When Blue is BAD

Respiratory assessment and evaluation for the pediatric client in distress

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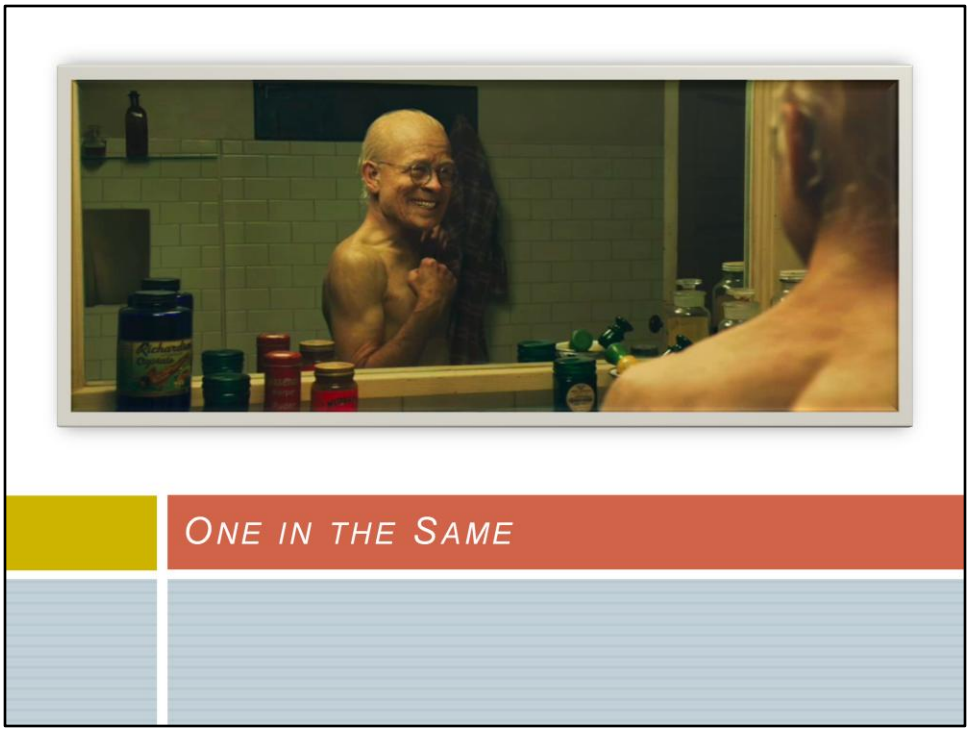
Are children little adults? No, anatomically and physiologically their bodies are different.

Larger body surface area
Different ways of regulating their temperature
Airways signficantly different
Respiratory fxn immature
Go down hill on a slip and slide



What's the same – similar to our **geriatric** patients

Family Centered Care

Ideally, In a child's life the family is the constant

Exchange complete and unbiased information

Honoring **ethinic, racial, spiritual, social, economic, educational, and geographical diversity**

Encouraging family-family support

Appreciating familes as families and children as children recognizing they possess a wide range of strengths, concerns, emotions, and aspirations

What is it?

Care that minimizes the psychological and physical distress of medical interventions experienced by children **and their familes** in the health care system

May include anxiety, fear, anger, disappointment, sadness, shame, or guilt

May include pain, temperature extremes, loud noises, bright lights, or darkness

3 main goals for this framework
•Prevent or minimize the child's separation from the family
•Promote a sense of control
•Minimize boidily injury and child

Foster the parent-child relationship

When Blue is BAD

Developmental Issues of Assessment

Infants

- Auscultate them first
- Take them out of the car seat
- Undress them

- Learn the language of the cry
- The threat of the stranger

Toddlers

- Get on their level
- Let them handle the instruments
- Let them play while you assess
- *The fine art of* ***distraction***

- Praise for cooperative behavior

Pre School

- Curious – Why?
- Eager to please
- May localize complaint
- May regress / lose control

- Everything is direct and concrete – Unable to work with abstractions
- Personify inanimate objects
  - "Stick in arm"
  - Pulse ox will bite me

School Age

- Modest
- Want to perform well
- Able to describe details, but not time sequence

- A+
- Explain things very simply—functionally
  - Otoscope to “see eardrum”
  - Stethescope to listen to heartbeat

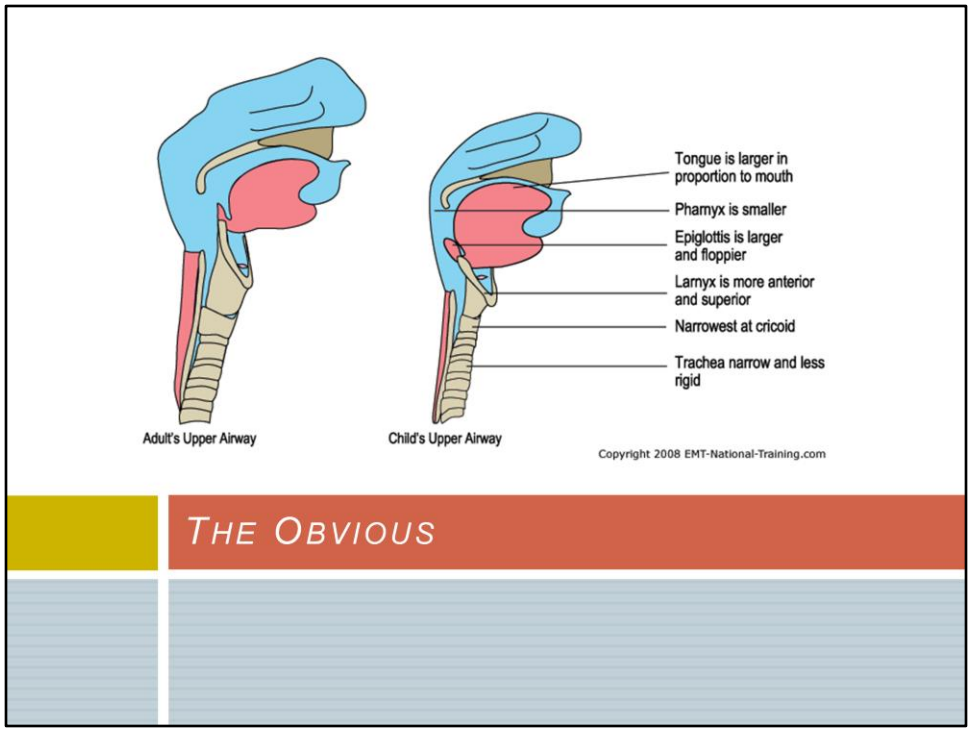
Adolescents

- Unpredictable
- Play to audience or unreasonably stoic
- Egocentric
- Self-conscious of appearance
  - Be matter of fact

- Fluctuate between adult and childlike thinking
- Emphasize normalcy of development
- Respect need for privacy

