



# Critical Care Nutrition

## CARE AND MANAGEMENT OF NASODUODENAL FEEDING TUBES GUIDELINE

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### **A) GENERAL CONSIDERATIONS:**

Nasoduodenal feeding tubes (NDFT) allow for enteral nutrition (EN) when gastric stasis or aspiration risk (i.e. gastroesophageal reflux) precludes the nasogastric (NG) route. NDFT can be placed manually (at the bedside or intraoperatively), endoscopically, or by fluoroscopic technique. NDFT must be cared for properly in order to ensure safe, continuous, cost-effective EN.

### **B) GENERAL GUIDELINES:**

#### **1) PREVENTING NDFT DISLODGMET – TUBE SECUREMENT:**

- (a) Using a black permanent marker, mark the point where NDFT enters the nostril.
- (b) Using an alcohol wipe, remove all oil and debris from the nose and NDFT.
- (c) Apply a protective skin barrier product to the nose (i.e. Coloplast Prep<sup>®</sup> - Coloplast Corp., N. Mankatato, MN, USA) Reapply product until the skin on the nose is tacky.
- (d) Obtain a 7-cm length of tape (i.e. silk tape or another product that adheres well to the skin). Cut the distal 5-cm section of the tape into two “legs”.
- (e) Place the uncut section of tape onto the nose; pinch the tape at the nostril (to prevent a pressure point); braid the tape “legs” down the length of the NDFT.
- (f) For extra security, place a short strip of tape across the bridge of the nose.
- (g) In mechanically ventilated patients with an endo-tracheal tube (OETT) fold a small piece of tape around the proximal end of the NDFT and pin to the OETT ties.
- (h) Check the security of the NDFT every 12-hr shift. If not secure (i.e. tape pulls off nose; NDFT moves between tape), resecure.

**2) FEED INITIATION/TITRATION:** Initiate feeds at 25 ml/hr and increase by 25 ml/hr Q4H until at goal rate. Do not decrease the feed rate based on gastric residuals (refer to section #5).

#### **3) PREVENTION OF ASPIRATION:**

**a) CONCURRENT GASTRIC DECOMPRESSION:** Gastric secretions account for 2400 ml of the fluid handled by the gastrointestinal tract each day. If gastric stasis is present, place a decompression tube such as an Argyle Salem Sump NG tube<sup>®</sup> (Sherwood Medical, St. Louis, MO, USA.) to allow for gastric decompression. Clamp the NG tube; decompress and discard gastric contents Q4H. Do not place the NG tube on suction as this may result in gastric mucosal irritation, fluid and electrolyte imbalance, and decompress feed from the small bowel. If hourly decompression is required place the NG to straight drainage. NG tubes can be removed once it is clear that gastric decompression is no longer required.

**b) PATIENT POSITIONING:** Unless contraindicated, elevate the head of bed 45°. If this is not feasible, elevate the head of bed as much as possible.

#### **4) TUBE OCCLUSION:**

**a) PREVENTION:** In order to keep the lumen and tip of the NDFT clear, instill a pancreatic enzyme mixture (i.e. 1 Cotazyme<sup>®</sup> capsule or crushed tablet, 1- 324 mg sodium bicarbonate crushed tablet, and 2-5 ml water) into the NDFT QID. Always flush the NDFT with 15-30 ml water every 4 hours and anytime feeds are held.

**b) MEDICATION FORM:** Avoid liquid formulations (elixirs, solutions, suspension, and syrups) as they may gel or form globular particles when in contact with feed, increasing the risk of NDFT occlusion. Do not deliver bulk-forming agents via the NDFT as they congeal quickly and will obstruct the NDFT. Tablets are preferred over liquid medications where possible. Crush tablets well and dilute with 15-30 ml water.

**c) MEDICATION ADMINISTRATION:** Whether using a liquid or solid medication, flush the NDFT with 15-30 ml water before and after each medication is given. The risk of tube occlusion can be reduced by using the NG tube for medication delivery rather than the NDFT. (Note: only use NG tube for medications if gastric residual volumes are <250 ml Q4H).

