolerated before transfer may depend on staffing and census

Case 2

12 year old female with sudden onset of rash and labored and noisy breathing

Scenario: 12 year old female with sudden onset of rash and labored and noisy breathing

Identify	Initial Impression	Identify
Interact	Vitals	Interact
Intervene	ABC's: Primary Assessment A B C D E	Critical Interventions
	Secondary Assessment S A M P L E	Directed Interventions
Anticipate Early Transfer	Early Transfer	Recognize Indications for Early Transfer

Pediatric Pearls: Anaphylaxis

- ALWAYS obtain a BP for anaphylaxis
- Epinephrine administration is the priority – DO NOT DELAY
- Keep epinephrine dosing simple:
  - < 30 kg = 0.15 mg
  - > 30 kg = 0.3 mg
  - can give 0.5 mg for larger patients (> 50 kg)
- Warn patients and parents of epinephrine side effects
- Critical interventions (ABC's) still first, but no other Directed Intervention should supersede epinephrine
- Cetirizine is now the standard over diphenhydramine
- Hypotension deserves transfer

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Case 3

3 year old male with vomiting and diarrhea for 3 days, increasingly obtunded over the past 2 hours

Scenario: 3 year old male with vomiting and diarrhea for 3 days, increasingly obtunded over the past 2 hours

Identify	Initial Impression	Identify
		
Interact	Vitals	Interact
Intervene	ABC's: Primary Assessment	Critical Interventions
	A B C D E	
	Secondary Assessment	Directed Interventions
	S A M P L E	
Immediately Transfer	Early Transfer	Recognize Indications for Early Transfer

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Pediatric Pearls: Hypovolemic Shock

- ALWAYS obtain a BP and D-stick for an initial impression of lethargy (be more discerning with parental report of lethargy)
  - ❖ **REMEMBER**: ↓ BP = OMINOUS late sign of impending failure in children
- Obtaining BP can be challenging in children
  - ✓ Ensure correct cuff size
  - ✓ Consider manual instead of machine
- If patient has their own glucometer with them, use their lancet
- Have list of normal values by age of all vitals readily available
- Generally, ondansetron with ORT sufficient for most pediatric AGE, but NOT for a patient with hypotension
- For hypotension and/or AMS use Push-Pull method for IV fluid delivery
- Hypotension deserves transfer

Case 4

7 month old male with poor feeding, breathing difficulty & decreased wet diapers since early this morning

Scenario: 7 month old male with poor feeding, breathing difficulty & decreased wet diapers since early this morning

Identify	Initial Impression	Identify
Interact	Vitals	Interact
Intervene	ABC's: Primary Assessment A B C D E	Critical Interventions
	Secondary Assessment S A M P L E	Directed Interventions
Initiate Early Transfer	Early Transfer	Recognize Indications for Early Transfer

EKG

Pediatric Pearls: SVT with Cardiogenic Shock

- Vagal Maneuvers

Knees to Chest

Blow Into Syringe

- 10 mL syringe x 15 sec while semi-recumbent,
- then lay with legs raised x 45 sec

Ice to Face

- Sudden, fast
- Do not block airway

- IV access should ideally be in the antecubital location
- Rapid push is the saline after the adenosine, not the actual adenosine
- Maintain continuous EKG during interventions
- Transfer due to tendency to revert

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Case 5

4 year old female who began seizing in car just prior to arrival is carried in by parent

Scenario: 4 year old female who began seizing in car just prior to arrival is carried in by parent

Identify	Initial Impression	Identify
		
Interact	Vitals	Interact
Intervene	ABC's: Primary Assessment	Critical Interventions
	A B C D E	
	Secondary Assessment	Directed Interventions
	S A M P L E	
Consider Early Transfer	Early Transfer	Recognize Indications for Early Transfer

Pediatric Pearls : Unresponsive/Seizing Patient

- Preferred and safest methods of midazolam delivery are buccal or IN
- Buccal Midazolam
  - Best administered with child lying on their side. Can place more anteriorly (in front and below lower front teeth) when child is supine or administer with child held upright
  - Use a syringe (no needle) to **place liquid medicine between**

- Do not forget option of a D-stick as cause for seizure

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Initiate Early Transfer

Determine disposition in a timely manner

Immediate transfer if:

Any red flags are present

or

Any key interventions for specific conditions are repeated

Examples:

- >1 racemic epi for croup
- >1 epi for anaphylaxis
- Asthma/croup presenting with significant hypoxia
- Altered mental status
- Neurovascular compromise
- Seizures (unless simple febrile)

Early transfer to advanced care can be crucial to successful management of the critically ill child

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Questions?

