

Top Tips for Distal Enteral Tube Feeding

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Distal enteral feeding includes feeding through the distal limb of an enterocutaneous fistula (fistuloclysis) or through a defunctioned distal small bowel stoma/mucus fistula (enteroclysis). The distal feeding (DF) may be complete/total (CDF), where the aim is to administer all nutrition and hydration (+/- chyme) via the enteral tube, or trophic (TDF), where only enough nutrition/hydration is provided to maintain bowel structure and function usually before a surgical re-anastomosis. DF is achieved by inserting an enteral feeding tube (fine bore nasogastric tube or balloon gastrostomy) more than 5 cm into the distal intestine.

Key points

1. The management of DF involves a multidisciplinary team (MDT) approach that includes stoma care nurses to ensure the most appropriate appliances are used.
2. Proximal and distal contrast studies of the bowel prior to commencing DF must be completed to ensure there is no disease, obstruction or leak present in the distal bowel.
3. The patient should be free of abdominal sepsis, and haemodynamically and biochemically stable prior to commencing DF, especially if the aim is to achieve CDF.
4. The patient/carers/family should have good manual dexterity and be confident in stoma care prior to introducing the techniques for DF, especially if the expectation is for the patient to be self-caring.
5. The action of DF, by neural and humeral mechanisms, reduces upper gastrointestinal secretions and motility, and thus proximal stomal/fistula output so reducing the amount of nutritional/fluid support needed.
6. All enteral feeding systems need to be ENFit compliant.

Complete distal feeding (CDF)

7. Patients with a proximal output of less than 2 L/24 hours when having little or nothing orally (usually also have less than 150 cm proximal small bowel), with accessible distal small bowel (ideally with a colon in continuity), should be considered for CDF.
8. If CDF is successful the risks of parenteral support (PS) (catheter-related blood stream infections, central vein thrombosis and deranged liver function tests) are negated (especially if PS is completely stopped).
9. Oral and pharmacological intervention must be optimised to reduce the proximal stomal/fistula output, with little or no oral intake, to less than 2 L/24 hours .

10. The tube type (fine bore nasogastric tube or balloon gastrostomy) is determined by the distal limb presentation, and its size (12-18 Fr) takes into account the viscosity of the infusate.
11. The distal feeding regimen may be started with a saline solution (90-160 mmol/l) at 30 ml/hr for 6 hours to obviate cramps and discomfort (if a colon in continuity water can be used). Following this the feed is commenced as per the dietitian's regimen and the rate slowly increased as tolerated by the patient.
12. A polymeric, semi-elemental or elemental feed or chyme may be given, +/- added salt, dependent on local Trust policy.
13. Nutrition and hydration status must be monitored, in particular the urinary Na concentration and the serum magnesium when the patient is being weaned off parenteral support.
14. If the feed appears to be refluxing in the stoma bag consider checking the balloon if present (deflate by 0.5 ml). Confirm that the refluxate is feed by adding blue food colouring to the feed/fluids.
15. PS will need to be gradually reduced and if the patient is going to be able to stop PS, this should be achieved within a month.
16. Consider the patients holistic care and if continuing to need PS in addition to the total distal feeding, difficult wound management and sometimes a urinary catheter, it may be better to stop CDF and use TDF.

Trophic distal feeding (TDF)

17. Patients who do not have nutrition/hydration problems, but who have defunctioned bowel and are awaiting a re-anastomosis should be considered for TDF.
18. For TDF, only a small volume (typically 100-500 ml/24 hours) of a polymeric or semi-elemental feed is infused to try and maintain gut structure and motility prior to a surgical re-anastomosis, facilitating postoperative recovery of gut function and improve anastomotic healing.

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Explanations of some key points

Key point 7: The maximum volume of DF that has been given in UK is 3.2 L/24 hours and the infusion rate generally cannot exceed 110-120 ml/hr. Thus, to wean a patient completely off PS a proximal output needs to be less than 2 L/24 hours, otherwise dehydration (salt and water depletion) is likely to result without PS.

Key point 9: Maximising remaining upper gut function and reducing the stoma/fistula output will reduce the need for distal nutrition and hydration. To reduce proximal stoma/fistula output patients must be educated and compliant with dietary advice (low fibre diet, restricting hypotonic fluids to <1L per day) and pharmacological interventions optimised to help reduce the proximal output to less than 2 L/24 hours. See BIFA Top Tips for Managing a High Output Stoma or Fistula.

Key point 10: Tube choice is dependent on the anatomical presentations of the distal limb (i.e. ileo-stoma, separate mucus fistula), and if the stoma appliance needs to collect proximal effluent. Other considerations include: can the stoma appliance be applied with the tube in situ and does the tube need to be inserted after stoma base plate application? If the tube is going to remain in situ, it must have an external fixation device to prevent tube migration (for example, a balloon gastrostomy). Fine bore feeding tubes should only be used for trophic feeding where the tube does not remain in situ between feeds. A good stoma appliance skin seal, with a water tight seal between the tube and stoma appliance, must be created.

