

WRHEPC PEDIATRIC EMERGENCY PREPAREDNESS SEMINAR

SESSION 4 – 10/27/20

Pediatric Emergency Airway Management

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LEARNING OBJECTIVES

At the conclusion of this activity, participants will be able to:

- Recognize different disease processes in children that lead to respiratory emergencies
- Learn the pediatric assessment triangle and how to apply it to children
- Identify signs of respiratory distress in children and manage a pediatric intubation
- Describe common pitfalls when endotracheally intubating children
- Avoid and recognize potential airway failure and catastrophic consequences

Pediatric Respiratory Emergencies

Little kids tryna make sure you see them coughing




Pediatric Respiratory Emergencies

Little kids tryna make sure you see them coughing



Causes of Pediatric Respiratory Failure

- Asthma
- Bronchiolitis
- Croup
- FB aspiration
- Pneumonia
- Retropharyngeal Abscess
- Peritonsillar abscess
- Epiglottitis
- Bacterial Tracheitis




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How to approach every sick patient

1. Sick or not sick?
2. ABCs
3. Clinical assessment
4. Working diagnosis
5. Interventions
6. Reassessment

*Phone a friend



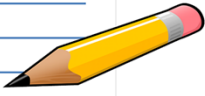
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CHECKLIST


-
-
-
-
-
-
- Reassessment



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Reassessment

- ABC again
- Improvement?
- Possibly another cause?
- Repeat interventions?



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Phone a friend

- Protocol
- Your partner
- Medical control
- Call ED/Pediatric ED



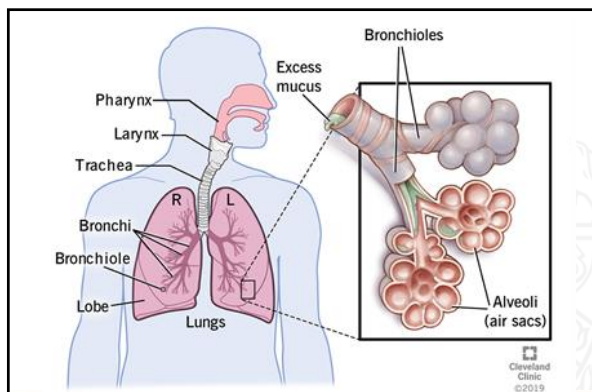
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Case 1

- 4 month old with nasal congestion for 2-3 days, breathing harder and not taking bottles
 - Ex-32 weeker
 - Decreased PO intake
 - Decreased UOP
 - Cranky but consolable
- Alert but in moderate distress
- Temp=38C, HR=180, RR=64, Sats=90%
- Dry mucous membranes
- Severe nasal congestion and coughing
- Decreased air entry with rhonch throughout
- Moderate intercostal and subcostal retractions

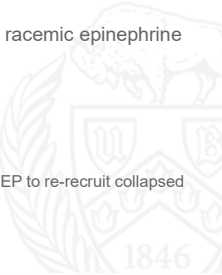
Bronchiolitis

- Viral infection of medium to small airways
- This is NOT Bronchitis
- Majority of cases (>85%) caused by RSV
- Peaks in winter to spring in WNY
- Birth to 2 years of age have clinical symptoms
 - URI
 - Tachypnea, (wheezing) rhochi, retractions, nasal flaring
 - Grunting
 - Apnea in younger age
 - Typically lasts 7-10 days
 - Most kids worst at 3-5 days



Bronchiolitis Treatment

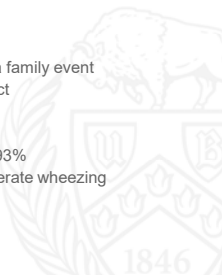
- Nasal suctioning
- Hydration
- ?Albuterol vs hypertonic saline vs racemic epinephrine
- Oxygen
 - ?NC
 - ?HFNC-start at 2L/kg
- Intubation and MV
 - ***Pitfall #1 intubating a bronchiolitic**
 - -Patients often need increased PEEP to re-recruit collapsed alveoli



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Case 2

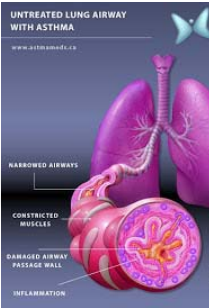
- 3 year old with respiratory distress for 1 day with noisy breathing and retractions
 - Hx of wheezing
 - Currently taking albuterol prn
 - Exposed to second hand smoke at a family event
 - Albuterol given by mom without effect
- Alert but in moderate distress
- Temp 36C, HR=155, RR=44, Sats=93%
- Decreased BS throughout with moderate wheezing
- Minimal intercostal retractions



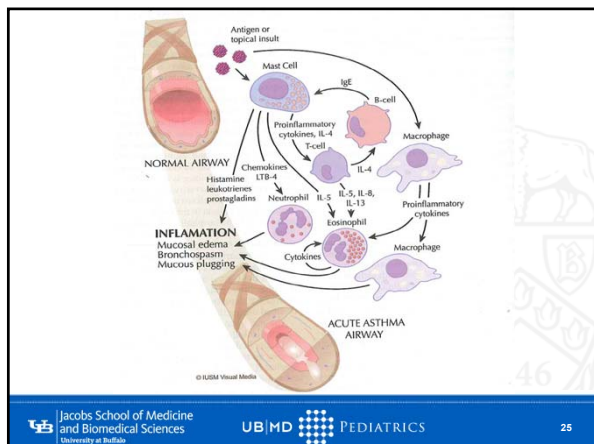
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Asthma