When Blue is BAD

The Physical Exam



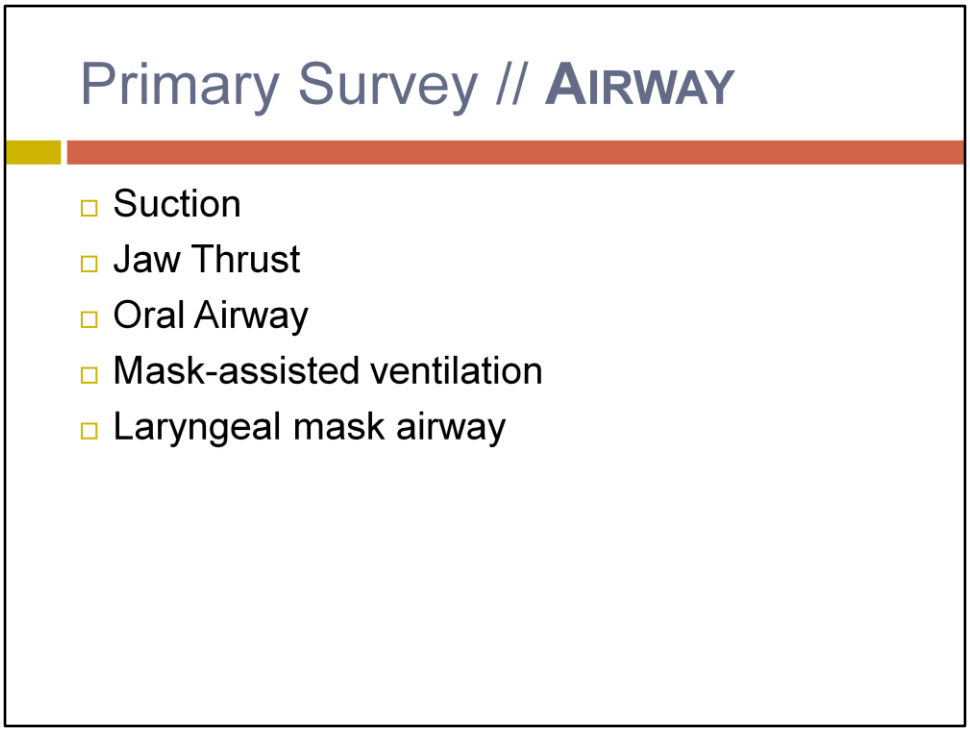
Larger Head and tongue – easily obstructed
Floppier airways – easier to obstruct secondary to neck compression, mucous, and FB

Larger occiput is difficult to position – Muscles in neck not as strong

Trachea is narrower and shorter – easier to mainstem intubate

Very position sensitive – abdominal pressure easily shifted on diaphragm

Fail d/t **hypoventilation and hypoxia**
vs. **hypovolemia and hypotension**



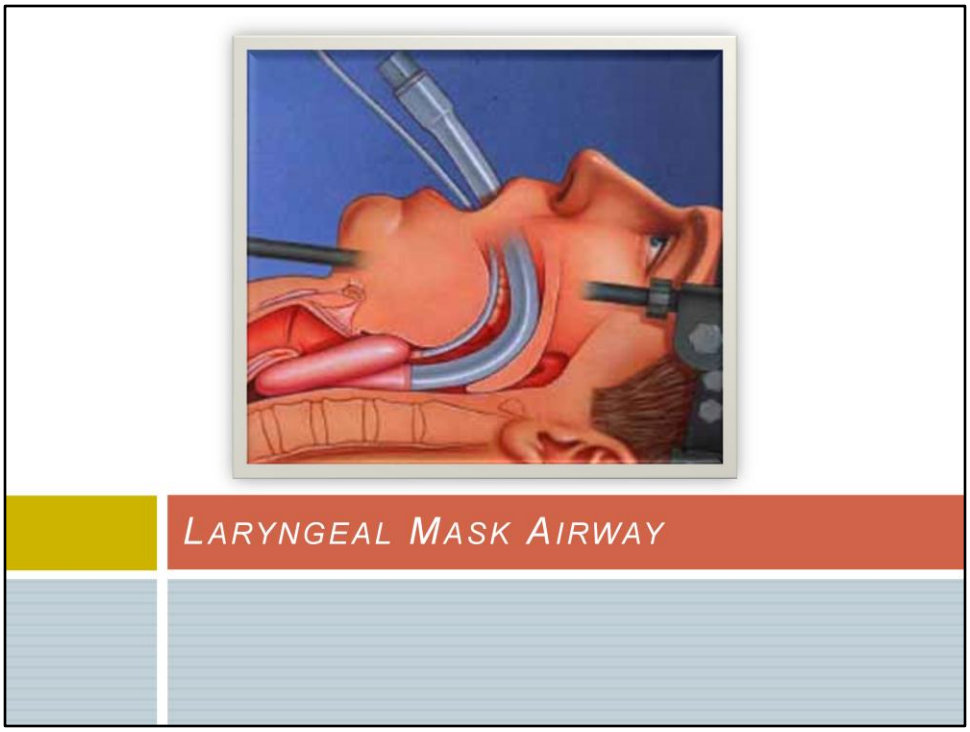
Starting with the basics

Suction - Drooling, audible congestion, mild inspiratory stridor

Jaw thrust – vs. chin lift
Positioning with towel roll to align the airway

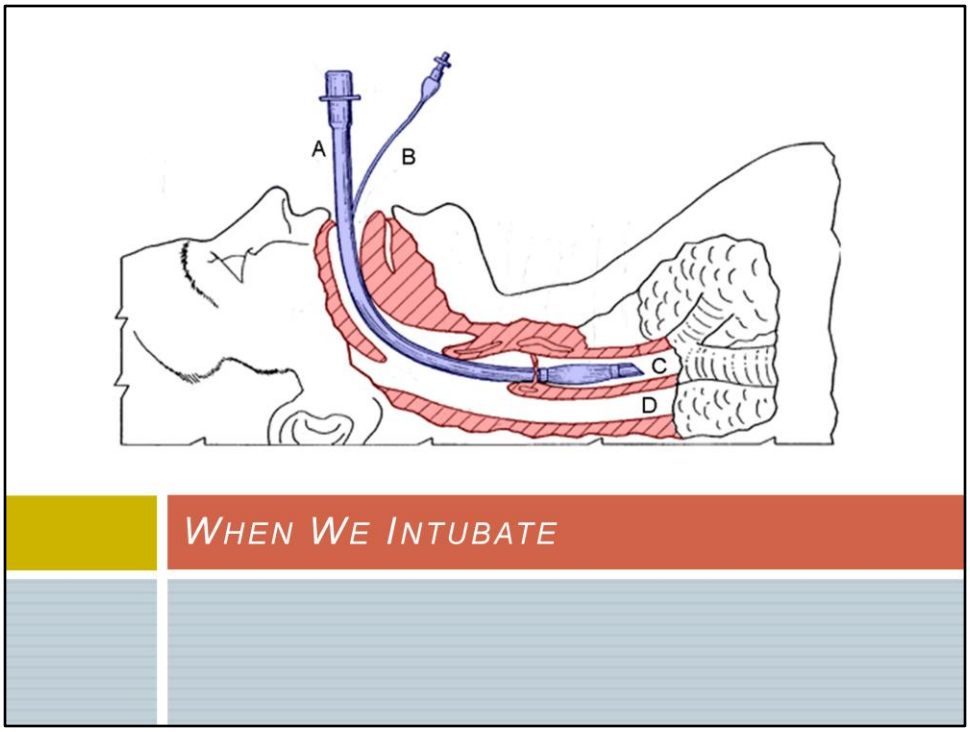
Oral Airway – help with large tongue and upper airway swelling

