




**Stabilization  
Essentials in  
Pediatrics**

# *Identification and Assessment of the Critically ill child*



# Objectives

- Utilize the Targeted Clinical Assessment
  - Recognize features of a critically ill child
  - Apply rapid assessment to guide resuscitation
- 



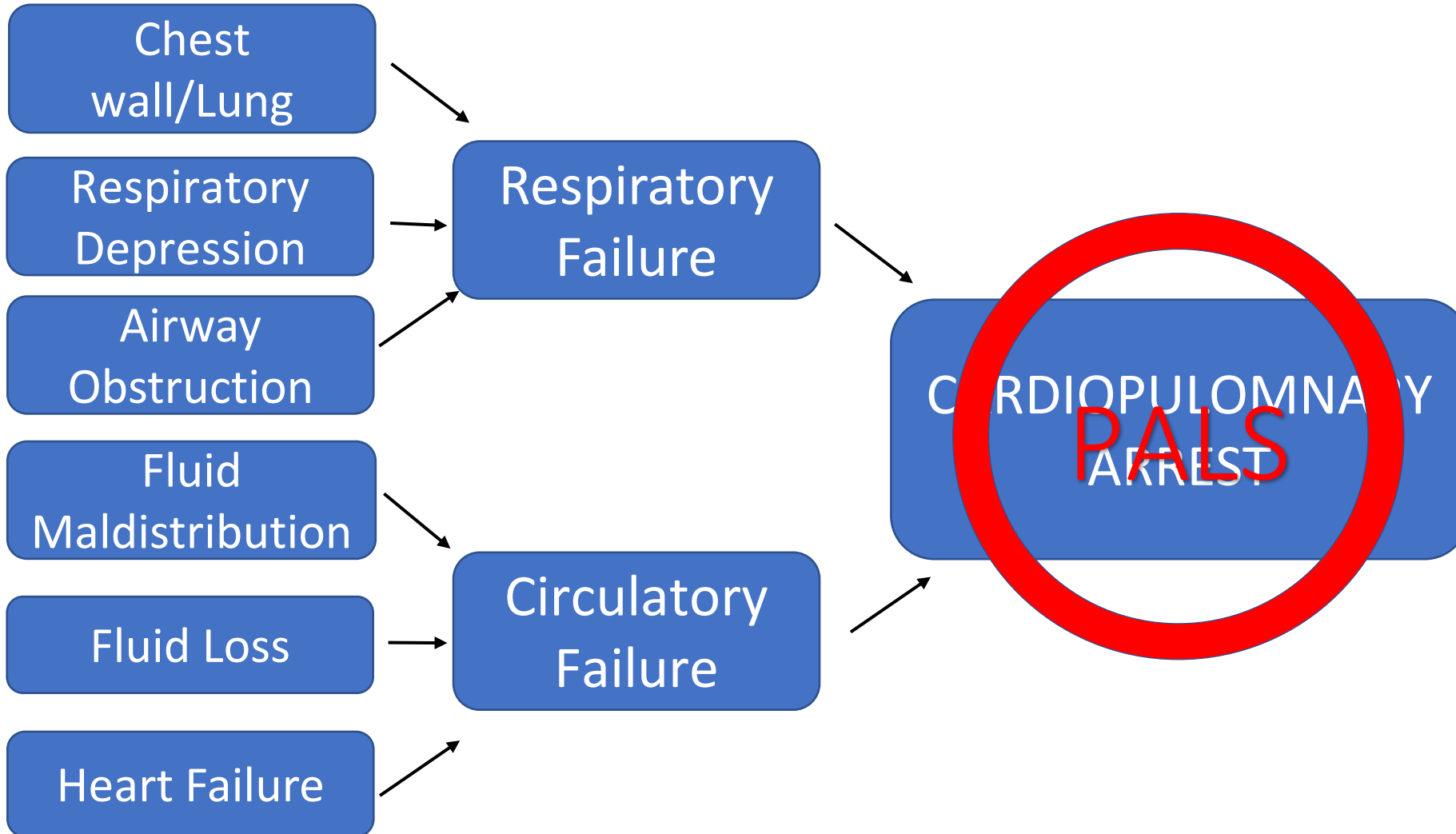
# Case 1

- 2 yo boy into ER with vomiting and headache
- Admitted last night with oral rehydration therapy, no IV
- Suddenly mom running from the room
- He is not waking up



