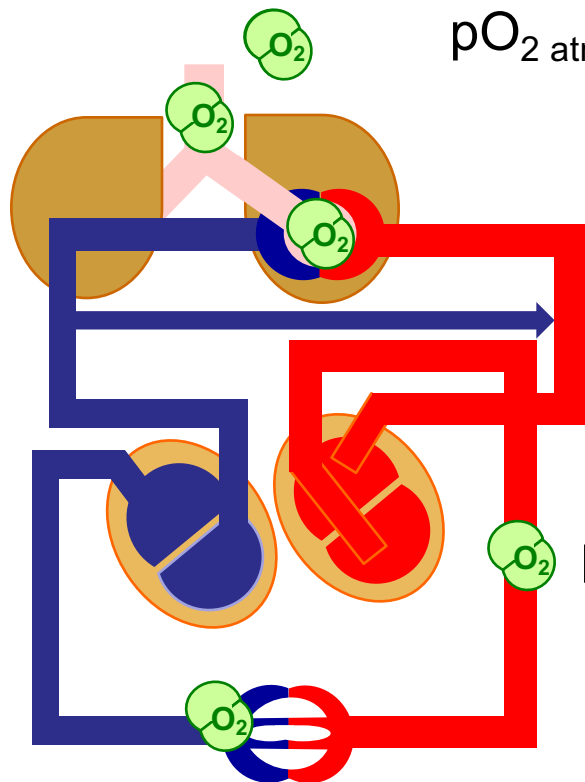


Pathophysiology



Hypoxaemic respiratory failure

- Low inspired pO_2



Zurich

$$\begin{aligned} pO_{2 \text{ atm}} &= p_{\text{atm}} \times 0.21 \\ &= 760\text{mmHg} \times 0.21 \\ &= 159\text{mmHg} \end{aligned}$$

$$pO_{2 \text{ art}} = 95\text{mmHg}$$

Everest

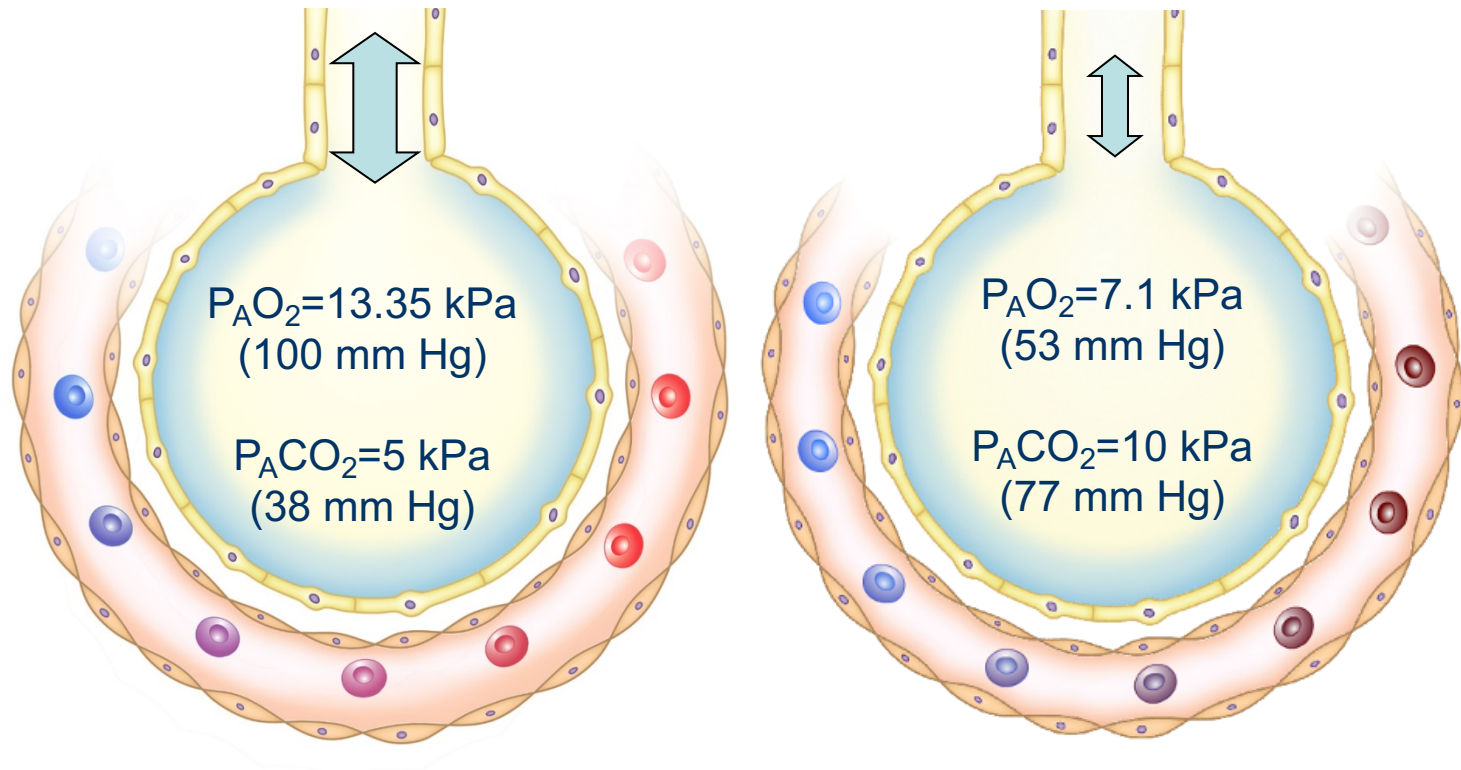
$$\begin{aligned} pO_{2 \text{ atm}} &= p_{\text{atm}} \times 0.21 \\ &= 253\text{mmHg} \times 0.21 \\ &= 53\text{mmHg} \end{aligned}$$

