Society of Critical Care Medicine

The Intensive Care Professionals



Pediatric ICU Quick Reference Guide

sccm.org/50years

Contents:

Pediatric Fundamental Critical Care Support

Common injectious causes of
Upper Airway Obstruction3
Unintentional Versus Abusive
Patterns of Injury. 4

Surviving Sepsis Campaign®

Initial Resuscitation Algorithm										
for Child	ren							 		.5
Fluid and Vasoactive-Inotrope										
Manager	nent Al	aori	thm	For	Ch	ildr	en.	 		. 6

Critical Care Ultrasound: Pediatric and Neonatal

Respiratory variation in interior	
Vena Cava Diameter	7
Respiratory Variation in	
Peak Aortic Velocity	8

© 2020 Society of Critical Care Medicine. The Society of Critical Care Medicine and SCCM are registered trademarks of the Society of Critical Care Medicine.

Pediatric Fundamental Critical

Characteristic	Croup	Epiglottitis	Bacterial Tracheitis	Retropharyngeal Abscess		
Onset	Gradual, viral prodrome, 1-7 days	Rapid onset, 6-12 hours	Viral prodrome followed by rapid deterioration	Viral prodrome followed by rapid deterioration		
Typical age at onset	6 months - 4 years	2-8 years	6 months - 8 years	< 5 years		
Seasonal occurrence	Late fall/winter Throughout the year Haemophilus influenzae type B (classically), Streptococcus pneumoniae, GABHS		Fall/winter	Throughout the year		
Causative agents			Staphylococcus aureus (classically), GABHS, Streptococcus pneumoniae	Anaerobic bacteria, GABHS, Staphylococcus aureus		
Pathology			Thick, mucopurulent, membranous tracheal secretions	Abscess formation in deep cervical fascia		
Fever	Low-grade	High	High	High		
Cough	Barking or seal-like None		Usually absent	Usually absent		
Sore throat	None Severe		None	Severe		
Drooling	Sitting forward, mouth		None	Frequent		
Posture			Any	Sitting forward, mouth open, neck extended (tripod position)		
Voice	Normal or hoarse	Muffled	Normal or hoarse	Muffled		
Appearance	earance Nontoxic Toxic		Toxic	Toxic		

Abbreviation: GABHS, group A $\beta\text{-hemolytic streptococci}.$

Unintentional Versus

Abusive Patterns of Injury^a

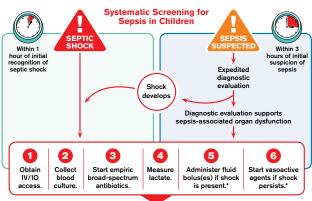
Site of Injury	Unintentional Injury	Abusive Injury				
Head	 Focal injuries at site of impact Clear history of causative incident Simple, linear skull fracture Absence of other injuries 	Global/widespread injuries Inconsistent description of injury Diastatic, depressed skull fractures from reported short falls Injuries to other body sites				
Skeletal	Mid-shaft clavicular Diaphysis of long bones in ambulatory children	Posterior ribs Metaphyses of long bones in nonambulatory children Vertebral body Multiple sites Injuries of varying ages				
Cutaneous	Bruises over bony prominences in ambulatory children Burns with splash appearance	 Bruises to face or head in nonambulatory children Bruises over padded areas, ears, neck, genitalia Patterned injuries and bites Burns with well-demarcated edges Bruises or burns involving genitalia 				

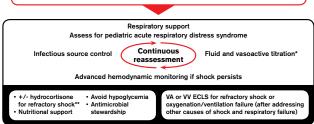
^aNo pattern of injury is diagnostic of either unintentional or abusive injury without consideration of the supporting history and developmental stage of the child.

Explore the full range of Pediatric Fundamental Critical Care Support products at sccm.org/pfccs.

Surviving Sepsis Campaign®

Initial Resuscitation Algorithm for Children





Abbreviations: ECLS, extracorporeal life support; VA, venoarterial; VV, venovenous.

"See fluid and vasoactive algorithm. Note: Fluid bolus should be omitted from bundle if a) fluid overload is present or b) it is a low-resource setting without hypotension. Fluid in mL/kg should be dosed as ideal body weldn't.

Explore the full range of children's sepsis resources at sccm.org/survivingsepsis

^{**}Hydrocortisone may produce benefit or harm.

Surviving Sepsis Campaign®

Fluid and Vasoactive-Inotrope Management Algorithm For Children

Abnormal perfusion with or without hypotension

Healthcare Systems

- If signs of fluid overload are absent, administer fluid bolus, 10-20 mL/kg.
- Repeat assessment of hemodynamic response to fluid and consider fluid boluses, 10-20 mL/kg, until shock resolves or signs of fluid overload develop.
- Assess cardiac function.
- Consider epinephrine if there is myocardial dysfunction or epinephrine/ norepinephrine if shock persists after 40-60 mL/kg (or sooner if signs of fluid overload develop).

Abnormal perfusion WITHOUT hypotension

SEPTIC SHOCK

- Do NOT give fluid bolus unless there are signs of dehydration with ongoing fluid losses (eg, diarrhea).
- Start maintenance fluids.
- Monitor hemodynamics closely.
- Consider vasoactiveinotropic support (if available).

Abnormal perfusion WITH hypotension

Healthcare Systems

WITHOUT Intensive Care

- If signs of fluid overload are absent, administer fluid bolus, 10-20 mL/kg.
- Assess hemodynamic response to fluid and repeat fluid boluses, 10-20 mL/kg, until hypotension resolves or signs of fluid overload develop.
- Assess cardiac function (if available).
- Consider epinephrine/ norepinephrine if hypotension persists after 40 mL/kg (or sooner if signs of fluid overload develop).

Fluid in mL/kg should be dosed as ideal body weight.

Shock resolved, perfusion improved

- Do not give more fluid boluses.
- Consider maintenance fluids.
- Monitor for signs/symptoms of recurrent shock.

*Hypotension in healthcare systems WITHOUT intensive care is defined as either: SBP

< 50 mm Hg in children aged < 12 months SBP

< 60 mm Hg in children aged 1 to 5 years SBP < 70 mm Hg

in children aged > 5 years OR

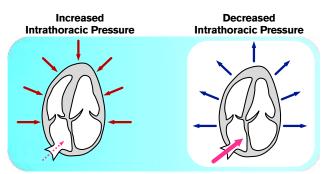
Presence of all 3 World Health Organization criteria: cold extremities, prolonged capillary refill > 3 seconds, weak/fast pulse





Critical Care Ultrasound: Pediatric and Neonatal

Respiratory Variation in Inferior Vena Cava Diameter



Decreased Venous Return

Increased Venous Return

- Because inferior vena cava (IVC) drainage to the right atrium is reduced during a positive pressure breath there is a corresponding increase in IVC diameter during inspiration.
- Positive pressure ventilation transmits pressure to the right atrium during inspiration, thus reducing the pressure gradient between the abdominal IVC and the right atrium.

Explore the full range of Critical Care
Ultrasound: Pediatric and Neonatal products
at sccm.org/ultrasound.

Critical Care Ultrasound: Pediatric and Neonatal

Respiratory Variation in Peak Aortic Velocity

The phasic variation in the stroke volume over the respiratory cycle is exaggerated in patients with preload recruitable cardiac output.

