How to use less oxygen

Our gas cylinder supply could become limited if the NHS has a greater need.

Play your part now by reducing fresh gas flow under anaesthesia.

Update your knowledge here.

Overview

Oxygen is the main carrier gas used in the UK. Some practices may also use medical air.

Under anaesthesia we use carrier gases to vaporise the volatile agents and to ‘push’ carbon dioxide out of the breathing system.

Calculate oxygen requirement

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<td>Determine minute ventilation (MV)</td>
<td>MV = tidal volume (TV) x resp rate (RR)</td>
<td>Approximations: TV 10-20ml/kg RR 10-20/min</td>
<td>MV range 100-400ml/kg/min</td>
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Tip: Start with 200ml/kg/min

Breathing systems

- Use an efficient breathing system.
- Choose a circle, mini Lack or Lack. Circuit factor = 1.
- For a circle start with a fresh gas flow of 2L/min for 5 mins then reduce to 0.5-1L/min.
- A Bain or a T-piece uses 2-3x MV so try to avoid.
- For short term IPPV a circle, mini Lack or Lack are okay.
- Humphrey ADE is a highly efficient option.

Use capnography

- Start with the lower end of your MV.
- Reduce fresh gas flow to the minimum to prevent rebreathing.
- Rebreathing of 1-2mmHg is acceptable.

Medical air

Where medical air is available use in a 1:1 ratio in a circle system and a 2:1 air:oxygen mix for non-rebreathing systems.

Sedated patients

- Only provide oxygen to these patients if clinically indicated.
- Observe mucus membranes regularly.
- Confirm with pulse oximetry if concerned.
- If oxygen is required, use a tight fitting mask and 0.5L/min.

Pre-oxygenation

- Reserve this for where it is clinically indicated by the patient’s condition.

Summary

Reducing fresh gas flow will keep your patient warmer and save money for the practice. It will also reduce environmental contamination from reducing volatile agent use.

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