Prescribing oxygen therapy

Oxygen therapy

- Oxygen comes out of tap in wall at 100% concentration.
- Different devices tolerate different flow rates (from 0-15L/min) and this flow rate can be set on the wall tap
- The percentage of oxygen delivery depends on the flow rate and the delivery device. The main type of oxygen deliver device are outlined below.

1. Nasal cannulae

- Deliver 24-30% O2 (this is an FiO2 of 0.24-0.3)
- Flow rate maximum 4L/min
- Comfortable and well-tolerated but can dry the nose. If patient complain of this use a humidified circuit (oxygen passed through water prior to getting to patient)
- Use for non-acute ward use, or if mildly hypoxic

Nasal cannula (deliver 24-30% oxygen)

2. Hudson mask

- Delivers 30-40%
- Flow rate 5-10L/min
- Not commonly used any more

Hudson mask (delivers 30-40% oxygen)

3. Venturi mask

- Delivers 24-60% oxygen depending on colour of fitting.
- Flow rate (oxygen flow rate is set on the O2 wall tap) is shown on mask along with the % O2 delivery. Each colour must be used with a given flow rate (written on the mask) to give the correct oxygen percentage.
- Often used in COPD as it the most accurate way of giving variable percentage inspired oxygen.
- Types:
    - BLUE = 2-4L/min = 24% O2
    - WHITE = 4-6L/min = 28% O2
    - YELLOW = 8-10L/min = 35% O2
    - RED = 10-12L/min = 40% O2
    - GREEN = 12-15L/min = 60% O2

Blue (24%) and yellow (35%) venturi masks

4. Non-rebreather mask

- Delivers 85-90% with 15L flow rate.
- Bag on mask with valves stopping almost all rebreathing of expired air
- Used for acutely unwell patients BUT note that **uncontrolled** high flow oxygen is damaging (see notes opposite). As such, a non-rebreather is rarely indicated for long-term treatment.

Non-rebreather mask

Non-invasive ventilation (CPAP/BiPAP)

- CPAP= continuous positive airway pressure = high pressure air/oxygen with a tight fitting mask. Positive pressure all the time.
    - Keeps airways open in sleep apnoea or heart failure.
    - Click here for details on intensive care, CPAP and BiPAP {http://www.oxfordmedicaleducation.com/intensive-care/} and click here for details on the practicalities of how to start patients on CPAP { http://www.oxfordmedicaleducation.com/procedures/starting-niv/}
- BiPAP= bilevel positive airway pressure = high positive pressure on inspiration and lower positive pressure on expiration. Used in COPD and atelectasis.
    - Click here for details on how to start patients on BiPAP { http://www.oxfordmedicaleducation.com/procedures/starting-niv/}

Invasive ventilation

- A ventilation bag or machine is attached to an artificial airway to ventilate lungs.
- Gives total control over flow or volume, percentage inspired oxygen (FiO2) and respiration rate – and therefore total control over minute ventilation.
- Used in intensive care and theatre.

General notes on oxygen prescribing and delivery

- Intubate if GCS is less than (or equal to) 8
- Oxygen saturation of less than 90% is problematic because the oxygen-haemoglobin saturation curve drops significantly at this point, meaning haemoglobin will rapidly become significantly less saturated with small changes in oxygen partial pressure.
- If O2 therapy is being used maximally (15L high flow) and oxygen levels continue to drop, involve intensive

care with a view to non-invasive ventilation or intubation and ventilation
    - The same applies if oxygen levels are suboptimal but a rising carbon dioxide prevents increasing the percentage of inspired oxygen
- Do an ABG on any patient with oxygen saturations of <92%
- Humidified oxygen can help with secretions and if prolonged oxygen therapy is required