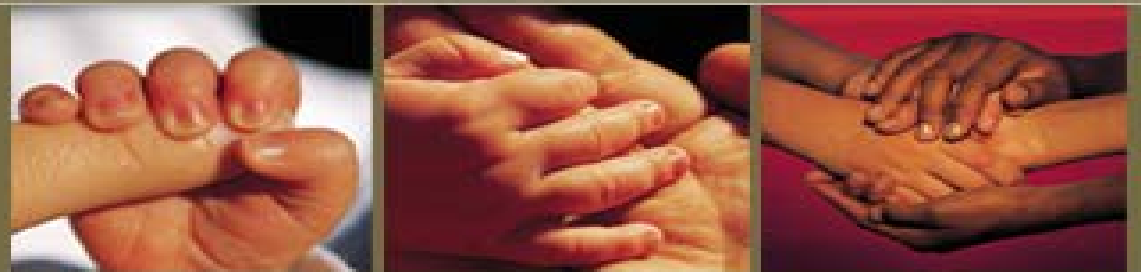


Tiny Patient, Big Problems: Neonatal Considerations Care for First 30 Days



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DISCLOSURE

- I have NO financial conflicts to disclose



OBJECTIVES

- Review anatomical and physiologic differences unique to the neonatal population
- Review neonatal airway management
- Understand essential physiologic differences that influence management of congenital cardiac anomalies
- Understand key features in diagnosis and evaluation of neonatal sepsis



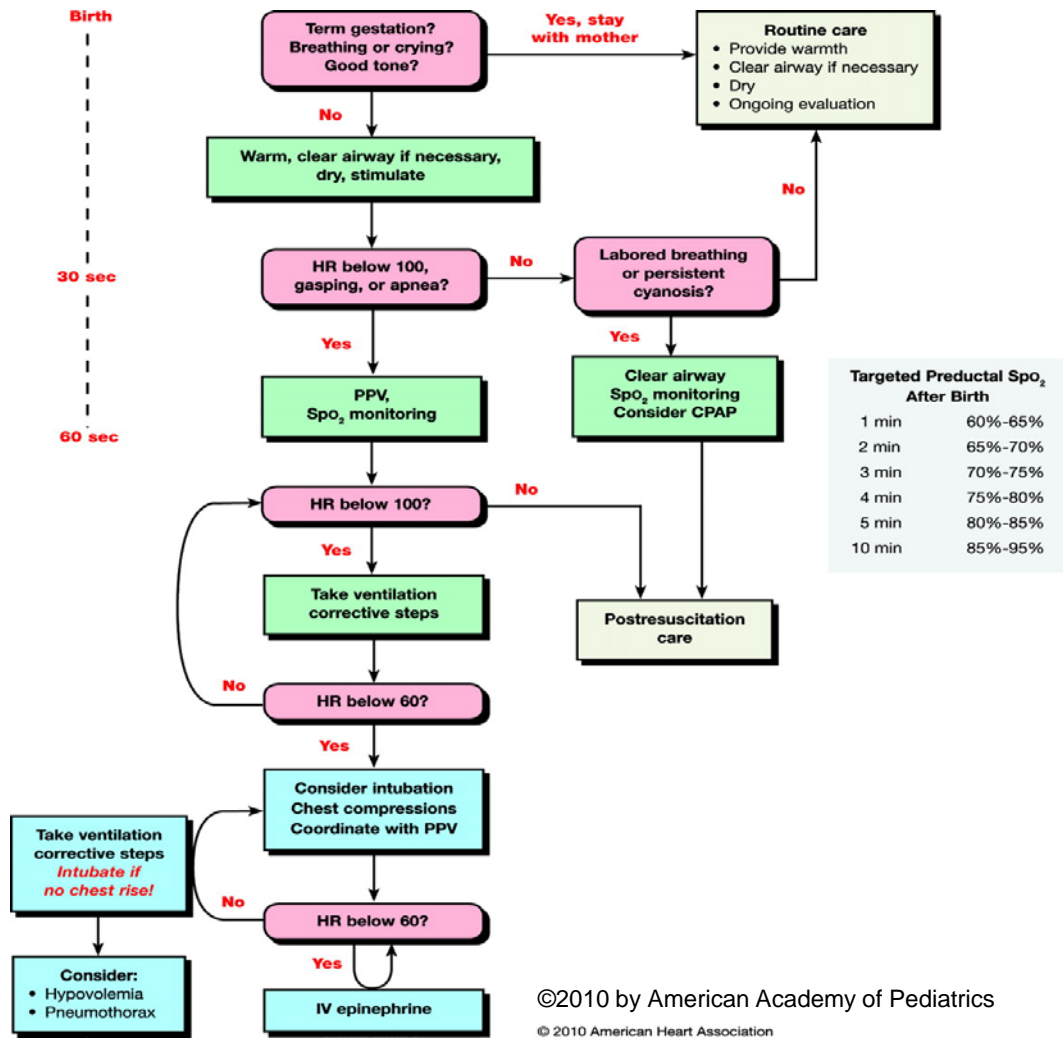
PEDIATRIC PATIENTS—NEONATAL PERIOD



CRITERIA

- Term ≥ 37 weeks
- Late Preterm 34-36 weeks
- Early Preterm < 34 weeks

Newborn Resuscitation Algorithm



APGAR SCORE

SIGN	0	1	2
Appearance	Blue/pale	Pink body/blue extremities	Completely Pink
Pulse	Absent	<100	>100
Grimace	None	Grimace	Cough/Sneeze
Activity	Limp	Some flexion	Active movement
Respiration	None	Slow/irregular	Good/crying