$$pO_{2 \text{ art}} = 24.6 \text{ mmHg}^*$$

* Grocott, NEJM 2009

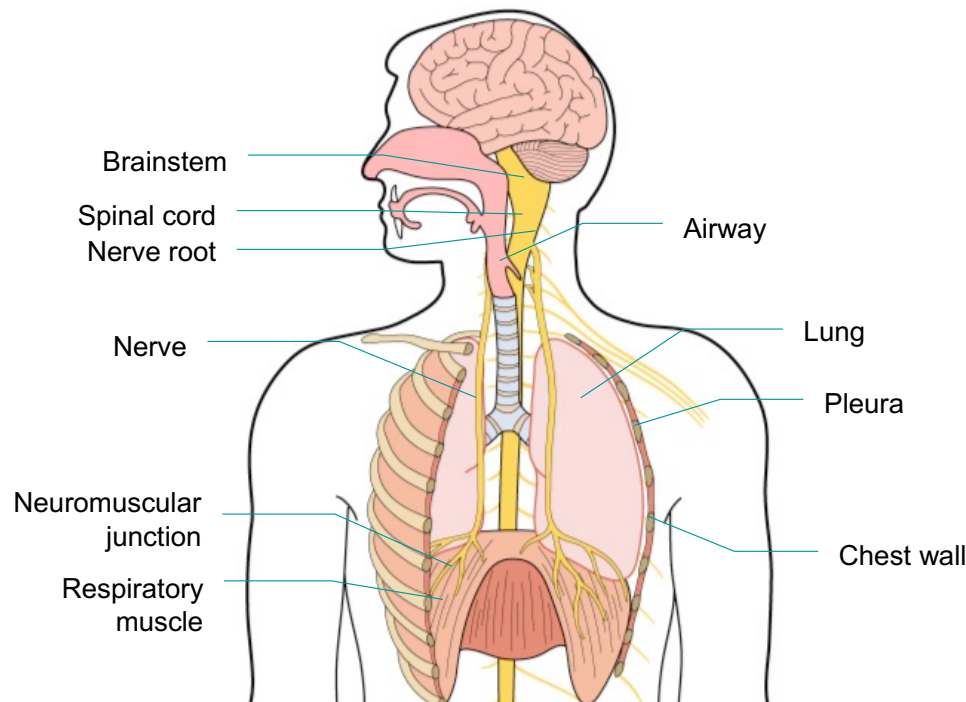
Hypoxaemic respiratory failure

- Low inspired pO_2
- Hypoventilation



Hypoxaemic respiratory failure

- Low inspired pO_2
- Hypoventilation

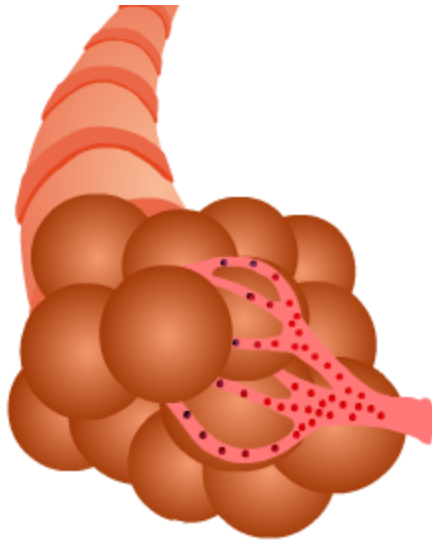