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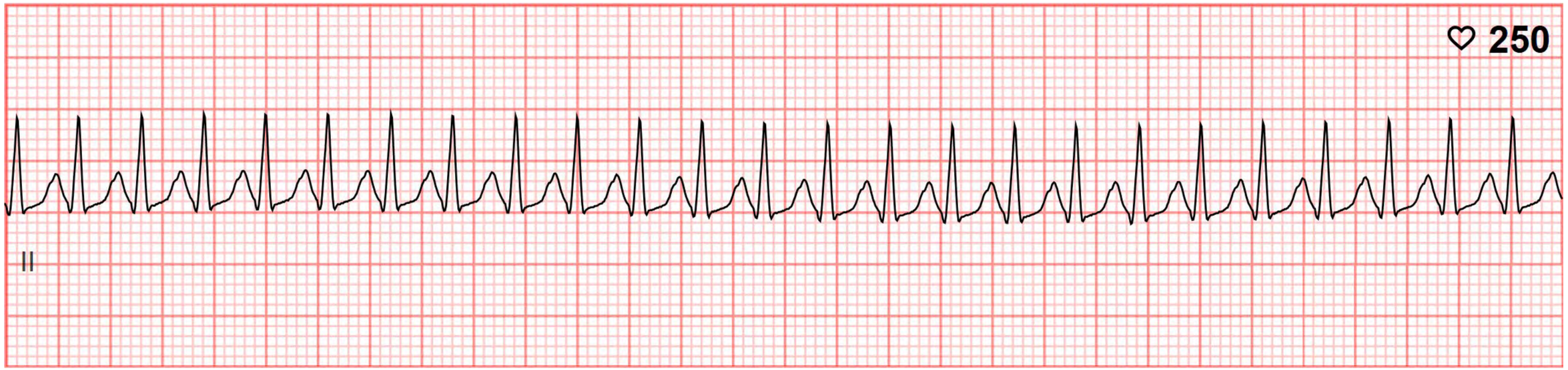


Front Desk Associate

- Identify critically ill patient on arrival and alert team
- Can help transfer patient to treatment room
- Activate EMS or 911 once prompted by provider
- Complete EMS call sheet
- Alert other patients that there may be a delay in care

MA

- Locate and bring code cart to resuscitation
- Assist in procedures when needed
- Can locate and obtain equipment if needed
- Alert other patients in office that there may be a delay in care during emergency
- Can obtain vitals

Nurse/UC Tech

- Assist in transfer of patient to treatment room
- Establish IV access (if needed)
- Draw up and deliver medications / IVF

XRT

- Clear treatment room (if occupied)
- Record all pertinent data and medications given
- Can obtain vitals
- Assume Reception or MA duties if one not present

Provider

- **Team leader** – all communication routes through the team leader
- Initial assessment and alert staff to notify if EMS is needed
- Direct and administer care
- Will incorporate nursing roles if nurse not present

Front Desk Associate/MA/XRT

- Identify and alert team to critically ill patient
- Helps to transfer patient to treatment room
- Notify other patients of critical patient and delay
- Bring code cart, O_2, other equipment
- Can assist with vitals
- Complete EMS call sheet and activate EMS