# StEP

## Stabilization Essentials in Pediatrics



# Pediatric Assessment Triangle (PAT)

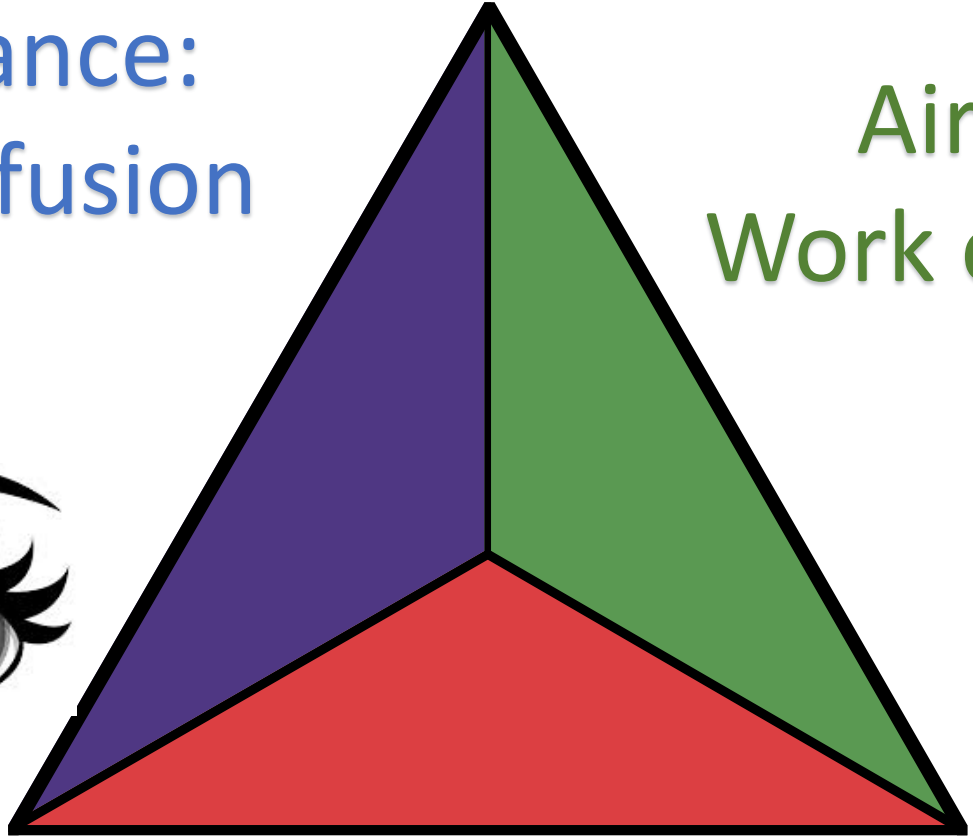
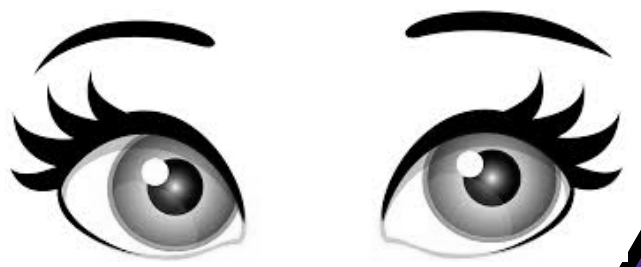