Sites at which disease may cause hypoventilation

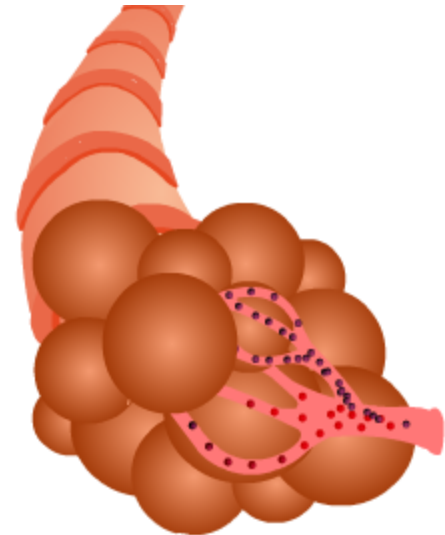


Hypoxaemic respiratory failure

- Low inspired pO_2
- Hypoventilation
- Ventilation-perfusion mismatch
 - Shunting

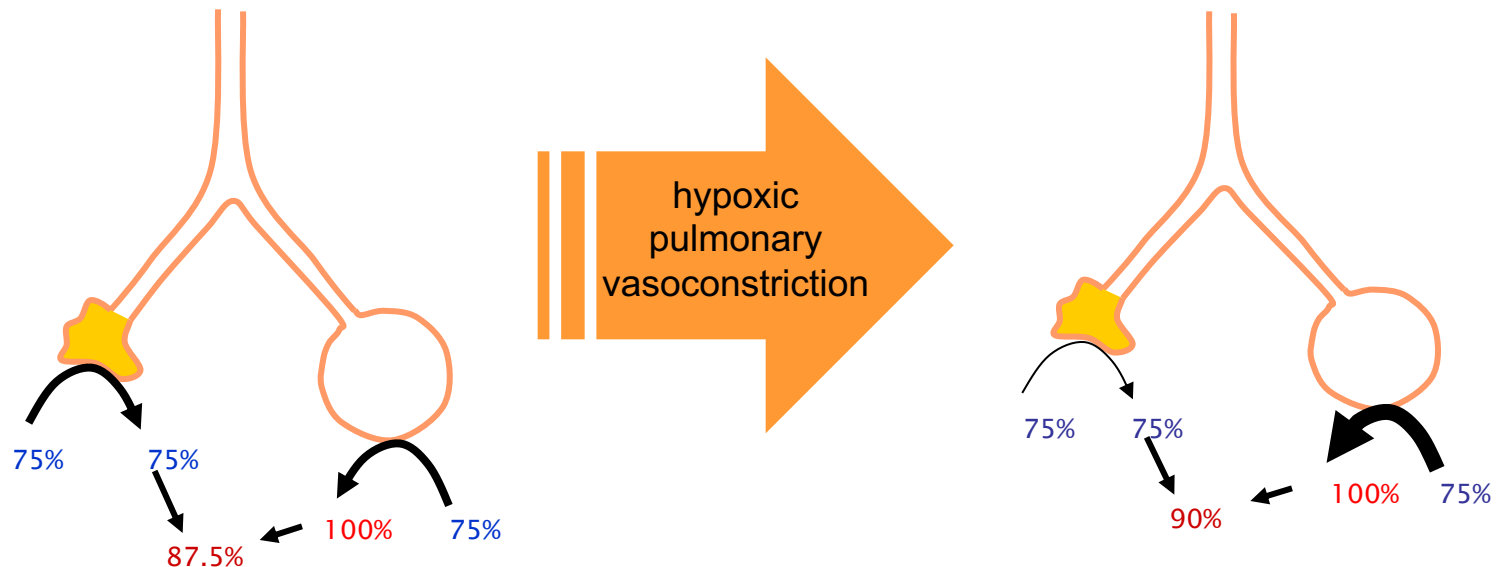


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Hypoxaemic respiratory failure