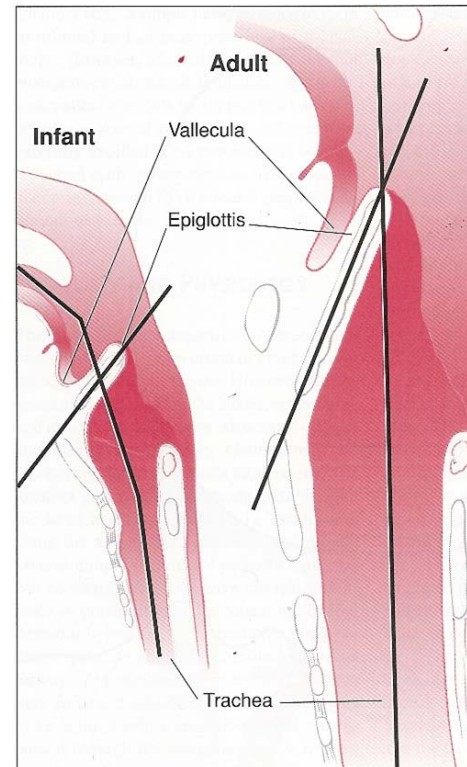
John Kattwinkel et al. Pediatrics 2010;126:e1400-e1413

PEDIATRICS[®]



PEDIATRIC AIRWAY DIFFERENCES

- Smaller Airway
- Large Tongue
- Epiglottis
- Larynx Position
 - C1 Birth
 - C3 Six months of age
- Anterior Airway





Newborn ETT

Weight (grams)	Gestational Age	Laryngoscope Blade	ETT	Depth (cm)
<1000	<28	0	2.5	6.5-7.0
1000-2000	28-34	0	3.0	7.0-8.0
2000-3000	34-38	0-1	3.5	8.0-9.0
>3000	>38	1	3.5/4.0	>9.0



Laryngeal Mask Airway (LMA)

LMA Size	Weight (kg)
1	<5
1.5	5-10
2	10-20
2.5	20-30
3	30-50
4	50-70



BLUE BABY EMS CALL





CONGENITAL HEART DISEASE (CHD)

- MOST COMMON neonatal disorder
- Prevalence 6-13 per 1000 live births
- Fetal cardiac circulation
 - Functionally two cardiac shunts as placenta provides oxygenated blood
 - Foramen ovale is connection between right and left atria
 - Patent ductus arteriosus (PDA) which connects pulmonary trunk directly to aorta



CONGENITAL HEART DISEASE (CHD)

- Patent ductus arteriosus closes within 3 days after birth
- AAP recommends measuring pre- and post-ductal saturations
 - Right hand (pre-ductal)
 - Either foot (post-ductal)
 - Positive screen if saturation $<90\%$ or $>3\%$ difference between pre- and post-ductal saturation



CLINICAL MANIFESTATIONS OF CHD

- Cyanosis
 - Especially when 100% oxygen applied and saturations remain <90%
 - ***PLACE PRE- AND POST-DUCTAL PULSE OX
- Tachypnea
- Increased work of breathing
- Feeding problems
- Excessive sweating, especially, during feeding



CLINICAL PRESENTATION

- SHOCK
- Tachycardic
- Tachypneic
- Cyanotic
- Decreased perfusion
- Diminished pulses



MANAGEMENT

- FLUIDS, FLUIDS, FLUIDS???
- FLUID RESISTANT SHOCK THINK CONGENITAL CARDIAC DISEASE!
- Prostaglandin E1 (Alprostadil)
 - Re-opens PDA
 - Dose 0.05-0.1 micrograms/kg/min infusion
 - Side effects: apnea, fever, hypotension, seizure



NEONATAL SEPSIS

- Incidence 1 to 5 cases per 1000 live births
 - Higher in preterm infants
- Group B *Streptococcus* and *Escherichia coli* most common
- *Listeria monocytogenes* and Herpes Simplex virus



CLINICAL MANIFESTATIONS

- Temperature instability hyper- or hypo-thermia
- Poor feeding
- Irritability
- Lethargy
- Respiratory symptoms
- Jaundice



CLINICAL PRESENTATION

- SHOCK
- Tachycardic or bradycardic
- Tachypneic, grunting, hypoxemic
- Cyanotic
- Decreased perfusion
- Hypotension



MANAGEMENT

- FLUIDS, FLUIDS, FLUIDS
- Blood, urine, CSF
- Antibiotics
 - Ampicillin 100 mg/kg/dose IV every 6 hours
 - Gentamicin 2.5 mg/kg/dose IV every 8 hours
 - Cefotaxime 50-75 mg/kg/dose IV every 8 hours



QUESTIONS?