Stabilization  
Essentials in  
Pediatrics

Appearance:  
Brain Perfusion



Airway and  
Work of Breathing

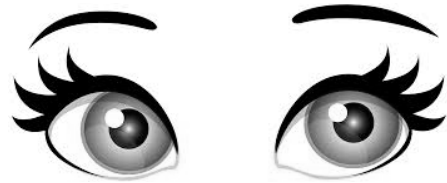


Circulation



# Appearance: Brain Perfusion

Tone  
Interactive  
Consolability  
Look/gaze  
Speech/cry



# Airway and Work of Breathing

Stridor

Grunting

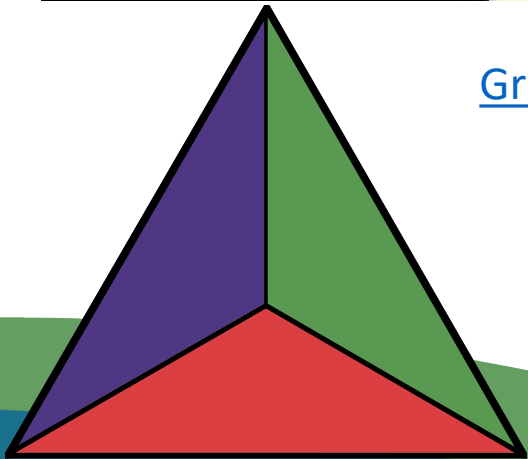
Retractions

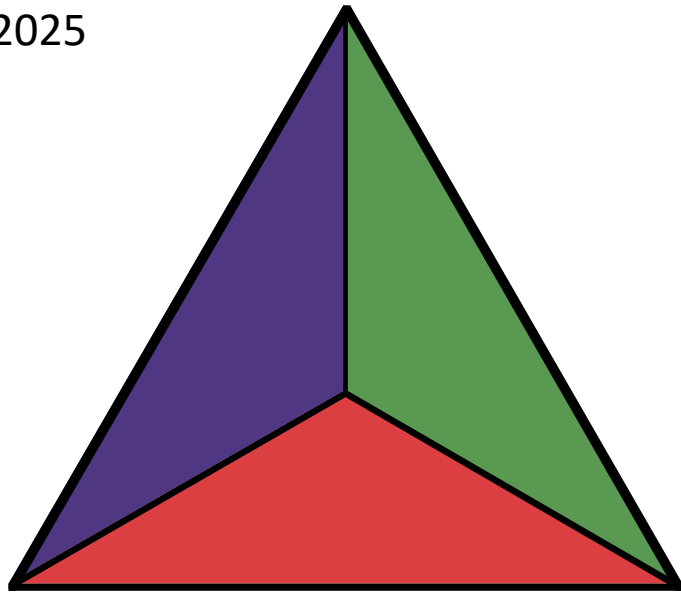
Accessory Muscle Use

Tripoding



[Grunting Child - YouTube](#)



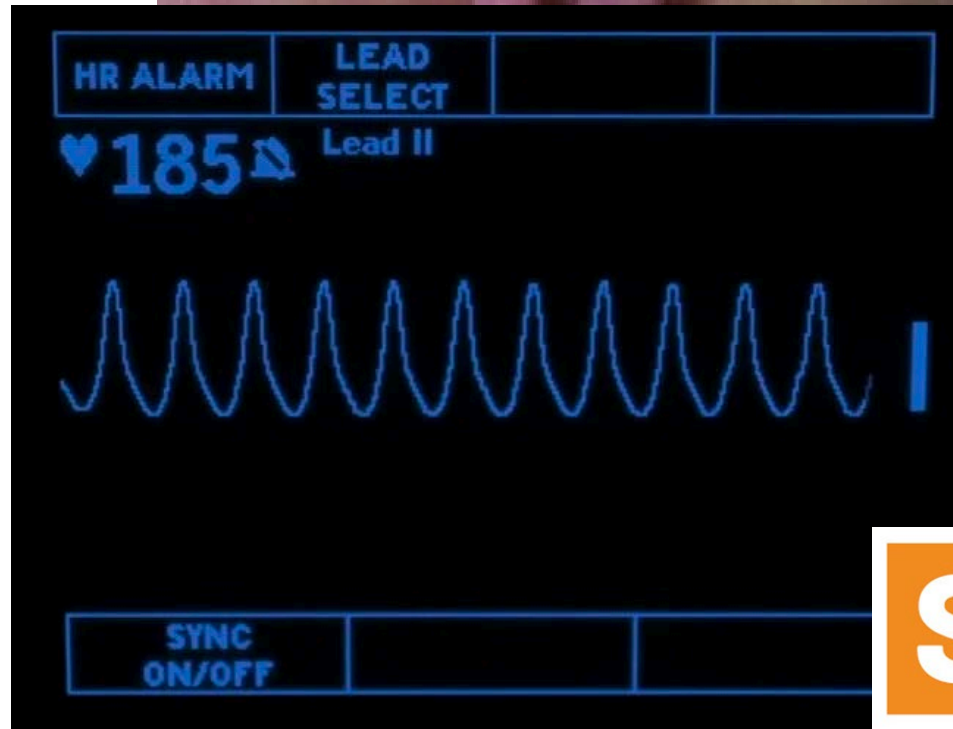


# Circulation

Pallor

Mottling

Cyanosis



# Critical Care

Appearance  
Brain perfusion  
Sedation  
Medications  
ICP/EEG



Airway &  
Work of  
Breathing

Saturation

FiO<sub>2</sub>

ETCO<sub>2</sub>

Ventilation (NIV)