Mask-assisted ventilation



LMA – Short term
•**Easier Access**
•Avoid nasal/sinus complications
•Allow for larger diameter:
•Breathing, suctioning, bronchoscopy

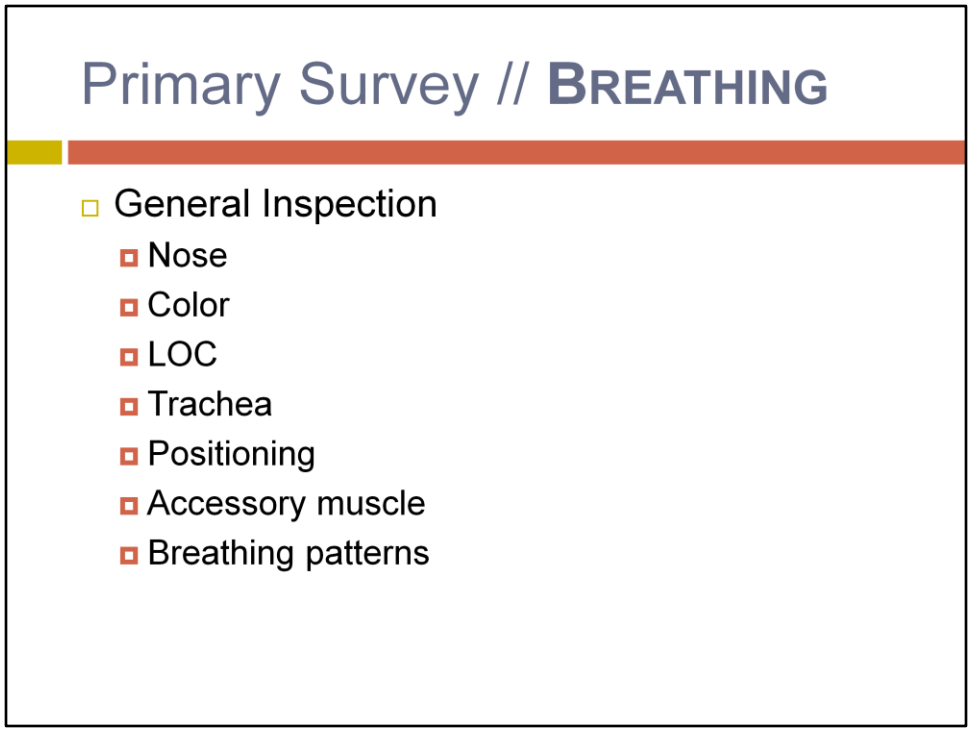
Good alternative to bag/mask
Less gastric distention but does not eliminate the risk of aspiration
Can't place GT/NG with this device



Indications

- Respiratory arrest
- Respiratory failure
- Airway obstruction (questionable)
- Significant alteration of mental status (less than 8, intubate)
    - Peds (less than 9, ain't so fine)

Prolonged venilatory support



Nose – Flaring, if unilateral, consider foreign body obstruction

Color – Pale, dusky, circumoral cyanosis, acrocyanosis

LOC – decreased LOC in the presence of respiratory distress – hypoxic / raising CO2 levels – PROBLEM
LETHARGY? SOMNOLENT? DROWSY?
Decreased PaO2 / Increased CO2 / RESPIRATORY ACIDOSIS
V/Q mismatch – SHUNT (Perfusion s ventilation)
CAUSES
•Over sedation – ingestion?
•Head Trauma – C345
•Brainstem - "Controllers" – Medulla / Pons (Automatic)
•Cerebral cortex - Voluntary
•NM Disease

ANXIOUS?
Hyperventilation – Think PE? Think Hypoxia? Think LOW Co2 and Respiratory Alkalosis

Which is better temporarily? Depends, with the exception of ICP issues, Respiratory acidosis bc causes a RIGHT SHIFT in oxyhemoglobin curve so HBG loose affinity for O2 and more readily give it away to perfuse tissue
Below 6.8 deadly

Trachea – shift is a problem
•pneumothorax – opposite side shift
•Atelectasis – same side shfit

Body position – Relaxed vs. tripod

Accessory Muscles
•Work from the bottom up
•Abdominal thrusting
•Subcostal – Intercostal – Supraclavicular – **Suprasternal**

Breathing patterns
?Rate, Depth, Effort?
•Nasal flaring
•Tachypneic
•Head bobbing
•Shallow? Sighing? **Stridor?**
•See Saw respirations?

Our kids deteriorate QUICKLY!! Go from labored breathing, to tachypnea to a state of total exhaustion and apnea

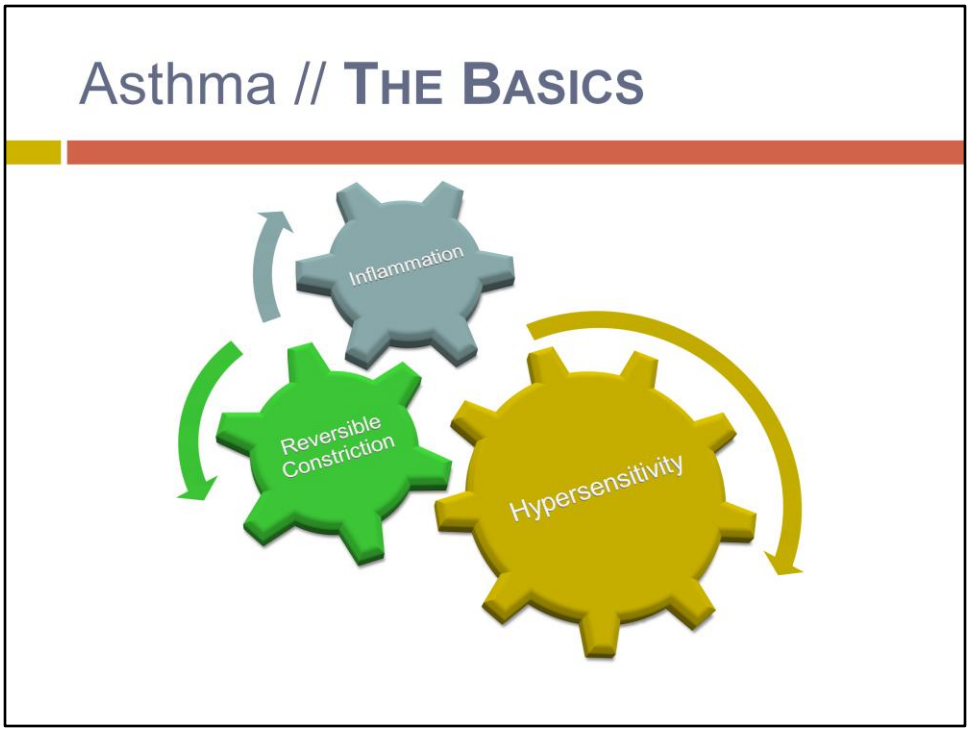
After inspeciton comes auscultation

Wheezes
Mild Crackles
Inspiratory Wheezing with crackles
Coarse crackles
Expiratory Crackles
Wheeze? Low Pitched Rhonchi
Mild inspiratory stridor
Rales associated with PNA (Fine crackles)
Rhonchi (musical)
Stridor