**d) RESOLUTION OF TUBE OCCLUSION:** Refer to section #5.

**5) TROUBLESHOOTING GUIDE FOR NDFT:**

<b><u>PROBLEM</u></b>	<b><u>ACTION</u></b>
<b>1) Elevated gastric residual volumes (i.e. &gt;400 ml Q4H).</b>	<p><b>A)</b> Ensure NG not on suction. If on suction, gastric residuals will not reflect gastric emptying. Clamp NG; decompress Q4H or place to straight drainage via gravity.</p> <p><b>B)</b> Ensure gastric residuals are being discarded, not refed.</p> <p><b>C)</b> No matter what the volume of the gastric residual, a problem does not exist unless the gastric residual contains a significant amount of feed. Even if the gastric residual contains feed, the feed rate should not be reduced. If the gastric residual contains feed, see point 2 below.</p>
<b>2) Gastric residual contains feed.</b>	<p><b>A)</b> Ensure NG not on suction (suction will decompress feed from the small bowel).</p> <p><b>B)</b> Obtain an abdominal x-ray* to locate tube tips. If NDFT has migrated out of duodenum, reposition. If NG has migrated into duodenum, gently pull tube back into the stomach.</p> <p><b>C)</b> If both tubes are in good position, rule out constipation, paralytic ileus, or other (i.e. mechanical obstruction, gut ischemia).  <b>Constipation:</b> continue feeds; minimise narcotic agents; initiate cathartic agents and enemas.  <b>Small bowel/colonic ileus:</b> reduce feeds to 10 - 25 ml /hr; resolve constipation if present; correct any electrolyte imbalances (i.e. hypokalemia); minimise narcotic agents. Consider TPN* if ileus not resolved in 7-10 days (time frame to the initiation of TPN must be assessed individually i.e. a shorter time frame may be indicated in malnourished or significantly hypermetabolic patients).  <b>Mechanical obstruction/gut ischemia:</b> stop feeds; MD interventions as indicated; consider TPN (time frame to the initiation of TPN must be assessed individually).</p> <p><b>D)</b> If both tubes are in good position and constipation/ileus/obstruction ruled out, the problem is that of duodenal reflux (may arise in patients with increased abdominal pressure due to obesity, ascites, and/or recent abdominal surgery). To attempt to reduce reflux, decrease gut volume (i.e. concentrate feeds*, discontinue water*); ensure HOB elevated &gt;45°; reposition NDFT into 4th section duodenum*; minimise narcotic agents*; initiate an IV motility agent* (or second motility agent*).</p> <p><b>E)</b> If there is no response to the above and feed reflux significant, reposition the tube into the jejunum.</p> <p><b>F)</b> If reflux persists, decrease feed rate to 25 ml/hr and consider initiating TPN (time frame to the initiation of TPN must be assessed individually).</p>
<b>3) Occluded NDFT.</b>	<p><b>A)</b> Check that NDFT is not kinked at the back of the throat causing the occlusion. If NDFT not kinked, see step B below.</p> <p><b>B)</b> Aspirate NDFT to remove feed from tube lumen; use a water filled 5 ml sliptip syringe fitted with a graduated connector (i.e. Safeed® Connector – Terumo Co, Tokyo, Japan). Use a repeated pumping action. If NDFT does not clear see step C below.</p> <p><b>C)</b> Combine 1 Cotazyme® capsule or crushed tablet, 1- 324 mg sodium bicarbonate crushed tablet, and 2-5 ml water. Draw up mixture into a 5 ml syringe; instil into the NDFT using a repeated pumping action.</p> <p><b>D)</b> If NDFT does not clear in 20 minutes, leave enzyme in NDFT for 1-2 hours (cap ports very tightly).</p> <p><b>E)</b> If unable to clear NDFT and gastric residuals low, ensure HOB elevated &gt;45° and resume feeds via NG tube. Check gastric residuals every 4 hours and increase feeds as outlined in the 'Enteral nutrition Feeding Guideline'.</p> <p><b>F)</b> Do not remove an occluded NDFT until multiple serious attempts have been made to resolve the</p>

	occlusion and/or it is clear that the NDFT is no longer required (i.e. gastric stasis resolved).
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- \* Requires MD order

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