## Circulation & Perfusion

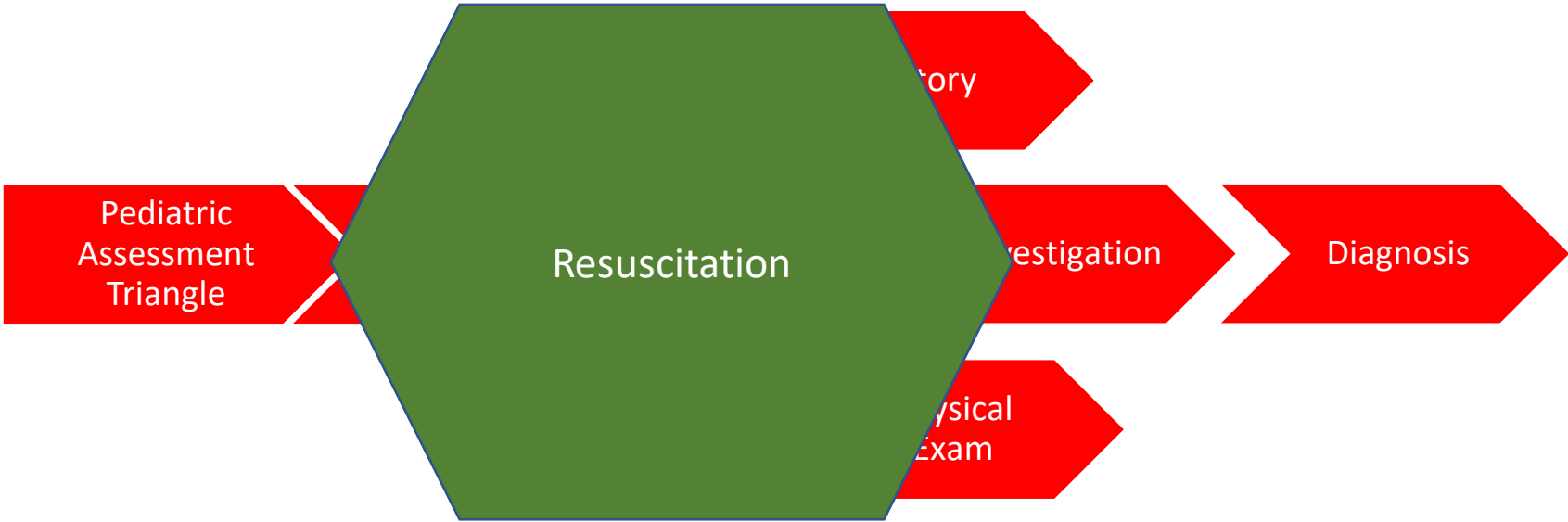
Heart Rate, Rhythm, NIBP Arterial Line,  
Inotropes, Urine Output



**Stabilization  
Essentials in  
Pediatrics**



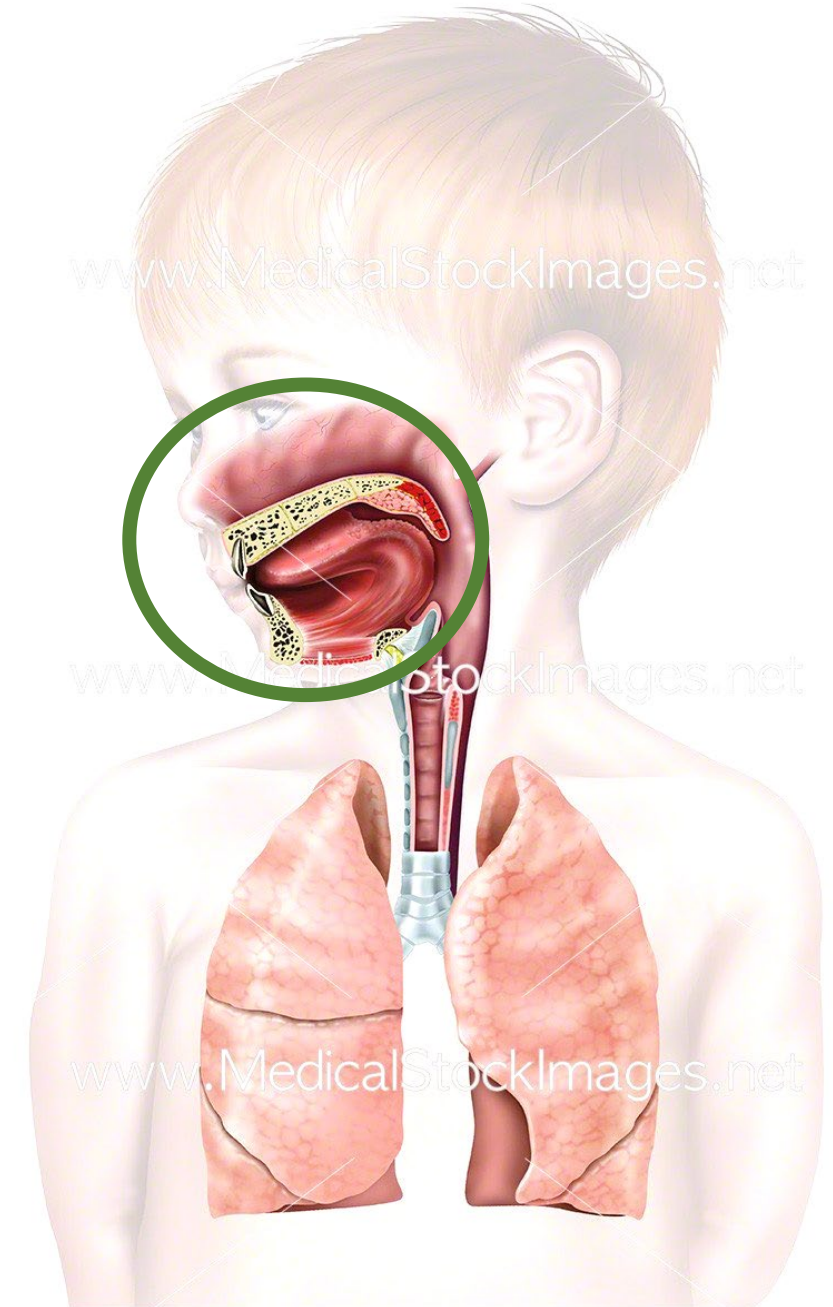
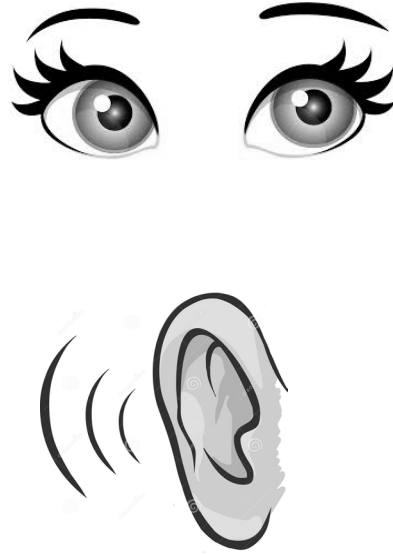
[www.stuff.co.nz](http://www.stuff.co.nz)

