

## Atelectasis

### 9.1.3 – Atelectasis

**Atelectasis** is defined as incomplete expansion of a lung or a portion of a lung in which the alveoli are deflated or even collapsed. Atelectasis is one of the most common respiratory complications after surgery. Other common causes include airway obstructions, lung compression due to pneumothorax or pleural effusion, or increased elastance of lung tissue due to a loss of surfactant. Atelectasis can be broken down into two categories:

1. **Primary atelectasis** occurs when the lungs of a newborn do not fully expand because of a lack of surfactant. Premature (born before week 28 of pregnancy) infants are at greatest risk of this condition and it is often called respiratory distress syndrome (RDS). Without surfactant, the surface tension within their lungs is too great, thus preventing the infant from being able to fully inflate their lungs on their own. Treatment includes administering a breathing tube to the infant, placing him/her on a ventilator or continuous positive airway pressure (CPAP) machine, and/or administering artificial surfactant. If it is known that the baby is at risk for a premature delivery, sometimes the mother is administered corticosteroid injections earlier in pregnancy (~24 weeks) to stimulate surfactant production in the fetus and thus reduce RDS and the risk of atelectasis.
2. **Secondary (or acquired) atelectasis** occurs when there is a partial or complete collapse of lungs that have once been fully expanded. Common causes of secondary atelectasis include lack of surfactant and airway obstructions caused by a mucus plug, a tumor mass, or exudate. Aspiration of foreign material can also be a cause. Those undergoing general anesthesia are at increased risk for developing secondary atelectasis because breathing high concentrations of oxygen can depress the ventilatory drive, making breaths more shallow. With more shallow breaths, the alveoli can gradually become less inflated, which leads to atelectasis. Measures that can be taken to decrease the risk of developing atelectasis include deep breathing, frequent change of position, and adequate hydration.



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