Respiratory failure in children

- Why are they susceptible?
  - Haven't yet acquired immunity to the infections adults are immune to
  - Upper and lower airways are more narrow and thus more easily obstructed by swelling or secretions
  - Chest wall is more compliant and this reduces the efficiency of breathing if there is increased effort
  - In infants, end-expiratory volume is similar to closing volume and so they have small airway closure
  - There are fewer alveoli
  - The respiratory muscles are inefficient: fatigued rapidly
  - Pulmonary vasculature is muscular: pulmonary hypoxic vasoconstriction occurs more readily. This can lead to duct reopening and R→L shunting
  - Foetal hemoglobin is present up to 4th-6ths month of life; dissociation curve shifted to the left: less oxygen is delivered to the tissues because of fHb’s higher affinity for oxygen

Presentation

- Frequently, the only sign in infants is decreased feeding
- Stridor = upper airway obstruction
- Wheeze = lower airway obstruction
- Grunt = pneumonia

The child with stridor

- Most common causes:
  - Croup: viral laryngotracheaitis; barking cough, coryza, fever, hoarseness.
  - Croup: spasmodic; sudden onset, recurrent, with a history of atopy

- Less common causes:
  - Laryngeal foreign body; suddenness of onset
  - Epiglottitis; drooling, with muffled voice
  - Trauma: neck swelling, bruising
  - Retropharyngeal abscess: drooling, septic appearance
  - Airway burns: soot in the mouth
  - Diphtheria: travel to endemic area while unimmunized

- Gurgling is a bad sign. The child is either too drowsy or too tired to clear the secretions with cough.

Loud harsh stridor is usually croup.
Quiet stridor is usually epiglottitis.