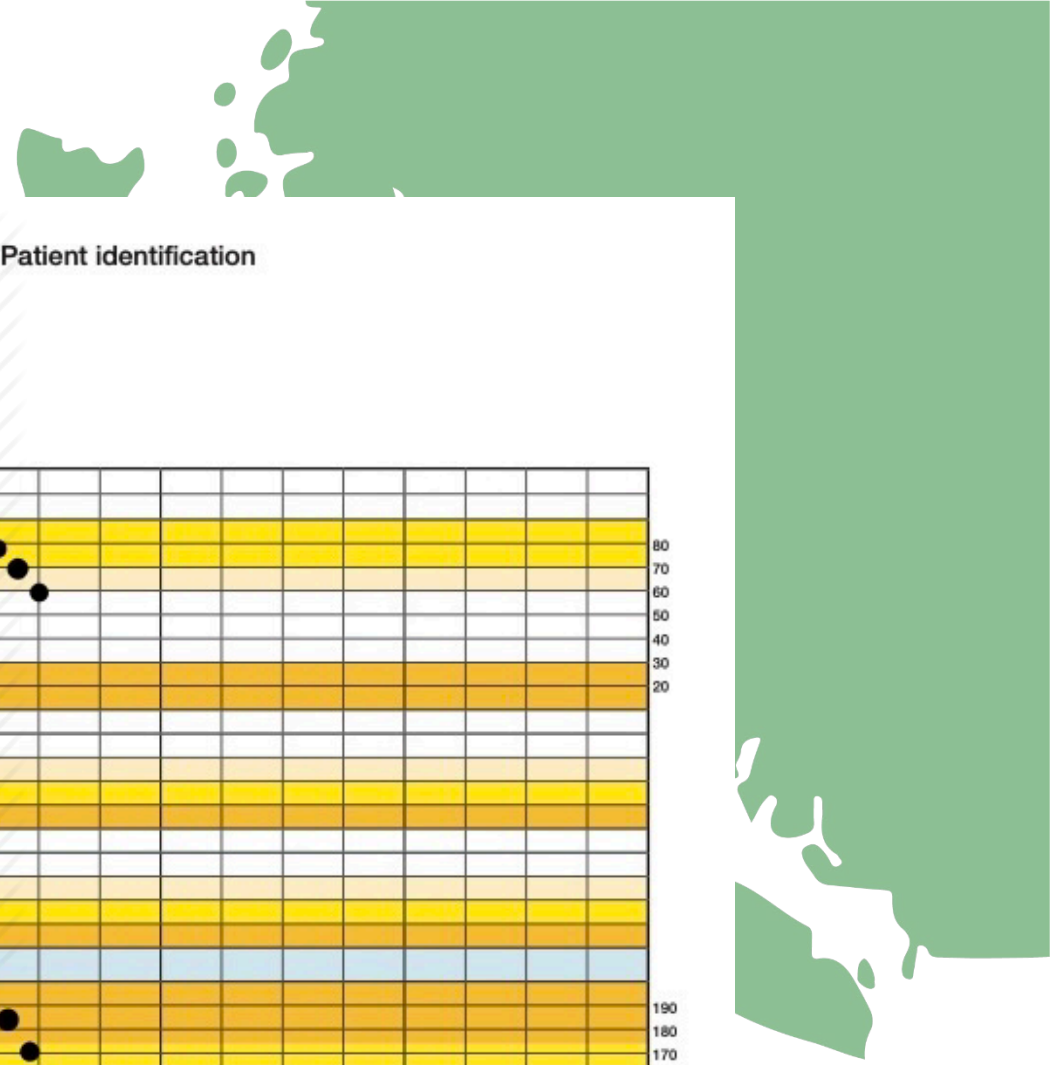


# Airway



[Child with inspiratory stridor - YouTube](#)