Palpation follows:
Often feel fremitis or palpable vibration
Rhonchal fremitis :: felt by mucous in the airways
Tussive fremitis :: felt whem mucous is cleared when coughing

When Blue is BAD

Asthma



Pollen
Pet dander
Tobacco
Cold weather

Past History

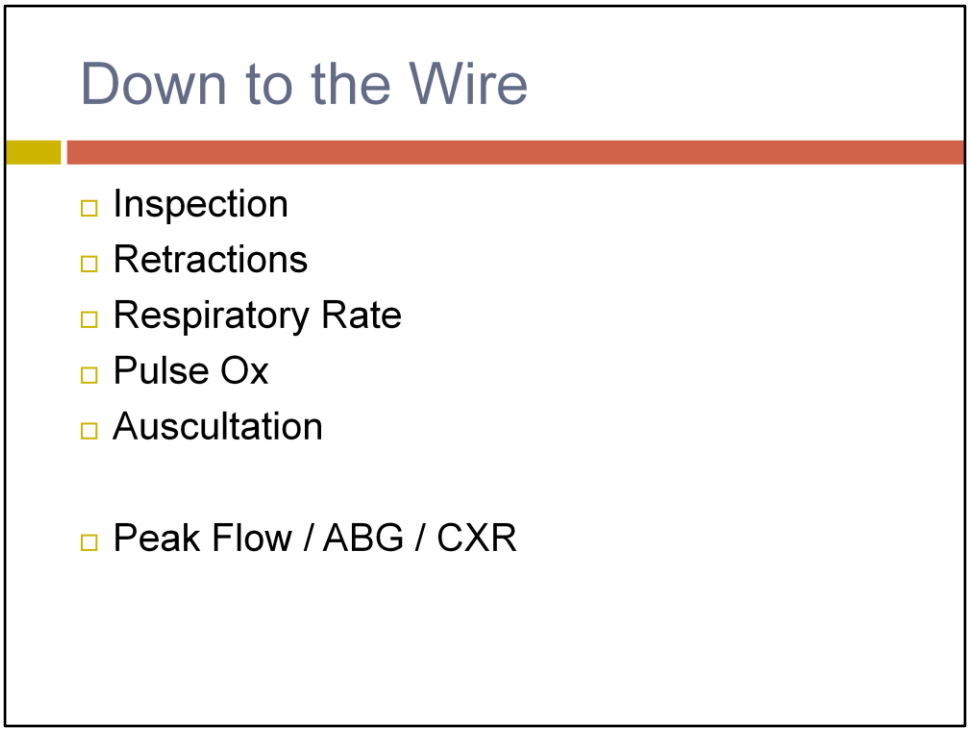
- Last ER visit
- Number of total ER visits
- Last hospital admission
- Number of hospital admissions
- Intensive care admissions
- Intubations

Try to get a grasp on the severity of the condition

Current Exacerbation

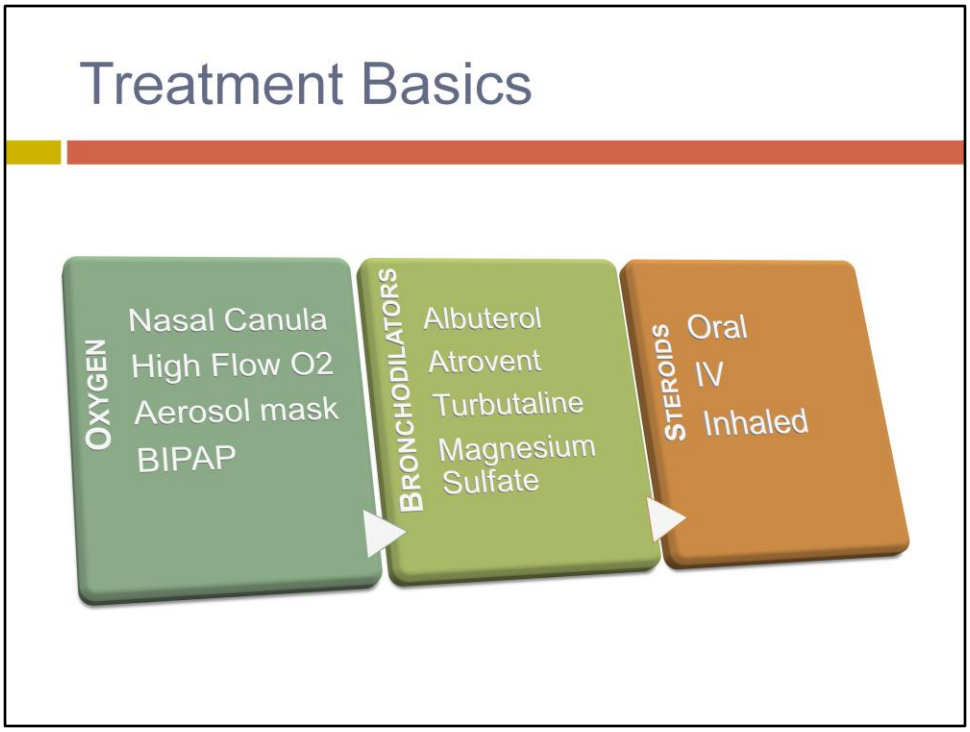
- Duration of asthma symptoms
- Preceding triggers
- Infectious symptoms (URI)
- Frequency of rescue medication
- Chronic medications
- Time of last medication dose
- Peak flow rates

How often do you use your albuterol?



Initial ABGs may indicate hypocapnia and respiratory alkalosis d/t hypervenilation
As fatigue sets in, hyposemia an dhypercapnia develop
Possible lactic acidosis by overproduction by the respiratory muscles
RESULT: Respiratory and metabolic acidosis