- Low inspired pO_2
- Hypoventilation
- Ventilation-perfusion mismatch
 - Shunting



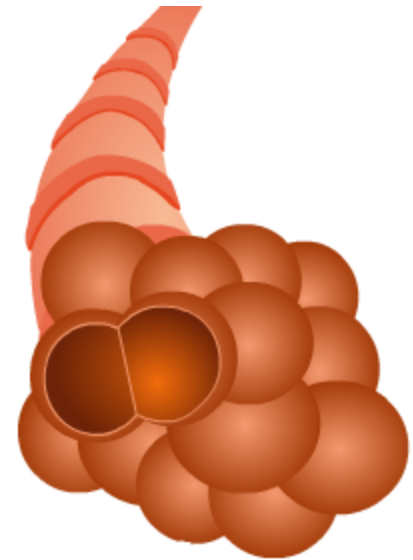
Hypoxaemic respiratory failure

- Low inspired pO_2
- Hypoventilation
- Ventilation-perfusion mismatch
 - Shunting: Intra-pulmonary
 - Pneumonia
 - Pulmonary oedema
 - Atelectasis
 - Collapse
 - Pulmonary haemorrhage or contusionIntra-cardiac
 - Any cause of right to left shunt
 - eg Fallot's, Eisenmenger,
 - Pulmonary hypertension with patent foramen ovale



Hypoxaemic respiratory failure

- Low inspired pO_2
- Hypoventilation
- Ventilation-perfusion mismatch
 - Shunting
 - Dead space ventilation

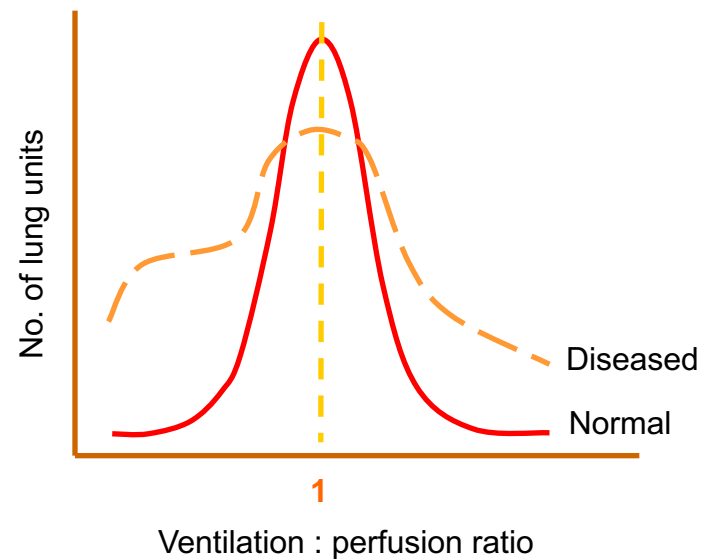
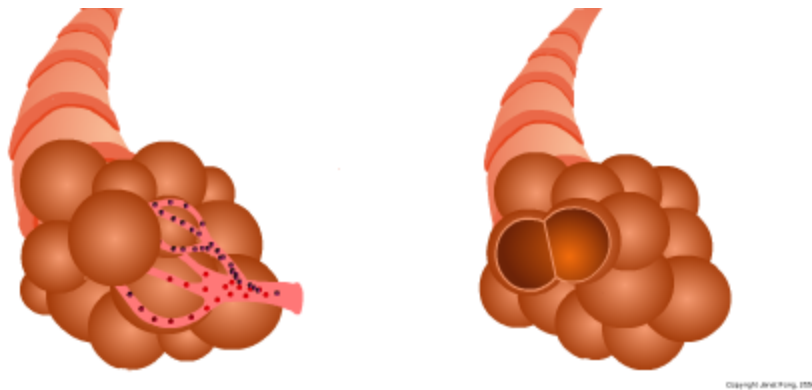


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Hypoxaemic respiratory failure

- Low inspired pO_2
- Hypoventilation
- Ventilation-perfusion mismatch
 - Shunting
 - Dead space ventilation



Hypoxaemic respiratory failure

- Low inspired pO_2
- Hypoventilation
- Ventilation-perfusion mismatch
 - Shunting
 - Dead space ventilation
- Diffusion abnormality