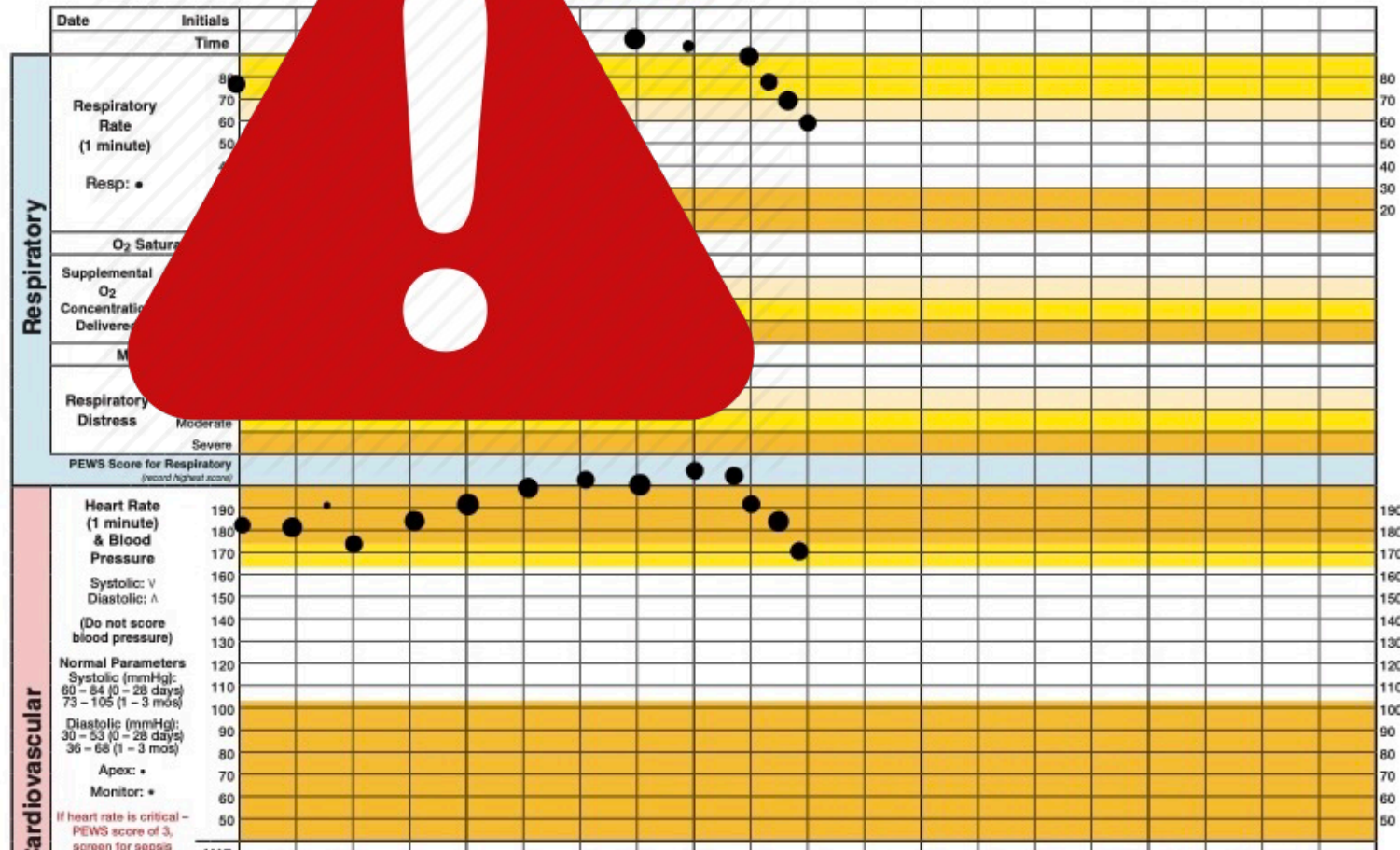
Date: \_\_\_\_\_



### 24 Hour Flowsheet MONTHS

Patient identification

PEWS 0 1 2 3



# Breathing

- Respiratory Rate / Heart Rate
- Work of Breathing
- Activity level
- Auscultation
- Impending respiratory failure
  - Decreased HR/RR
  - **Agitation or lethargy**