- Classics signs/symptoms are:
 - Recurrent wheezing
 - Coughing (especially nighttime)
 - SOB
 - Chest tightness
- Affects bronchus and bronchioles
- Reversible airway obstruction
 - Bronchospasm
 - Inflammation
 - Mucous production



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Asthma Risk Factors

Risk Factors for Status Asthmaticus

Medical Factors

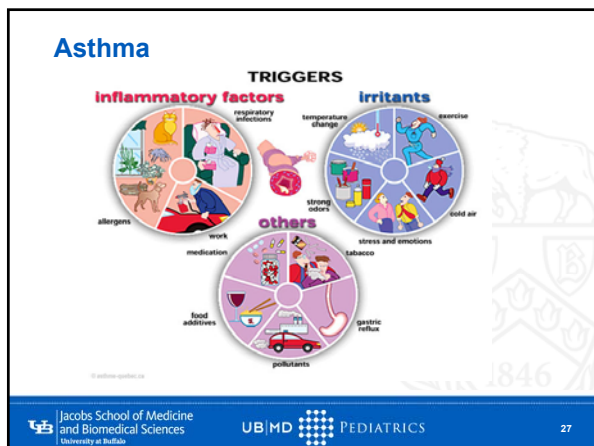
- Previous asthma attack with:
 - *Admission to ICU
 - *Respiratory failure and mechanical ventilation
 - *Seizures or syncope
 - *PaCO₂ > 45 torr
 - *High consumption of β-agonist MDI (>2 canisters per month)
 - *Underuse of corticosteroid therapy

Psychosocial Factors

- *Denial or failures to perceive severity of illness
- *Associated depression or other psychiatric disorder
- *Nonadherence
- *Dysfunctional family unit
- *Inner-city residents

Ethnic Factors

- *Nonwhite children (black, Hispanic, other)



Asthma Treatment

- Position of comfort
- Albuterol
- Oxygen
- Steroids
- Magnesium Sulfate
- Epinephrine
- BiPAP
- Negative Pressure Ventilation
- Ketamine
- Heliox
- Terbutaline
- Intubation and MV
 - *Pitfall #2 intubating an asthmatic**
 - need more preload (volume is your friend)
 - may not exhale CO2 right away (be patient when waiting for exhaled CO2 confirmation of placement)

Case 3

- 3 year old with 2 days of URI now with fever, barky cough
 - Woke up with stridor and barky cough
 - Vomited with coughing
 - Drooling a lot so mom brought in to ED
- Alert but irritable, drooling, tripod position
- Temp=39C, HR=180, RR=60, Sats=94%
- Audible marked inspiratory stridor
- Severe suprasternal retractions
- Occasional barky cough
- Good air entry

Croup

- Viral infection of upper airway
 - Causes subglottic edema
- Viral etiology (parainfluenza type 1 and 2)
- Usually in fall and winter months (children 3 months to 3 years)
- Barky cough and stridor are classic findings
- Fevers very common

CROUP IN CHILDREN

Inside the Trachea

Narrow Airway
Swollen Tissue

Healthy Croup

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Croup Treatment

- Cool air
- Nebulized epinephrine (if retracting)
- Steroids
- Oxygen (if needed)
- Intubation and MV
 - *Pitfall #3 intubating a crouper
 - subglottic edema can cause stenosis (bring ETT 1 and 2 sizes below what you think you would need)
 - always use a cuffed tube

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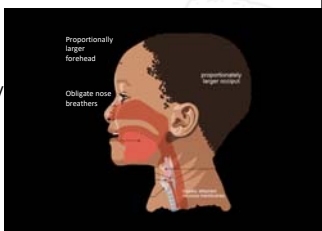
Comparison Table

	Asthma	Bronchiolitis	Croup	Foreign Body
Age Group	>2 years	Birth-2 yrs	3 mo-3 yrs	Up to 3 yrs
Cause	Allergen, infection, other etiologies	Viral infection (RSV, Rhinovirus, HMPV)	Viral infection (parainfluenza)	Foreign Body
Structure Affected	Bronchus or bronchioles	Bronchioles	Subglottic area	Pharynx to bronchus
Findings	Dyspnea, wheezing, no aeration (absent BS)	Nasal congestion, retractions, rhonchi/rales, ? wheezing, decreased BS	Barky cough, stridor, suprasternal retractions	? choking, ? coughing, ? dyspnea
Presentation	Varies	Gradual over days	1-2 day hx of URI	Acute onset
Intervention	O2, Albuterol, steroids	Aggressive nasal suctioning, O2, supportive treatment (NOT albuterol)	Cool air, nebulized epinephrine	O2, supportive care, removal of FB

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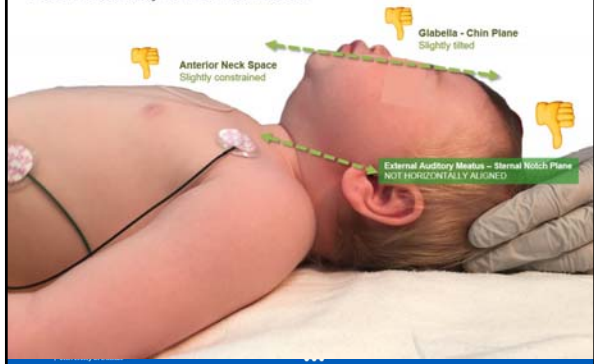
Pediatric Airway

- Important differences between the adult and pediatric airway:
 - While not truly obligate nose-breathers, infant nares are smaller and more easily occluded by mucus or edema



Step 1: Simple Head Extension (no shoulder roll or headrest)

Check if secondary markers meet criteria



Step 1: Simple Head Extension (no shoulder roll or headrest)



