

## Mechanisms of Ventilator Induced Lung Injury

High  $\text{FiO}_2$  alone, even in the absence of mechanical ventilation is damaging to the lungs. Damage caused by lung inflation is related to the inflation volume so we use the term volutrauma.

Experimental evidence indicates that the following aspects of ventilation may be particularly injurious.

- Excessive inflation volumes (high volume injury)
- Recurrent collapse and re-inflation (low volume injury)
- Fighting against the ventilator
- Atelectatic trauma
- Biotrauma (oxygen and chemical eg secretions/meconium/blood)
- Long inspiratory times

The implications of this are that we should:

- Avoid excessive tidal volumes (VT), by targeting tidal volumes where possible.
- Aim for around 5-6ml/kg on conventional ventilation
- Use [surfactant](#) as early as possible and maintain adequate PEEP if there is a significant oxygen requirement
- Used synchronised ventilation modes where possible and consider sedation to infants who are significantly interacting with ventilation (fighting the ventilator)
- Consider using paralysing agents if aggressive ventilation is required
- Aim for short inspiratory times initially in RDS (eg 0.3 seconds)