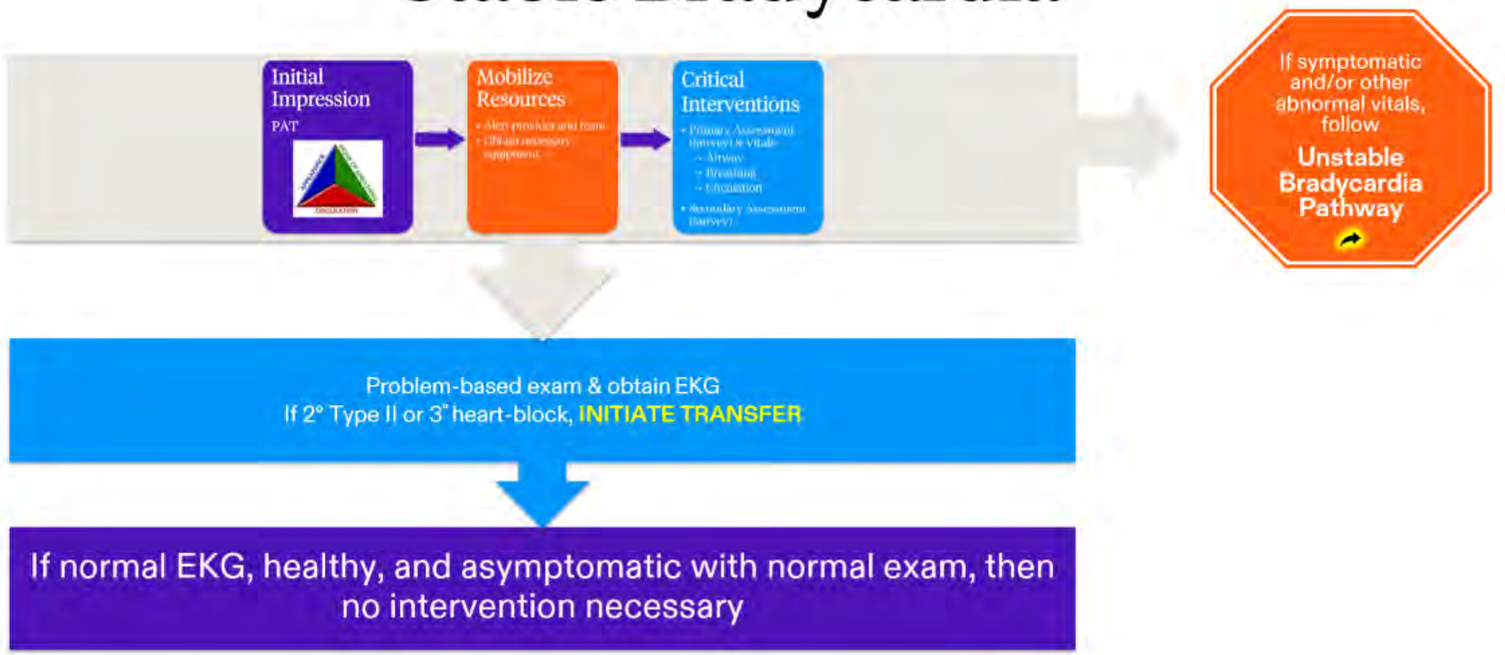
Nurse/UC Tech

- IV/IO Access, draw up meds
- Clears treatment room if needed
- Records
- Obtain vitals
- Can help with equipment
- Complete EMS call sheet and activate EMS (or MA)

Provider

- **Team Leader** – All communication routed through team leader, medical decision making and administering care
- Initial Assessment – ABCs
- Incorporate nursing roles if no nurse present (draw up and administer medications, direct O_2, assist with IV/IO if needed)
- Alert staff to notify EMS if needed

Stable Bradycardia



Stable Bradycardia

Initial Impression

PAT

Mobilize Resources

- Alert provider and team
- Obtain necessary equipment

Critical Interventions

- Primary Assessment (Survey) & Vitals:
  - Airway
  - Breathing
  - Circulation
- Secondary Assessment (Survey)

If symptomatic and/or other abnormal vitals, follow

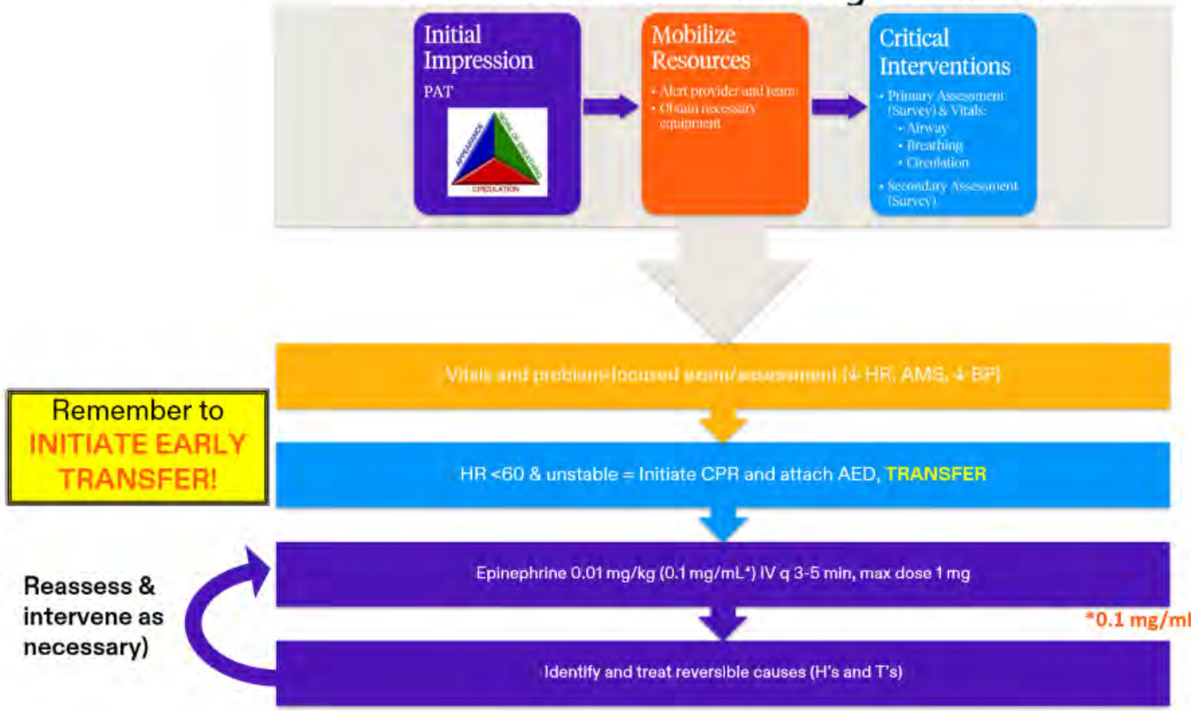
Unstable Bradycardia Pathway

Problem-based exam & obtain EKG

If 2° Type II or 3° heart-block, **INITIATE TRANSFER**

If normal EKG, healthy, and asymptomatic with normal exam, then no intervention necessary

Unstable Bradycardia



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Unstable Bradycardia

Initial Impression

PAT

Mobilize Resources

- Alert provider and team
- Obtain necessary equipment

Critical Interventions

- Primary Assessment (Survey) & Vitals:
  - Airway
  - Breathing
  - Circulation
- Secondary Assessment (Survey)