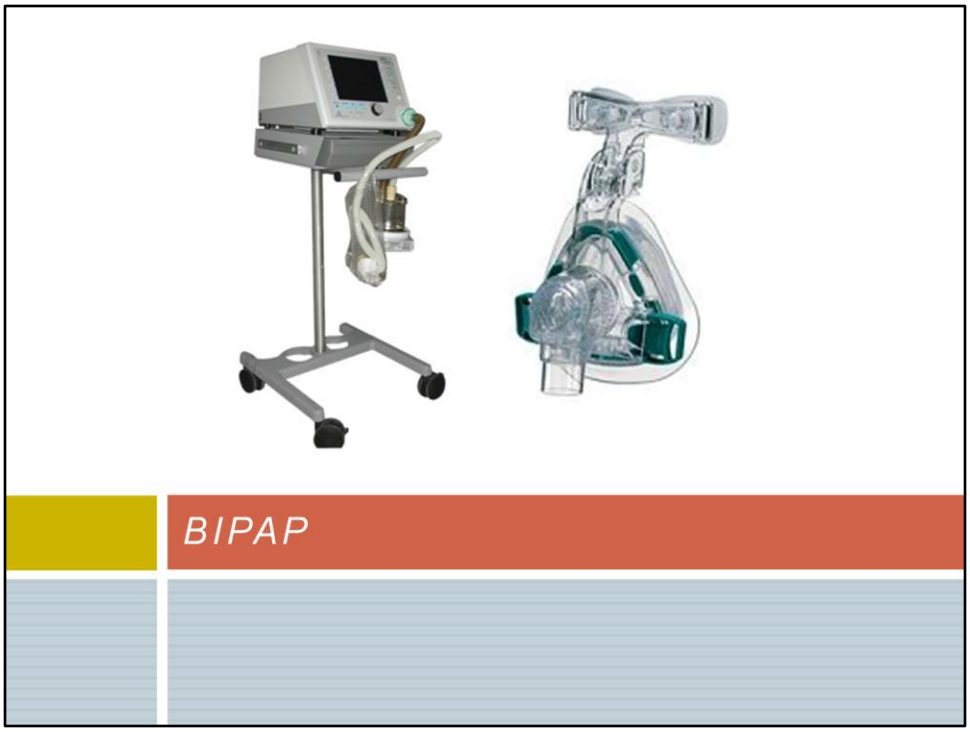
Peak Flow Video
Aerochamber video



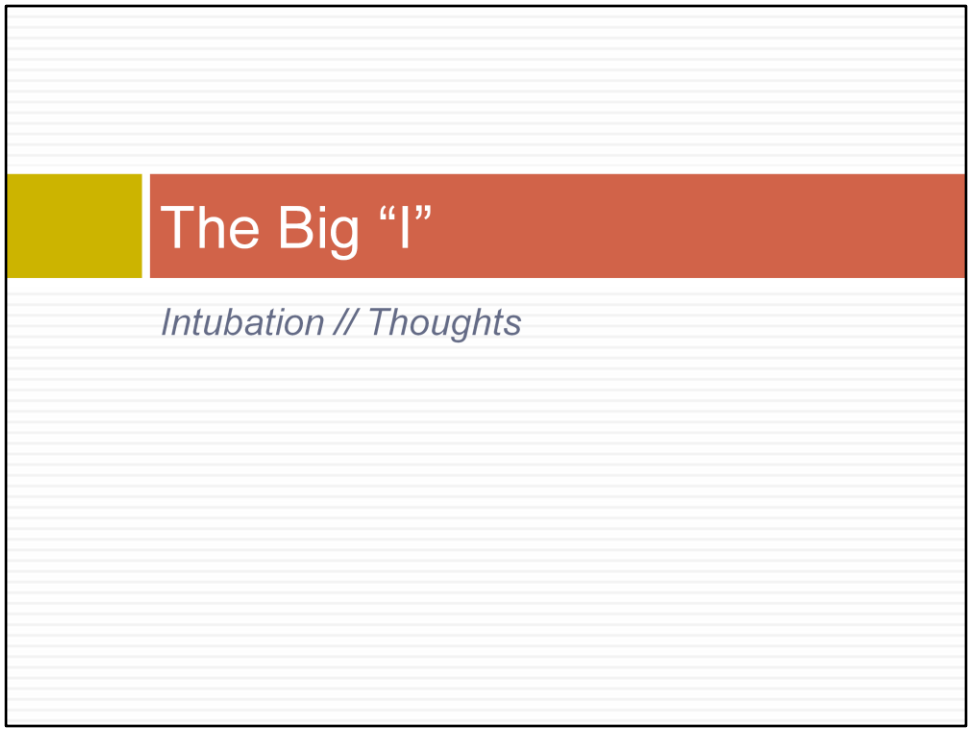
Sats >92
?Heliox – lighter so it flows easier into constricted areas