  - Decreased work of breathing\*



mild



severe

**Consider the Ventilated Child**

## Case 2

- 5 week term infant
- RSV + bronchiolitis, Day 4
- Initially LF, now HFNP 2L/kg/min, 25% FIO<sub>2</sub>
- RR = 60-70, HR increased today to 160
- Sat 92%

**Sick or not sick?**

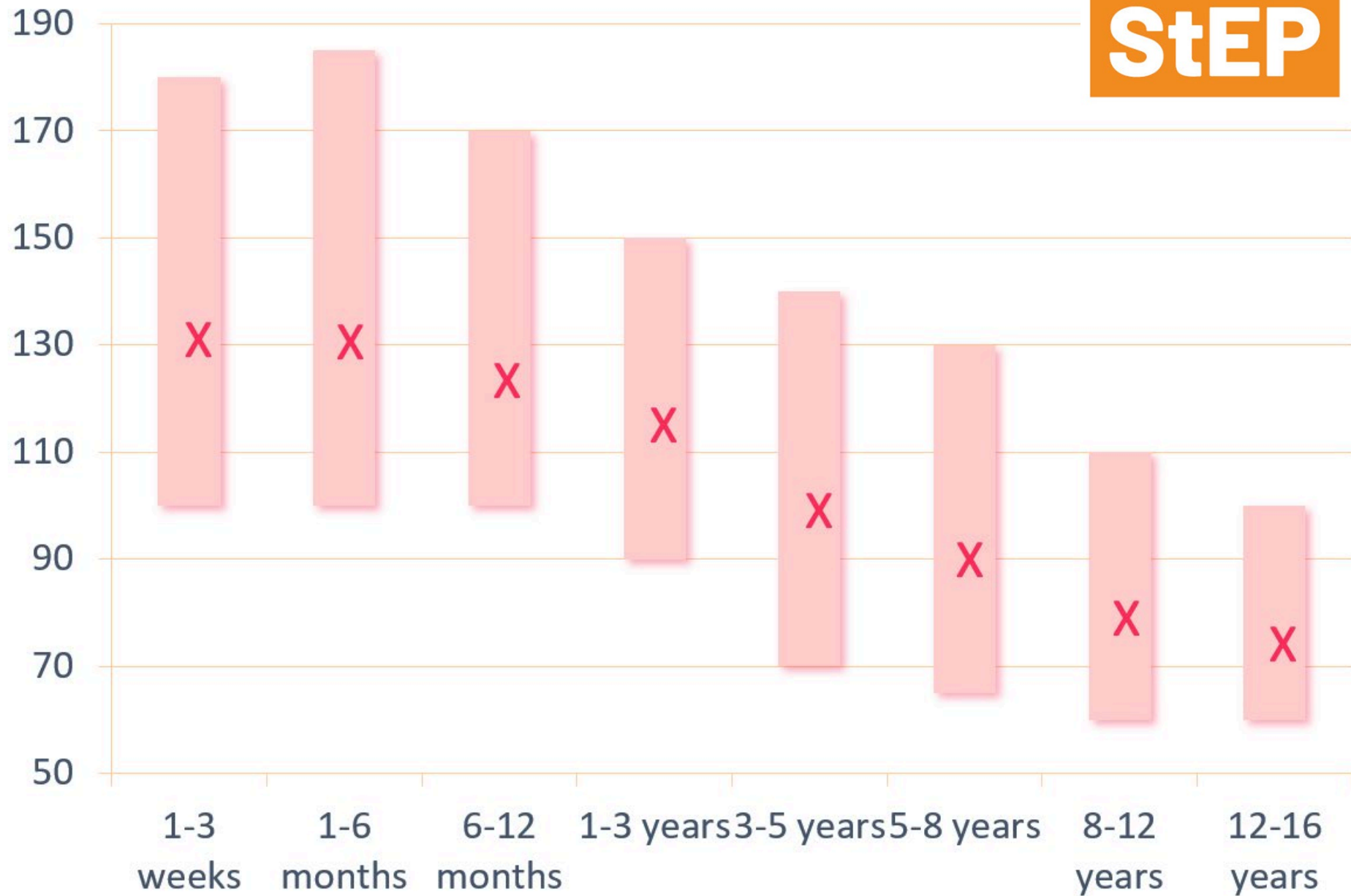
### Concerning:

