Route of Nutrition Support in Patients Requiring NIV & CPAP During the COVID-19 Response

The following recommendations apply to patients with COVID–19 infection and may not be considered optimal outside of a pandemic situation.

Patients on non-invasive ventilation (NIV) or continuous positive airways pressure (CPAP) often fail to meet nutritional requirements orally[1,2]. Poor nutrition is associated with a longer length of hospital stay[3] and increased mortality in COPD patients undergoing NIV[4].

Food and oral nutritional supplements should be used initially but where intake is sub-optimal for more than 2 days, artificial nutrition support should be considered with nasogastric (NG feeding) being the most readily available option.

NG feeding for those requiring NIV/CPAP can be associated with some problems such as air leakage and distension of the stomach[1]. If NG feeding is deemed appropriate, following the measures below can facilitate NG feeding while minimising risks in this group of patients.

1. For patients with tight fitting masks, silicone dressings can be used to reduce air leakage and the risk of pressure damage to the skin[5]. Details can be found at https://breathe.ersjournals.com/content/10/3/230
2. Use a fine bore 8Fr NG feeding tube if possible. See https://www.bapen.org.uk/resources-and-education/education-and-guidance/covid-19 for guidance of confirming the position of the tube prior to feeding.
3. Distension of the stomach can lead to poor tolerance of the feed and impair diaphragmatic function. Enteral feeding pumps should be prioritised to patients on NIV / CPAP so that the feed can be continuously infused at a precise rate. Gravity drip feeding can be considered if no enteral feeding pumps are available, however bolus feeding should not be used due to a possible increase in risk of aspiration.

4. Consider use of a gastric decompression device such as the Farrell Valve (Avanos) or ENFit Gastric Decompression System (Medicina). These decompress the stomach during feeding and the nutrition specialist nurse or dietitian can advise on their use.
5. Ensure the patient is upright at an angle of 30 - 40^{o} during feeding. NG feeding of patients on NIV / CPAP in the proned position is not recommended.
6. Use of regular prokinetics can help with gastric distension by promoting gastric emptying. NICE CG32 supports the use of metoclopramide and erythromycin either alone or in combination[3]. Prokinetic doses of Metoclopramide (10mg TDS) and erythromycin (100-250mg TDS) have be suggested[6].
7. If the above measures fail, aspirating the stomach and checking the gastric residual volume (GRV) can be considered to decompress the stomach and check for absorption of the feed. A GRV of < 500ml/6hrs is considered acceptable[6]. Repeat after 6 hours if >500ml. A recent article suggests this can be done with a fine-bore NG tube[7] although a 10 -12Fr polyurethane feeding tube may be preferable.
8. Where there are facilities to place them safely, nasojejunal (NJ) tubes could be considered to overcome problems with gastrointestinal intolerance.
9. Parenteral Nutrition (PN) should be considered where enteral and oral feeding are unsuccessful, especially in those with pre-existing malnutrition. Due to risk of line sepsis and metabolic complications, it is recommended that where possible this is supervised by a multidisciplinary nutrition support team[3]. A new dedicated central venous catheter (CVC) e.g. a peripherally inserted central catheter (PICC) is recommended for administration of PN. Existing CVCs from ICU can be used with caution provided one lumen has always been dedicated to PN. Close monitoring of blood glucose is essential since PN carries a higher risk of hyperglycaemia than enteral feeding[8] and controlling it seems to be particularly important in treating COVID-19[9].
10. Peripheral PN (<850mOsm/l) is not recommended as a first choice due to its low nutrient density and high fluid volume. Peripheral PN demands careful surveillance for thrombophlebitis as it is very irritant to veins and can lead to loss of access for medications. A peripheral midline is recommended where infusion is likely to exceed 6 days[10]. If short peripheral cannulas are used they should be dedicated to PN and rotated every 24 – 48 hours.

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