Leukotriene inhibitors – prevent release of these inflammatory mediators

Steroids- 6-8hours to take effect

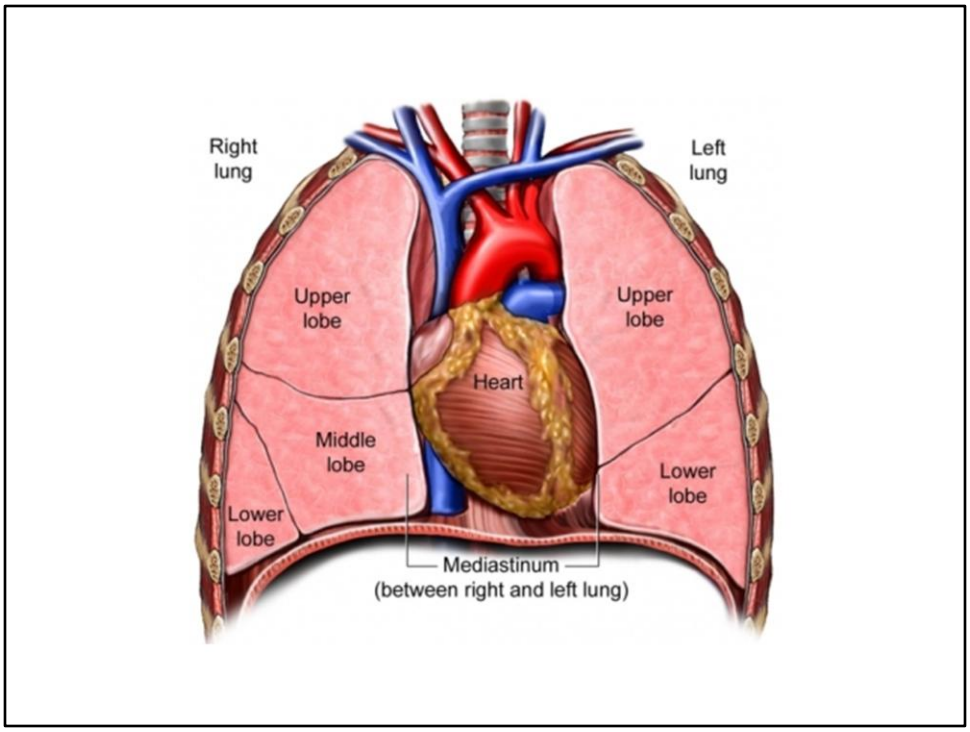


Biphasic Inspiratory Positive Airway Pressure
Nasal prongs
Nasal mask
Face mask



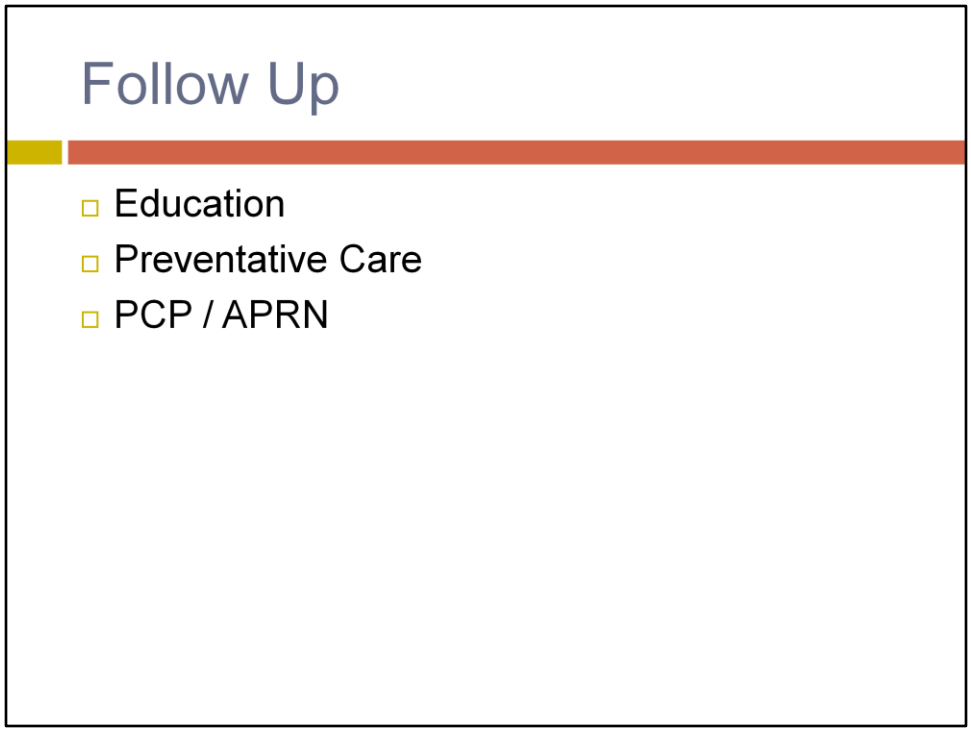
Paralytics / Muscle relaxants – Bronchospasm / Thickens mucous
Tube – Bronchospasm
Use so much pressure to “pop” open, increase intrathoracic pressure
Increase negative pressure in mediastinum

Auto peep with prolonged expiratory phase (1:4) ideally (low enough rate)
Permissive hypercapnia is OK
Ketamine for intubation if necessary…bronchodilitory properties/hypertensive properties



Decreases heart capacity to pump and fill

Increase in venous return and pooling of blood in the RV
RV stretches out causing septum to shift impinging on LV
Lv has to work harder to pump blood from the negative pressure in thorax
Decreased CO and fall in systolic pressures on inspiration (pulsus paradoxus)



Patho
Etiology
Monitor peak flow rates at home
Correct use of inhaler
Infection control

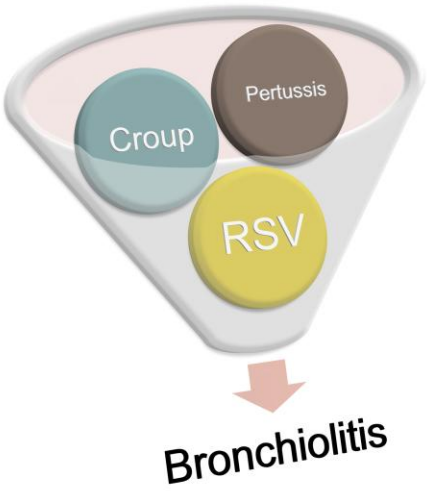
When Blue is BAD

Bronchiolitis

The Nitty Gritty

- Viral mediated illness (60-90% RSV) with inflammatory mediators which cause
  - Direct cytotoxic effects
  - Excess mucous
  - Cellular depris
  - Edema
  - Smooth Muscle Bronchoconstriciton

Key Players

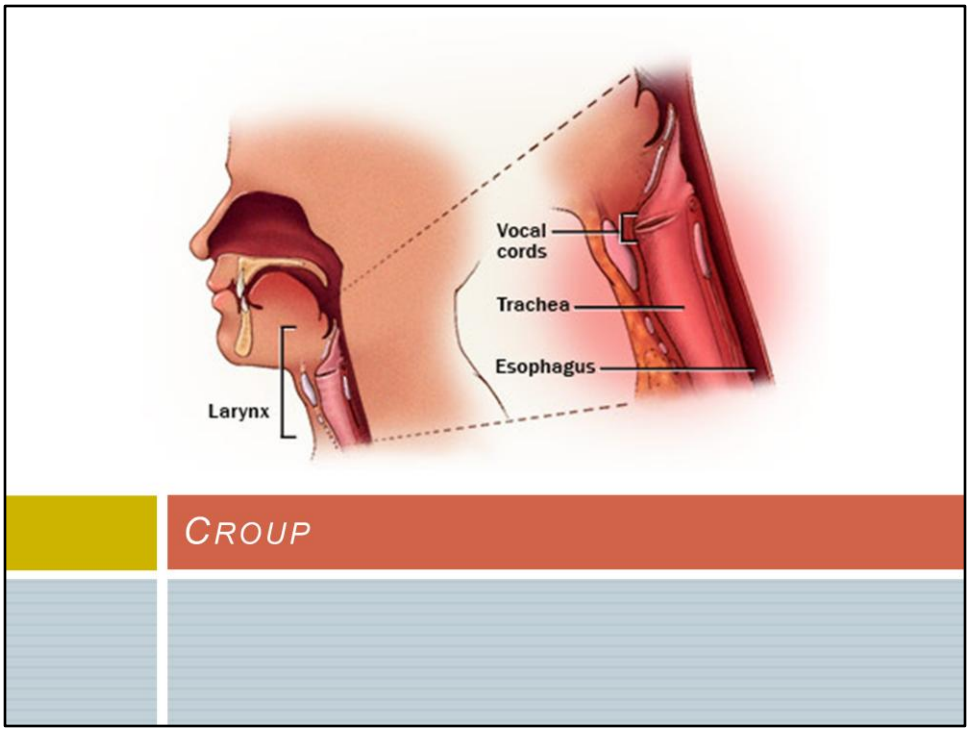


Bronchiolitis

The Croup

- Complex symptom presentation of hoarseness, a resonant cough described as **“barking”** or **“brassy”**, varying degrees of inspiratory stridor resulting from swelling or obstruction of the larynx