Progressive despite escalating therapy  
Sleepy, decreased level of consciousness  
Progressive and persistent abnormal vitals

## Case 3

- 4 week male presented to the ER
- Irritable with poor feeding x24h
- Urgent request pediatric support



**Heart rate  
(bpm)****Age of child**



**BP = 76/51**

# Circulation - perfusion

Skin Color and Temperature

Capillary Refill time

Pulse Volume

Heart Rate



# Normal vital signs

- Estimate SBP (>1y)
  - $70 + 2 \times \text{age (in years)}$  is the 5<sup>th</sup> percentile
  - $90 + 2 \times \text{age (in years)}$  is the 50<sup>th</sup> percentile
- Estimate MAP
  - $40 + 1.5 \times \text{age (in years)}$  is the 5th percentile
  - Or as a rule of thumb:
    - Neonate: GA
    - Infants: 40-45
    - Toddler: 50
    - Child: 55
    - Teen: 60

Age	Heart Rate (beats/min)	Respiratory Rate (breaths/min)
0-3 months	110-160	35-55
3-6 months	110-160	30-45
6-12 months	90-160	22-38
1-3 years	80-150	22-30
3-6 years	70-120	20-24
6-12 years	60-110	16-22
>12 years	60-110	12-20

# Brain perfusion / Disability

## Altered mentation

- Agitation/irritability VS lethargy/LOC
- Broad differential diagnosis
  - Neurological disease?
  - Severe systemic disease? Brain perfusion?
  - Non-Accidental Injury

**Assess pupils and GCS frequently**

**Glucose Check**



[www.washingtonpost.com](http://www.washingtonpost.com)

# Glasgow Coma Scale (GCS)



## Glasgow Coma Scale (GCS)

Sign/score	GCS	GCS for children <2yo/non-verbal
<u>Eye opening</u>		
<u>4</u>	Spontaneous	Spontaneous
<u>3</u>	To command	To sound
<u>2</u>	To Pain	To pain
<u>1</u>	None	None
<u>Verbal response</u>		
<u>5</u>	Oriented	Age appropriate (coos/babbles)
<u>4</u>	Confused	Irritable, cries (consolable)
<u>3</u>	Inappropriate words	Cries in response to pain
<u>2</u>	Incomprehensible sounds	Moans in response to pain
<u>1</u>	None	None
<u>Motor response</u>		
6	Obeys commands	Spontaneous / obeys commands
5	Localizes pain	Withdraws to touch
4	Withdraws to pain	Withdraws to pain
3	Abnormal flexion to pain	Abnormal flexion to pain
2	Abnormal extension to pain	Abnormal extension to pain
1	None	None



**S**tabilization  
**E**ssentials in  
**P**ediatrics

## *Summary*

- 1) Rapid Focus Assessment*
- 2) Concurrent Structured Assessment and Resuscitation*
- 3) Frequent Reevaluation and consideration of patient trajectory*





# Stabilization Essentials in Pediatrics

## References:

- Dieckmann RA, Brownstein D, Gausche-Hill M. The Pediatric Assessment Triangle: A Novel Approach to Pediatric Assessment. *Pediatric Emergency Care*, Vol 26, No 4, 2010: 312-315, 2010
- Grunting Child – freely accessible on YouTube: <https://www.youtube.com/shorts/KQTEu1mpRY8>
- Mottled Child images and work of breathing – Pediatric Basic Course
- Dehydrated infant :<https://www.stuff.co.nz/national/health/102378164/>
- Child with inspiratory stridor – freely accessible on YouTube: <https://www.youtube.com/watch?v=oeoAze-CHng>
- Duncan, H., Hutchison, J., & Parshuram, C. (2006). The pediatric early warning system score: A severity of illness score to predict urgent medical need in hospitalized children. *Journal of Critical Care*, 21, 271- 279.
- Haque IU, Zaritsky AL. Analysis of the evidence for the lower limit of systolic and mean arterial pressure in children. *Pediatr Crit Care Med*. 2007 Mar;8(2):138-44.
- Harman M, et al. (2011). Pediatric emergency and resuscitation. In RM Kliegman et al., eds., *Nelson Textbook of Pediatrics*, 19th ed., p. 280. Philadelphia: Saunders Elsevier

