practice questions

SOLVING YOUR CLINICAL DILEMMAS

Nursing practice often involves undertaking procedures about which there is debate or uncertainty. In Practice Questions, we ask experts to determine how nurses should approach them.

Q Does oxygen need humidification?

A Oxygen therapy is assumed to dry out the airways. Humidifying supplemental oxygen administered to patients was routine practice in the 1980s and early 1990s in most North American and European hospitals. It was thought this would prevent the upper respiratory tract from drying out but there was no evidence to support this practice.

HUMIDIFICATION EFFICACY

Campbell et al (1988) compared 99 patients who received humidified oxygen and 86 who received “dry” oxygen via a nasal cannula. All patients received oxygen at 5L/min; 50% described symptoms of dry nose and throat, although there was little difference in the two treatment groups. All symptoms decreased or stabilised over time and there was no significant difference in symptom severity between the humidified and non-humidified oxygen groups. The authors concluded that while complaints relating to drying of the mucous membranes were common from those receiving supplemental oxygen, humidified oxygen did not relieve the problems. Andres et al (1997) confirmed these findings in a blinded, randomised, crossover study involving 150 medical and surgical patients.

BRITISH THORACIC SOCIETY GUIDELINES

British Thoracic Society (2008) emergency oxygen guidelines state that humidification is not required to deliver low flow oxygen (<4L/min) or short term use of high flow oxygen for short periods. It is not unreasonable to humidify high flow oxygen for patients who need it for longer than 24 hours if they report upper airway discomfort due to dryness. This would include patients using a Venturi mask at ≥35% or nasal cannula with a flow rate of >4L/min but some patients can tolerate higher flow rates of oxygen without any problems.

Oxygen delivered via a tracheostomy should be humidified as it is introduced directly into the lower airway and bypasses the moistening and filtering effects of the upper airway. The emergency oxygen guideline suggest that patients with a tracheostomy can be managed for short periods, such as during an ambulance journey, without humidification.

HOME OXYGEN

Humidification for home oxygen concentrators is less of a problem as the concentrator filters oxygen from room air, which has a variable humidity.

CHANGING OXYGEN DEVICES

A number of devices can help to alleviate discomfort associated with oxygen therapy. High flow nasal cannulas are now available; these have wider tubing just below the nasal prongs than normal cannula and so reduce the delivery speed of oxygen into the nasal passages. Nasal irritation can be minimised by trying a variety of devices such as masks, cannulas and OxyArm – a non-touch arm attached to a headband that can be positioned in front of the nose and mouth.

DEHYDRATION

It is important to ensure that all patients receiving supplemental oxygen therapy are well hydrated, as any post operative patient who is debilitated, infected or acutely ill is prone to dehydration, which can cause the mucous membranes to dry out. This could easily be misinterpreted as a side effect of oxygen therapy if patients have been prescribed oxygen as a result of deterioration in their condition.

HUMIDIFICATION AND VISCOS SECRETIONS

Humidification may be combined with physiotherapy to help patients who have difficulty expectorating viscous secretions. BTS (2008) guidelines suggest using nebulised normal saline in this situation.

NON-INVASIVE VENTILATION

Specialists starting NIV therapy will assess symptom severity and decide whether to add humidification – usually in the form of a heated humidifier added into the ventilatory circuit to minimise upper airway symptoms. Patients in the community with humidification must adhere to strict cleaning protocols to avoid pulmonary infection. In most cases, they must replace any water in the humidified system with cool boiled water every day. Community teams must help ensure this practice occurs.

CONCLUSION

On starting therapy, some patients develop upper airway dryness; no evidence suggests that passing oxygen through a “bubble” humidifier will reduce this but it does become less of a problem over time.

Oxygen should always be humidified if it bypasses the upper airway and is introduced through a tracheostomy tube but it is not routine practice to humidify supplemental oxygen for low flow oxygen via nasal cannula (1–4L/min). In most cases low flow oxygen can be safely administered via a nasal cannula or mask without humidification; only consider humidification after various devices have been used. *

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REFERENCES

