

Early Phase Weaning of respiratory support

Important Points

- 1) The majority of patients only need a PO₂ of 8KpA
- 2) High FiO₂ is dangerous for our patients and unnecessarily high FiO₂ is exposing them to additional risk.
 - This is for 2 main reasons:
 - 1) It can result in long term respiratory damage (lung fibrosis secondary to oxygen toxicity)
 - 2) It can cause absorption atelectasis (collapse of alveoli and subsequent loss of lung volume)

Oxygen Toxicity

- The speed of the oxygen toxicity is related to the FiO₂ and to the duration of high FiO₂
- The maximal time (safe time) we should aim to have patients on high FiO₂ is as follows;
 - FiO₂ 1.0: < 12 hours
 - FiO₂ 0.8: < 24 hours
 - FiO₂ 0.6: < 36 hours
 - FiO₂ 0.5: indefinitely. This is the SAFE concentration of oxygen we should be aiming to get our patients too as soon as is clinically possible.

Absorption atelectasis (AA)

- This can occur when FiO₂ 1.0 is administered
 - Always try to minimise the time spent on 100% oxygen
 - Even if a patient is hypoxic, aim to have them on a maximum of FiO₂ 0.95, because even a small loss of volume due to AA can have an effect on oxygenation

Important message:

- The quicker that FiO₂ is weaned, the sooner that ventilatory support will be weaned
- The quicker that ventilatory support is weaned, the sooner that sedation can be weaned
- The quicker that sedation is switched off, the sooner the patient will start breathing spontaneously and the sooner the patient will be extubated
- **The quicker the patient is extubated, the sooner the patient will potentially leave the ICU and their risks of VAP/line infections/pressure sores will reduce. It will also free up critical care beds sooner and allow increased patient flow.**

Following admission to ICU

- Ascertain target PaO₂ or SpO₂ from the admitting doctor
- Once the patient is stable following admission (SpO₂ or ABG above set parameters), start weaning FiO₂ as soon as possible
- An ABG is not required before a change in FiO₂ as long as SpO₂ are above the target
- Keep weaning FiO₂ as long as the targets are achieved
- This does not need to be done over the course of many hours, it can be done quickly if the patient is stable and oxygenation stable
- Once FiO₂ is reduced, reducing ventilatory support and reducing sedation can be considered
- Whilst FiO₂ remains high, reducing ventilatory support is unlikely to be considered
 - The patient may therefore remain fully ventilated for an unnecessary longer period of time
 - This results in loss of respiratory muscle fibre function and a prolonged time to wean.
- Once FiO₂ is reduced, discuss with doctor about appropriateness of reducing sedation and what the target RASS score should be.
- Aim for spontaneous breathing as soon as it is clinically appropriate
 - This point will be brought forward if the FiO₂ and sedation is weaned in a timely fashion.