Vitals and problem-focused exam/assessment (↓ HR, AMS, ↓ BP)

HR <60 & unstable = Initiate CPR and attach AED,TRANSFER

Epinephrine 0.01 mg/kg (0.1 mg/mL*) IV q 3-5 min, max dose 1 mg

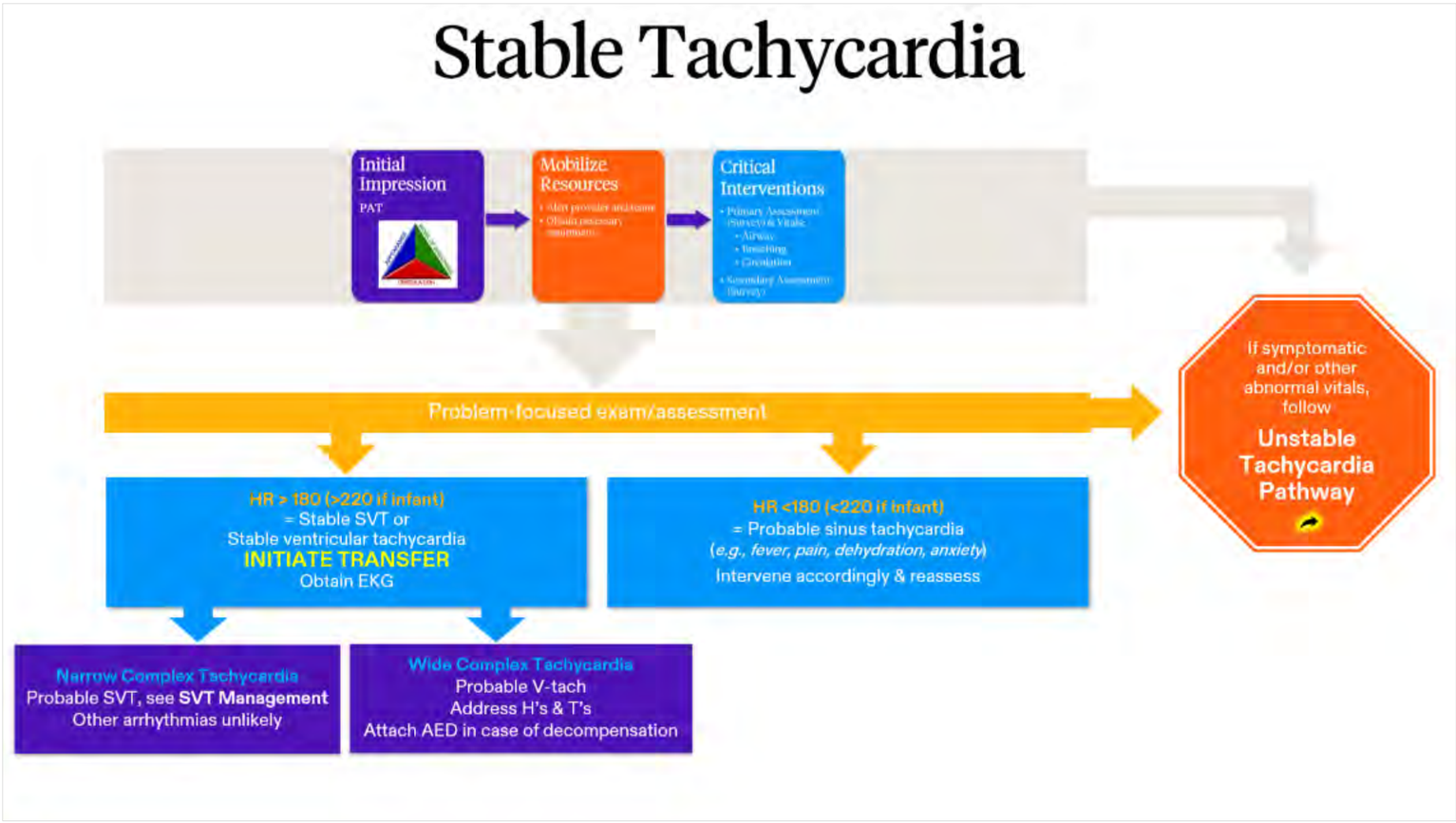
Identify and treat reversible causes (H's and T's)

Reassess & intervene as necessary)

Remember to INITIATE EARLY TRANSFER!