Key point 12: Care may be needed with a semi-elemental or elemental diet as the osmolality can be high and, if little or no colon remains in continuity, may increase diarrhoea. Enteral feeds are low in sodium and the addition of 0.9% saline to the enteral feeding regimen, or infusing an oral rehydration solution, should be considered.

Chyme may be reinfused and, theoretically, may be more beneficial than an enteral feed (though there is no data currently to prove this) due to the digestive enzymes and growth factors in the fluid. However, it can be technically difficult and time consuming to reinfuse, partly as the upper gastrointestinal effluent may need to be sieved before it can be drawn into a syringe/bag for re-infusion.

Key point 13: In addition to weight/muscle mass, monitoring involves serum creatinine, magnesium, and urinary sodium levels every 1-2 days

initially, then once or twice a week, and if fed long-term at home, monitored as above along with a full micronutrient profile (vitamin D, selenium, zinc and copper) every 2-3 months.

Key point 14: Feed reflux can be due to the balloon migrating back towards the stoma/fistula, or due to a bowel obstruction or ileus.

Key point 16: Try to minimise the number of tubes in situ and the number of procedures being performed each day. The patient needs to be encouraged to be mobile before any reconstructive surgery to promote muscle mass as part of prehabilitation.

Key point 18: TDF volume, rate, frequency and duration may vary according to local policy and there is no evidence to state which regimen is most efficacious. The volume varies from 100-500 ml/24 hours of polymeric or semi-elemental feed infused as a bolus regimen, or via an enteral feeding pump, and the volume depends upon the amount tolerated. It is usually given once or twice daily for at least 2 weeks (usually a month) prior to surgical re-anastomosis. The tube should be flushed as for any enteral tube before and after the feed, with at least 5 ml tap/sterile water or 0.9% saline depending upon local trust/community policies. This small volume feeding helps maintain bowel structure (prevents atrophy) and motility so may make a surgical anastomosis easier and make the return of normal bowel functions faster.



Complete Distal Feeding (CDF)

Further reading

- Teubner A, Morrison K, Ravishankar HR, et al. Fistuloclysis can successfully replace parenteral feeding in the nutritional support of patients with enterocutaneous fistula. *Br J Surg.* 2004 May; 91(5): 625-631.
- Pironi L and the Home Artificial Nutrition & Chronic Intestinal Failure; Acute Intestinal Failure Special Interest Groups of ESPEN. ESPEN endorsed recommendations. Definition and classification of intestinal failure in adults. *Clin Nutr.* 2015; 34: 171-180.
- Wu Y, Ren J, Wang G, et al. Fistuloclysis improves liver function and nutritional status in patients with high-output upper enteric fistula. *Gastroenterol Res Pract.* 2014; 2014: 941514.
- Hvas C, Kodjabashia K, Nixon E, et al. Reversal of intestinal failure-associated liver disease (IFALD): emphasis on its multifactorial nature. *Frontline Gastroenterol.* 2016; 7: 114-117.
- Thibault R, Picot D. Chyme reinfusion or enteroclysis in nutrition of patients with temporary double enterostomy or enterocutaneous fistula. *Curr Opin Clin Nutr Metab Care.* 2016; 19(5): 382-387.
- Farrer K, Lal S, Teubner A, et al. Fistuloclysis and distal enteral feeding in acute intestinal failure. *Abstracts/Clinical Nutrition ESPEN 10 (2015): e174ee212.*
- Picot D, Layec S, Dussaux L, et al. Chyme reinfusion in patients with intestinal failure due to temporary double enterostomy: A 15-year prospective cohort in a referral centre. *Clin Nutr.* 2017; 36(2): 593-600.
- Nightingale J and the BIFA Committee. Top Tips for Managing a High Output Stoma or Fistula. BAPEN; 2018: www.bapen.org.uk/pdfs/bifa/bifa-top-tips-series-1.pdf
- Nightingale J, Meade U and the BIFA committee. British Intestinal Failure Alliance (BIFA) Position Statement: The use of high dose loperamide in patients with intestinal failure. BAPEN; 2018: www.bapen.org.uk/pdfs/bifa/position-statements/use-of-loperamide-in-patients-with-intestinal-failure.pdf

Further reading

- Presentation from the Nutrition Village at the 2019 BAPEN Conference: www.srft.nhs.uk/about-us/depts/ifu/education/presentations/?assetdet104846=180449
- Culkin A (2015). Fistuloclysis (distal limb feeding). Presentation from AuSPEN Conference 2015: www.stmarksacademicinstitute.org.uk/content/uploads/2015/12/Distal-limb-feeding-Fistuloclysis.pdf