PEDIATRIC RESPIRATORY SYSTEM

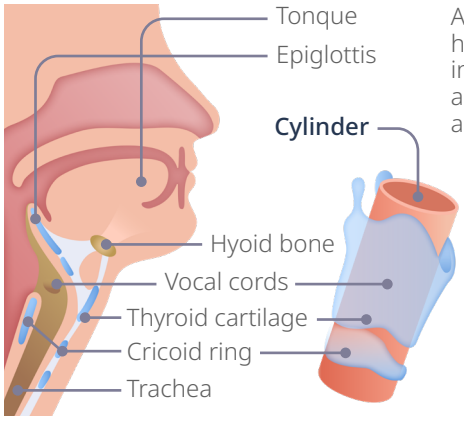
WATCH VIDEO!

The pediatric respiratory system differs from adults' in several key ways, increasing the risk of decompensation due to common respiratory illnesses in pediatric clients.

Upper airway structures

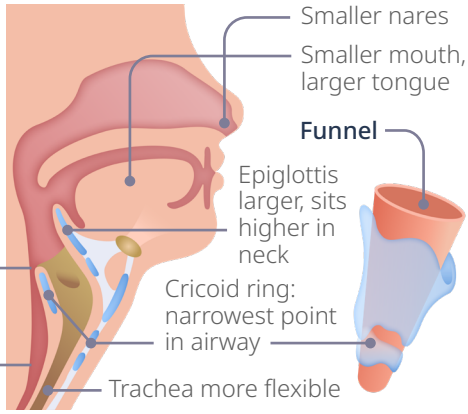
- Smaller nasal/oral passages and epiglottis more susceptible to obstruction by inflammation and mucus collection
- Narrow, funnel-shaped airway and more flexible trachea easily obstructed by malpositioning or inflammation

Adult airway

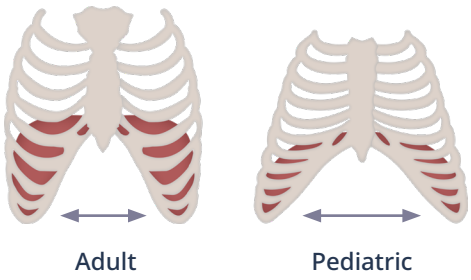


Airway higher in neck and more anterior

Pediatric airway



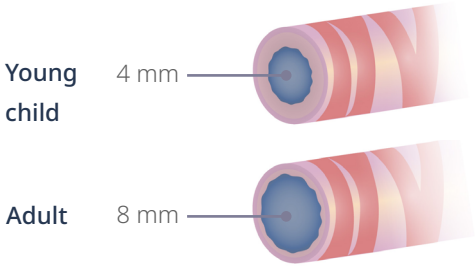
Thorax & diaphragm



- Diaphragm fatigues more easily.
- Accessory muscles are immature/weak.
- Increased rib cage angle and relatively large organ size limit chest expansion.

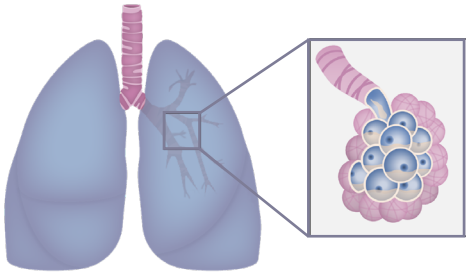
➔ Increasing respiratory rate is only mechanism to increase lung function.

Lower airway diameter



- Smaller relative airway diameter
- Patency easily compromised by bronchoconstriction and mucus collection
- Immature beta-adrenergic receptors less responsive to bronchodilator medications

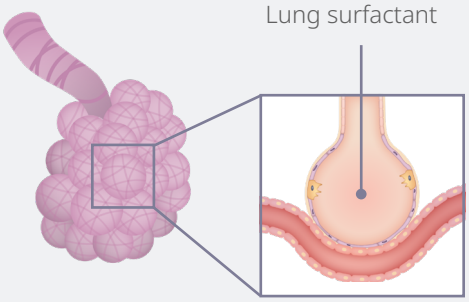
Alveoli



- Few functioning alveoli at birth
- Smaller area for gas exchange
- Small, immature alveoli more susceptible to collapse and atelectasis

Surfactant

- Phospholipid produced within the alveoli by type II pneumocytes
- Reduces surface tension, keeps alveoli open
- Produced at 30–34 weeks gestation, insufficient in premature infants



Insufficient surfactant may cause:

- Increased surface tension
- Difficulty expanding alveoli
- Increased work of breathing
- Atelectasis
- Lung collapse