*0.1 mg/mL formulation = formerly 1:10, 000

Stable Tachycardia



EB MEDICINE

Stable Tachycardia

Initial Impression

PAT

Mobilize Resources

- Alert provider and team
- Obtain necessary equipment

Critical Interventions

- Primary Assessment (Survey) & Vitals:
  - Airway
  - Breathing
  - Circulation
- Secondary Assessment (Survey)

Problem-focused exam/assessment

If symptomatic and/or other abnormal vitals, follow

Unstable Tachycardia Pathway

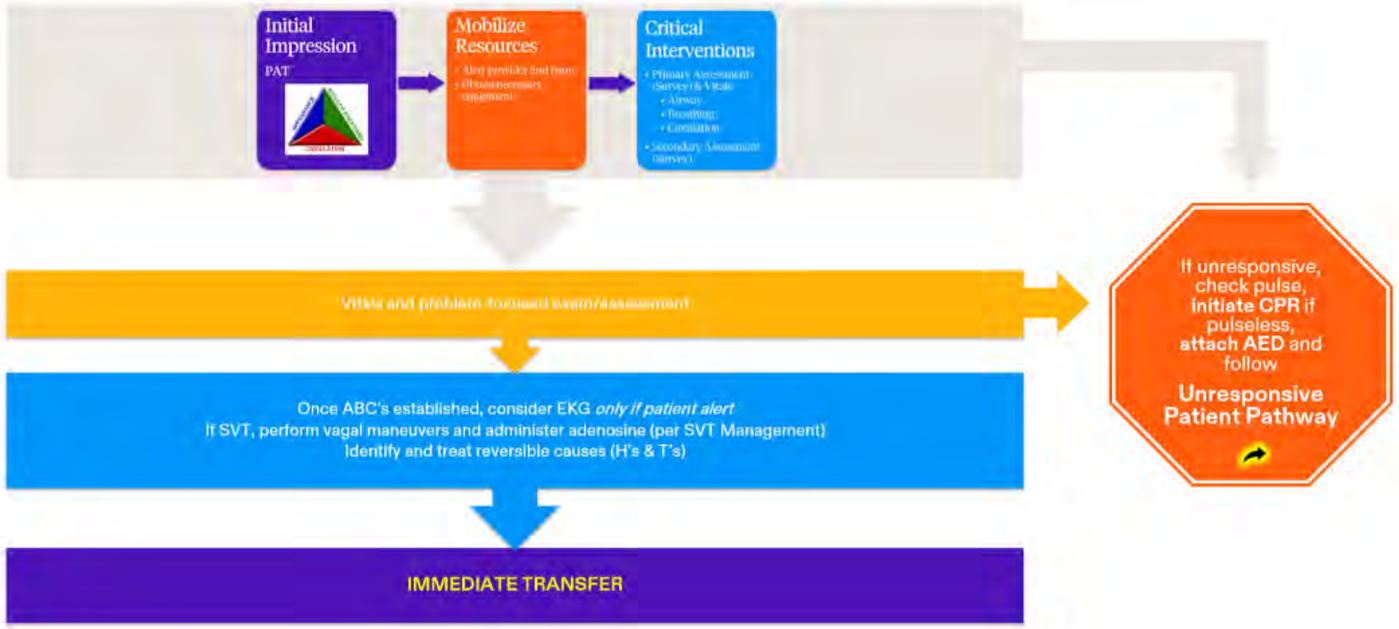
HR > 180 (>220 if infant)
= Stable SVT or
Stable ventricular tachycardia
INITIATE TRANSFER
Obtain EKG

HR <180 (<220 if infant)
= Probable sinus tachycardia
(*e.g., fever, pain, dehydration, anxiety*)
Intervene accordingly & reassess

Narrow Complex Tachycardia
Probable SVT, see **SVT Management**
Other arrhythmias unlikely

Wide Complex Tachycardia
Probable V-tach
Address H's & T's
Attach AED in case of decompensation

Unstable Tachycardia



Unstable Tachycardia

Initial Impression

PAT

Mobilize Resources

- Alert provider and team
- Obtain necessary equipment

Critical Interventions

- Primary Assessment (Survey) & Vitals:
  - Airway
  - Breathing
  - Circulation
- Secondary Assessment (Survey)