- Etiology
  - Paraflu
  - Flu A & B
  - Adenovirus
  - RSV

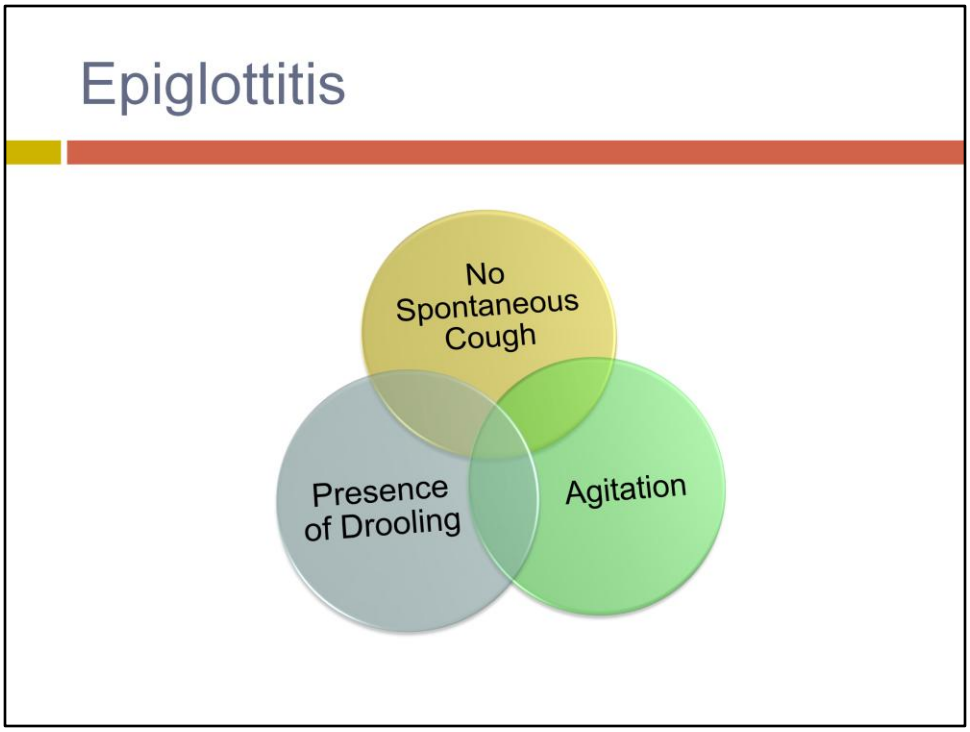


Inflammation and swelling around larynx
Vocal chords (False and True)
Subglottic tissue
Trachea

Often described based on area of inflmamation and swelling

Epiglottitis (Older as in 2-5)
Supraglottitis
Laryngitis
Laryngotracheobronchitis (Younger kids)
Trachetis

Children with epiglottitis usually look worse than they sound
Those with LTB sound worse than they look



Tripod positioning – Stridor worse when supine
Dysphagia
Fever
Froglike croacking
Look toxic

Do not inspect oral cavity with depressor unless ready to intubate or trach!
Can potentiate swelling
Tx: Humidified O2 / Antibiotics / Airway protection
After 24hrs / swelling decreaeses

Laryngotracheobronchitis

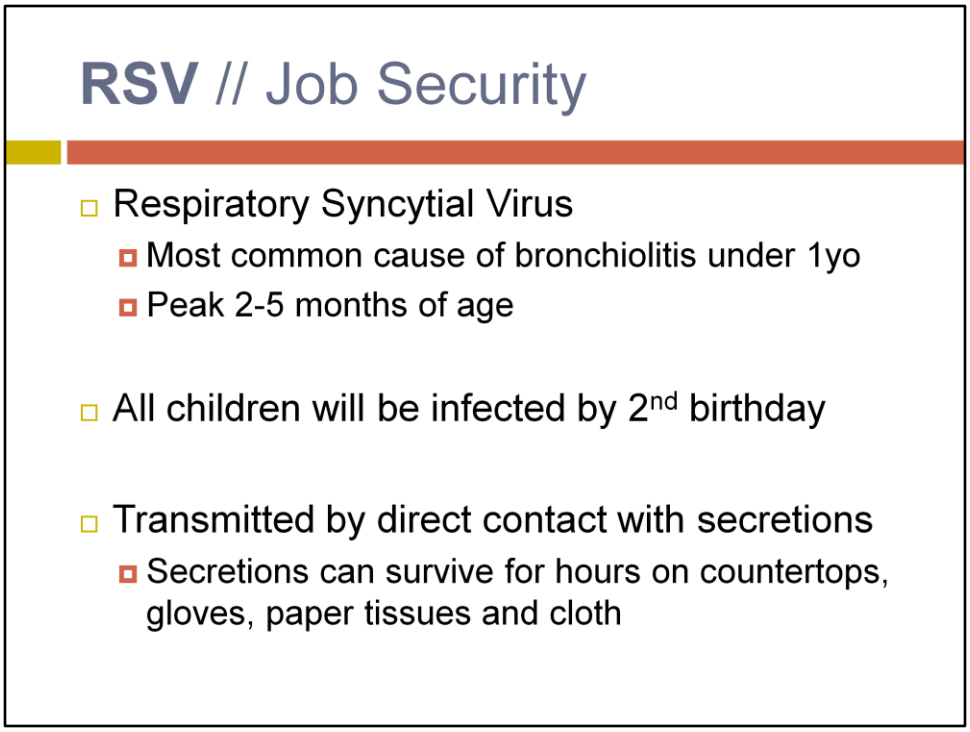
- Most common
- Less than 3mo – 8yrs

- Treatment
  - Cool mist
  - Racemic Epinephrine
  - Heliox

Present with URI
Stridor

Pertussis // **Whoop Whoop**

- Caused by *Bordetella pertussis*
  - NP Swab
- Usually younger than 4 without DTP vaccine
- **Highly contagious**
- Once lasts a lifetime