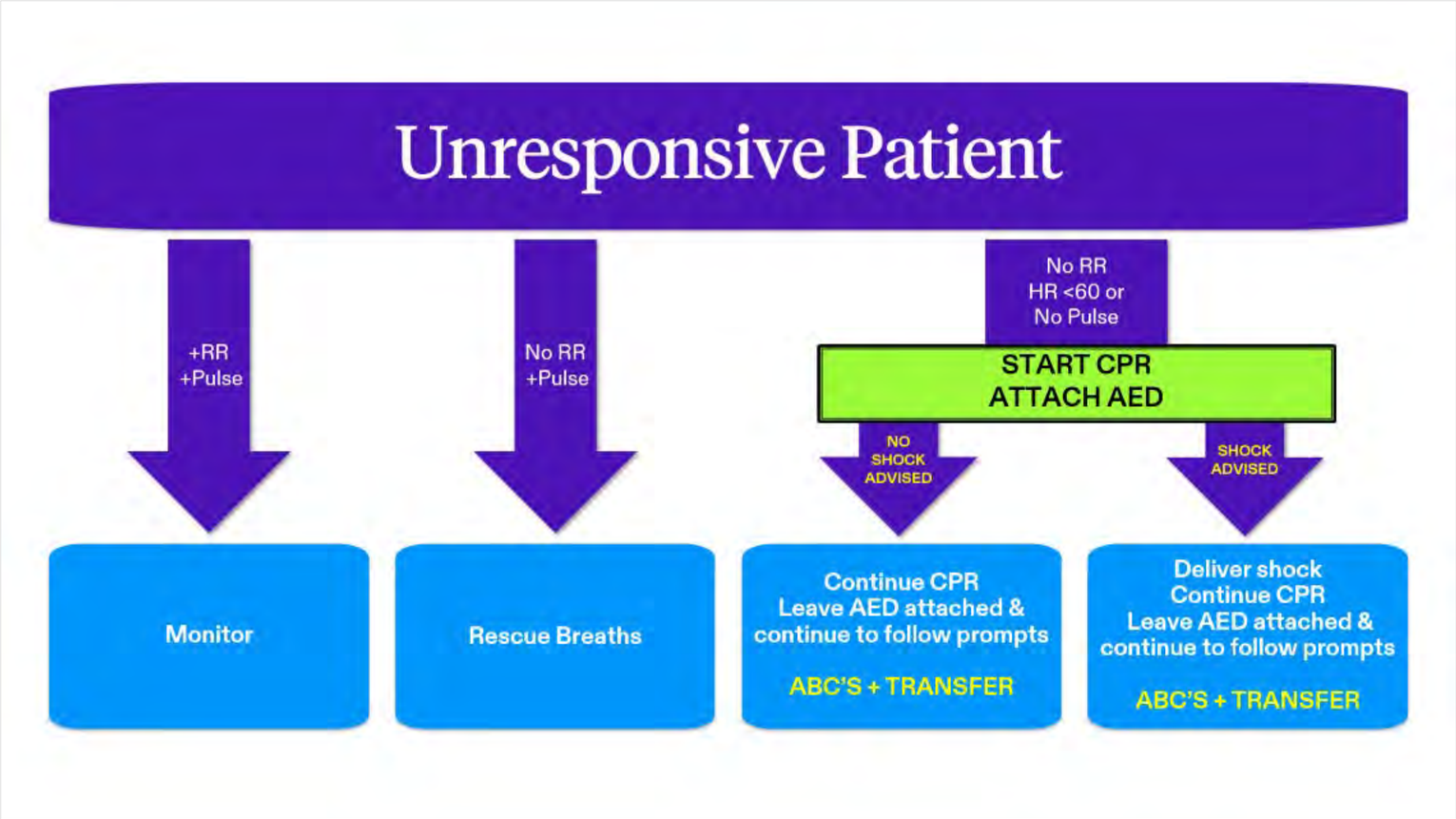
Vitals and problem-focused exam/assessment

Once ABC's established, consider EKG *only if patient alert*
If SVT, perform vagal maneuvers and administer adenosine (per SVT Management)
Identify and treat reversible causes (H's & T's)

IMMEDIATE TRANSFER

If unresponsive, check pulse, **initiate CPR** if pulseless, **attach AED** and follow

Unresponsive Patient Pathway


Unresponsive Patient
+RR
+Pulse
No RR
+Pulse
No RR
HR <60 or
No Pulse
START CPR
ATTACH AED
NO
SHOCK
ADVISED
SHOCK
ADVISED
Monitor
Rescue Breaths
Continue CPR
Leave AED attached &
continue to follow prompts
ABC'S + TRANSFER
Deliver shock
Continue CPR
Leave AED attached &
continue to follow prompts
ABC'S + TRANSFER

EB MEDICINE

Unresponsive Patient

+RR
+Pulse

Monitor

No RR
+Pulse

Rescue Breaths

No RR
HR <60 or
No Pulse

START CPR
ATTACH AED

NO
SHOCK
ADVISED

Continue CPR
Leave AED attached &
continue to follow prompts

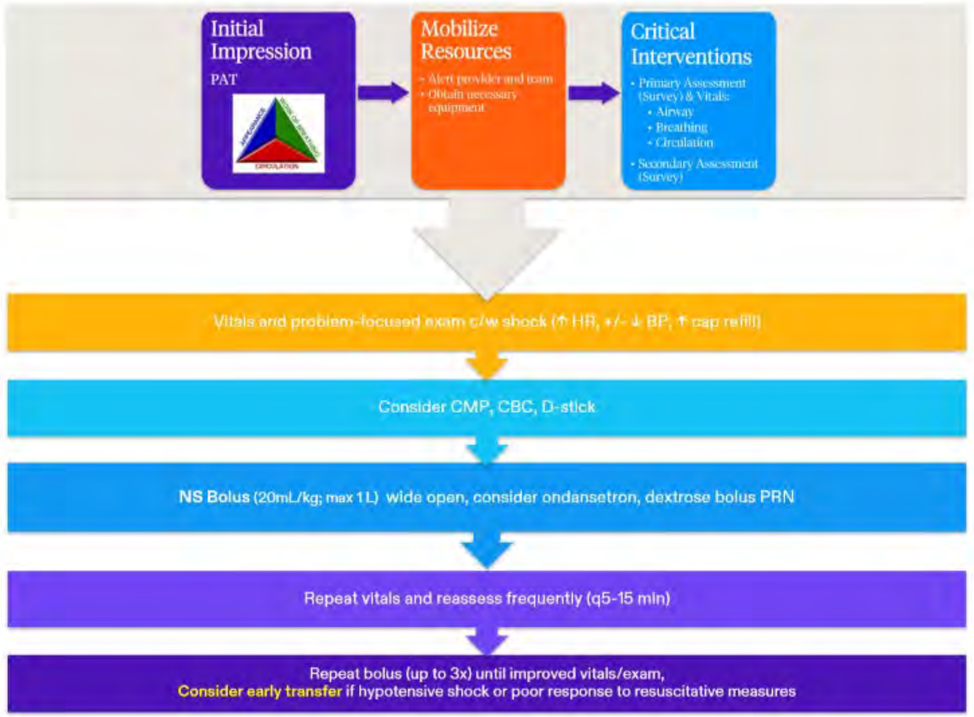
ABC'S + TRANSFER

SHOCK
ADVISED

Deliver shock
Continue CPR
Leave AED attached &
continue to follow prompts

ABC'S + TRANSFER

Hypovolemic Shock



Hypovolemic Shock

Initial Impression

PAT

Mobilize Resources

- Alert provider and team
- Obtain necessary equipment

Critical Interventions

- Primary Assessment (Survey) & Vitals:
  - Airway
  - Breathing
  - Circulation
- Secondary Assessment (Survey)

Vitals and problem-focused exam c/w shock (↑ HR, +/- ↓ BP, ↑ cap refill)

Consider CMP, CBC, D-stick

NS Bolus (20mL/kg; max 1L) wide open, consider ondansetron, dextrose bolus PRN

Repeat vitals and reassess frequently (q5-15 min)

Repeat bolus (up to 3x) until improved vitals/exam,
Consider early transfer if hypotensive shock or poor response to resuscitative measures

Distributive Shock

Vitals and problem-focused exam (r/o shock)
(tachycardia, ↓cap refill, bounding pulses, warm skin, rash, s/s of anaphylaxis)

Anaphylaxis Kit,
consider CMP, CBC, D-stick, cultures if sepsis suspected (DO NOT delay abx to obtain cultures)

NS Bolus (20 mL/kg) to max 80 mL/kg; if sepsis, **ceftriaxone** IM/IV (75-100 mg/kg, max 1 g; early is key)
If anaphylaxis, **Epi IM** (0.15 mg<30 kg, 0.3 mg if >30 kg), antipyretics PRN

Repeat vitals and reassess frequently (q5-15 min)

Repeat bolus (up to 3x) until improved vitals/exam
Consider early transfer if no/poor improvement, ↓ BP, or need to repeat Epi if anaphylaxis

Adjunctive Anaphylaxis Interventions	
diphenhydramine	•1-1.25mg/kg, max 50mg IM/IV/PO
dexamethasone	•0.6mg/kg IM/IV/PO; max 16mg
cetirizine	•10mg >6yo, 5mg <5yo •Only if able to take PO
Nebulizer treatment	•Racemic epinephrine (0.5mg in 3mL NS) if stridor •Albuterol (2.5mg/3mL) if wheezing

****Low BP in context of anaphylaxis can be ominous – watch closely****

****If in shock, do not administer PO meds, IV/IM only****

Distributive Shock

Initial Impression

PAT

Mobilize Resources

- Alert provider and team
- Obtain necessary equipment

Critical Interventions

- Primary Assessment (Survey) & Vitals:
  - Airway
  - Breathing
  - Circulation
- Secondary Assessment (Survey)

Vitals and problem-focused exam c/w shock
(tachycardia, flash cap refill, bounding pulses, warm skin, fever, s/s of anaphylaxis)

Anaphylaxis Kit,
consider CMP, CBC, D-stick, cultures if sepsis suspected (DO NOT delay abx to obtain cultures)

NS Bolus (20 mL/kg) to max 80 mL/kg; if sepsis, **ceftriaxone** IM/IV (75-100 mg/kg, max 1g; early is key)
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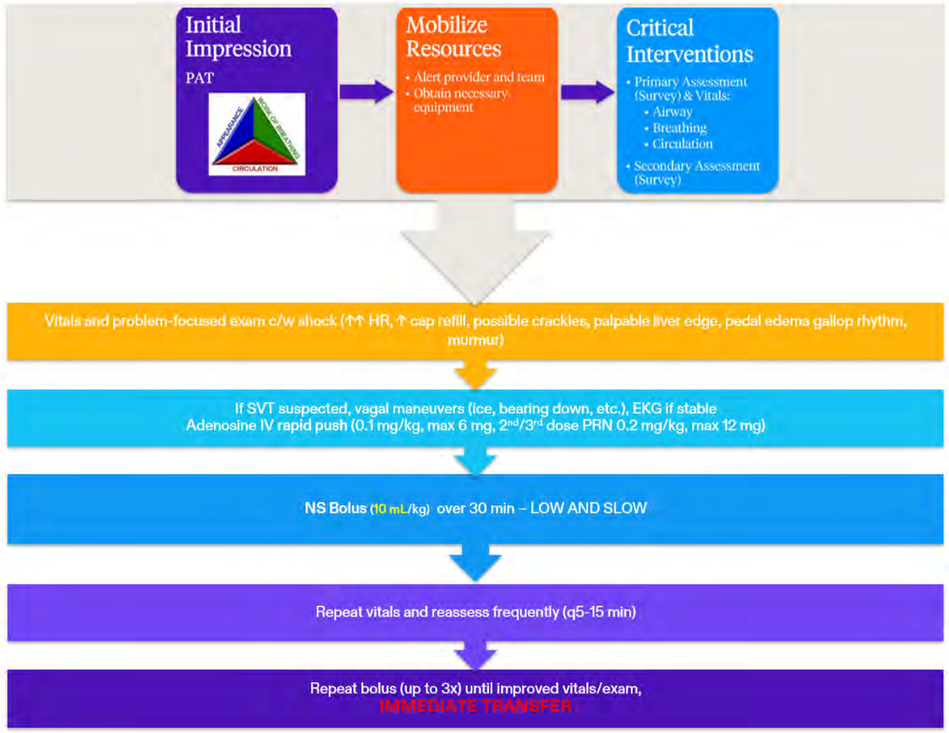
Cardiogenic Shock