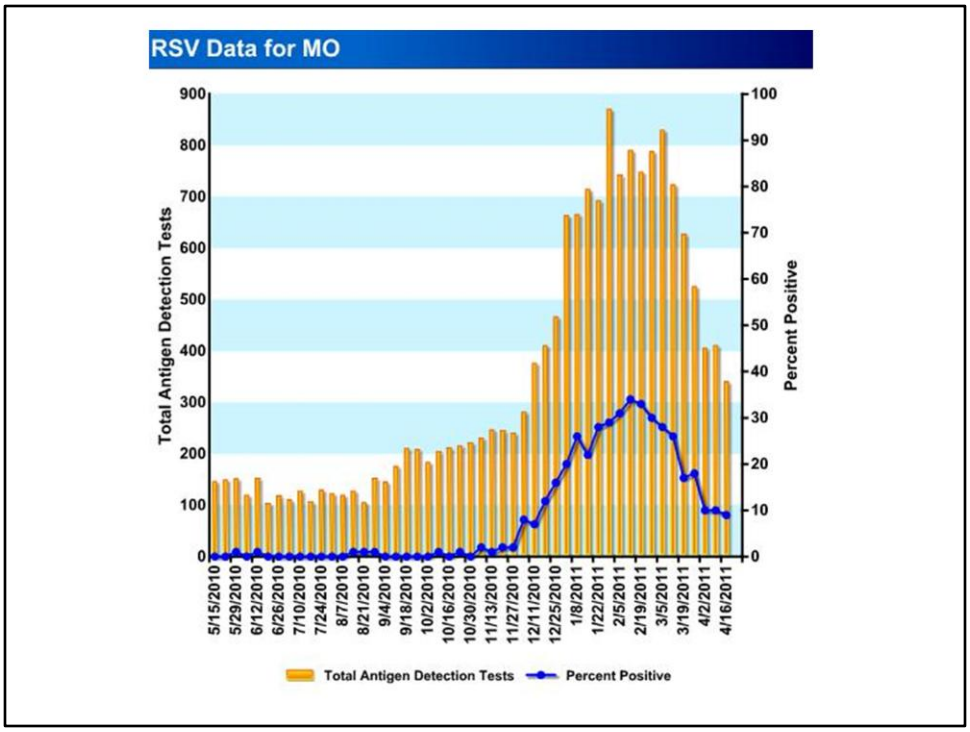


Respiratory Sinsishal Virus

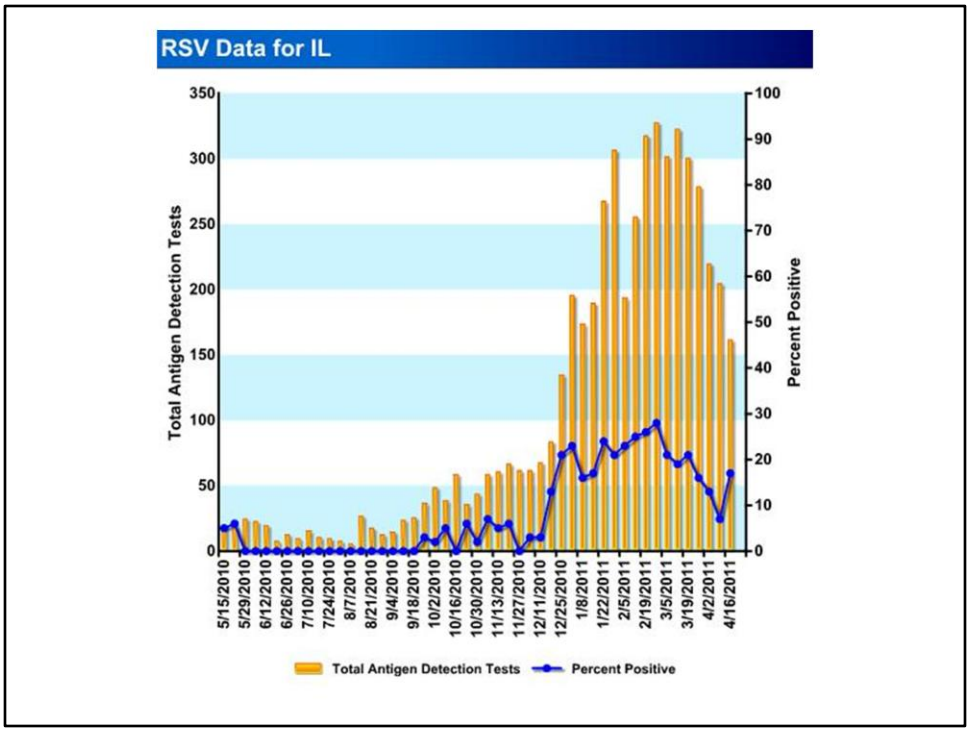
Paramyxovirus containing a single strand of RNA r/t paraflu
Two types
Type A (virulent) and type B
Begins in fall, peaks in winter, decreases during spring

As of 2008 According to CDC – We are in region 7 (Kansas City)
Late November to Early March

You guys – Region 5 (Chicago)
Early November to Mid April



Trend up first week of December
Decreased first week of April



Data collected every two weeks
Begin to trend up Christmas day
Broke spike second week of April

Patho: Dr Cecchia of SLCH

RSV // Symptoms

Initial

- Rhinorrhea
- Pharyngitis
- Coughing
- Wheezing
- Otitis Media
- Fever

Progressive

- Increased coughing
- Tachypnea
- Retractions
- Cyanosis
- Apneic spells

Diagnosis & Treatment

- NP Swab
- Rapid RSV
- ABG / CXR

- Humidified O2
- Adequate hydration (IVF)
- Airway maintenance / Clearance
- Steroids / Bronchodilators / Epi

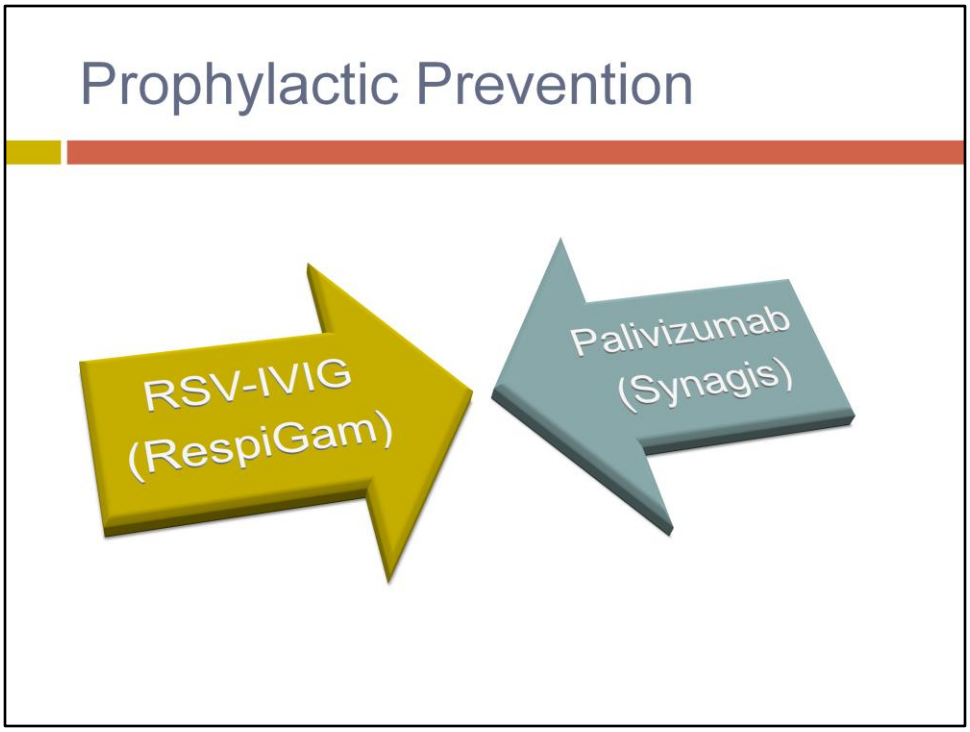
O2 – NC / CPAP / BIPAP / Intubation / Oscillation
Frequent suctioning
Drug of choice is physician dependant

No abx / VIRAL

Ribavirin

- Very expensive
- Must be aerosoled
- Potential toxic effects to personnel
- Questionable efficacy

Controversal antiviral



Respigam (IVIG) used in high risk infants and infants with BPD
Given before or during the RSV epidemic season (Nov-Mar)
Also given q month to maintain protection

Synagis (Genetically engineered RSV antibody)
Monthly IM injections are associated with 55% overall reduction in hospitalization
Preferred over IVIG

Recommendations

1. Infants and children younger than 2 with BPD who have received medical therapy for BPD within 6 mo prior to RSV season
2. Infants born at 32wks of gestation
3. Children with severe immunodeficiencies
4. Must be initiated at the onset of the season
5. Infants and children younger than 2 with hemodynamically significant CHD

Based on American Academy of Pediatrics

Questions

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