Cardiogenic Shock

Initial Impression

PAT

Mobilize Resources

- Alert provider and team
- Obtain necessary equipment

Critical Interventions

- Primary Assessment (Survey) & Vitals:
  - Airway
  - Breathing
  - Circulation
- Secondary Assessment (Survey)

Vitals and problem-focused exam c/w shock (↑ ↑ HR, ↑ cap refill, possible crackles, palpable liver edge, pedal edema gallop rhythm, murmur)

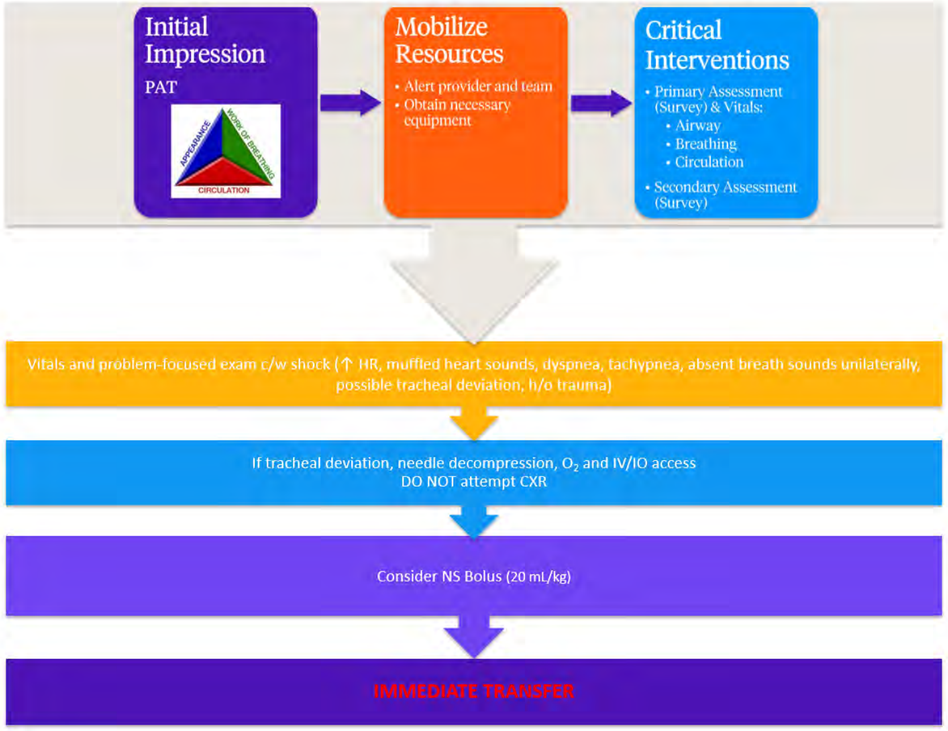
If SVT suspected, vagal maneuvers (ice, bearing down, etc.), EKG if stable
Adenosine IV **rapid push** (0.1 mg/kg, max 6 mg, 2nd/3rd dose PRN 0.2 mg/kg, max 12 mg)

NS Bolus (10 mL/kg) over 30 min – LOW AND SLOW

Repeat vitals and reassess frequently (q5-15 min)

Repeat bolus (up to 3x) until improved vitals/exam,
IMMEDIATE TRANSFER

Obstructive Shock



EB MEDICINE

Obstructive Shock

Initial Impression

PAT

Mobilize Resources

- Alert provider and team
- Obtain necessary equipment

Critical Interventions

- Primary Assessment (Survey) & Vitals:
  - Airway
  - Breathing
  - Circulation
- Secondary Assessment (Survey)

Vitals and problem-focused exam c/w shock (↑ HR, muffled heart sounds, dyspnea, tachypnea, absent breath sounds unilaterally, possible tracheal deviation, h/o trauma)

If tracheal deviation, needle decompression, O_2 and IV/IO access
DO NOT attempt CXR

Consider NS Bolus (20 mL/kg)

IMMEDIATE TRANSFER