

This Medicines Information Leaflet is produced locally to optimise the use of medicines by encouraging prescribing that is safe, clinically appropriate and cost-effective to the NHS.

Medical Management of High Output Stoma and Enterocutaneous Fistula in Adults

High output stoma can be difficult to manage and patients are at risk of complications such as dehydration and malnutrition. A stoma is an opening in the skin through which a section of bowel is brought out. When the bowel is short in length, water, nutrients and electrolytes are not adequately absorbed. This leads to high output of watery stools and loss of electrolytes, especially sodium and magnesium.

An enterocutaneous (EC) fistula is an abnormal connection between the skin and gastrointestinal tract. Fistulae can form as a complication of Crohn's disease or surgery. Similar to a stoma, high output can be associated with nutritional and electrolyte deficits and dehydration.

Definition of high output stoma

A high output stoma is defined as fluid loss of greater than 1500ml/24 hours

Definition of a high output enterocutaneous fistula

A high output fistula is defined as fluid loss of greater than 500ml/24 hours.

This MIL is aimed for areas that are not specialised in managing high output stoma/fistulas.

EMERGENCY MANAGEMENT

1. **Identify** patients with dehydration or electrolyte imbalance who have a high output stoma or fistula
2. **Check Bloods** – routine bloods including full blood count, U+Es, **calcium**, **magnesium** and **phosphate**
3. **Replace** fluids using IV fluid replacement as normal. Ileal effluent contains approximately 90mmol of sodium per litre so hyponatraemia is common as is hypomagnesaemia. Replace electrolytes as per the relevant [MILs](#) but avoid oral magnesium and potassium, since these can increase output.
4. **Measure** and record the output accurately so changes can be monitored. Discuss measuring output with the patient as they often have a good understanding about their output and will involve them in their care.
5. **Avoid** advice to 'drink plenty', since the wrong type of oral fluids can increase output and exacerbate dehydration (see isotonic fluid section below). Be aware that some oral electrolyte replacement may not be absorbed as effectively.

6. **Refer** to ward dietician and/or gastroenterology team.

ON THE WARD

Although most patients with high output stomas and fistulas are best admitted to a specialist ward, some patients may be admitted to general wards for other conditions. Therefore it is important to know how to manage their stoma/fistula. Refer to the ward dietician, the nutrition team, gastroenterology teams and/or stoma nurse services if needed.

Drug Management

Antimotility Drugs: **Loperamide** and **Codeine**

These slow the gut down through opioid receptors. Loperamide should be started at 2 - 4 mg four times a day and titrated upwards until a satisfactory response has been obtained. Doses should be given 30 – 60 minutes before meals and at bedtime. Doses greater than 16mg per day are unlicensed but may be required in the management of high output and should be guided by a specialist. Doses should generally not exceed 80mg a day.

Tablets are preferred to capsules as capsules are not well absorbed in patients with short gut. The 1mg/5ml loperamide liquid should be avoided because it increases gut motility due to the volume required to achieve an appropriate dose. There is an unlicensed 25mg/5ml loperamide liquid which can be used for short gut syndrome if the number of tablets required cannot be tolerated.

For use on unlicensed medications please refer to the [unlicensed procedure](#) and the [unlicensed register](#).



MHRA warning – there is a MHRA warning regarding the risk of QT prolongation with high dose loperamide which should be communicated to patients if they are to exceed the 16mg a day maximum dose.

The British Intestinal Failure Alliance guidance advises:

- If the patient is on a dose of loperamide **greater than 16mg per day** an **ECG** should be performed **before** initiation, to detect a prolonged QT interval, **after the dose has been increased** and ensure referral to gastroenterology is made for continued monitoring. The half-life of loperamide ranges from 5-19 hours therefore reaching steady state can take between 1-5 days. The ECG should be repeated in this period and after any dose increase.
- High dose loperamide should be used with **caution** in patients with existing cardiac or hepatic conditions or taking other medications that can prolong the QT interval (e.g. ondansetron). When reviewing these patients the clinician should assess the risk versus benefit, consider more frequent monitoring including ECGs and consider cardiology advice.
- **Toxicity** should be considered if patients experience fainting episodes not otherwise accounted for or cardiac abnormalities. Patients should be

counselled to report lightheadedness or fainting to a healthcare professional urgently.

- A MHRA yellow card report should be completed for any adverse reactions.

Codeine doses should be started at 30mg four times a day and then optimized to the safest dose for the patient (up to 60mg four times a day). Caution should be exercised in the elderly.

High dose Proton Pump inhibitor (PPI):
Omeprazole

PPIs reduce gastric acid secretion which contributes to fluid loss. Omeprazole can be initiated at 40mg once a day and increased to 40mg twice a day if needed to reduce output.

IV electrolyte replacement e.g. magnesium, sodium, potassium. Please see relevant [MILs](#) for advice on dosing.

Isotonic fluids – Must have dietician input

Fluids such as water, tea and milk are **hypotonic**. In a normal bowel, water and sodium are re-absorbed in the colon. In short bowel (approximately 150 cm - 200cm of jejunum/ileum remaining), **hypotonic** fluids increase the stoma/fistula output. This increases sodium loss, because there is insufficient capacity to reabsorb sodium. For water absorption to occur in the jejunum, the luminal fluid content should have a sodium content of about 90mmol/L. **Isotonic** fluids should therefore contain around 90 - 100mmol/l of sodium. This means sodium (and therefore water) will not be drawn from the blood into the bowel but will facilitate

absorption of both sodium and water. This slows down the output and reduces sodium and fluid loss. Examples of more commonly used isotonic fluids are **Lucozade® with added salt, Dioralyte® made up to double strength (double strength Dioralyte®)** and **glucose sodium solution (also known as St Mark's Solution)**.

Refer to the ward dietician for advice on which solution to use and how to make it up.

If the dietician suggests double strength dioralyte this will need to be prescribed as it is a licensed medicine (see below).

How to make up Dioralyte® made up to double strength (double strength Dioralyte®)

This is made by mixing 1 sachet of Dioralyte® in 100ml of water (double the licensed amount of water for each sachet). This can be scaled up to 10 sachets in 1 litre. This solution can be stored in the fridge for up to 24 hours and used throughout the day. Discard any remaining after 24 hours. Avoid flavouring with orange juice or other liquids as it will alter the electrolyte content.

How to prescribe Dioralyte® made up to double strength on EPR.

Search results for 'dioralyte' (Type: Inpatient):

- Dioralyte oral powder sachets blackcurrant
- Dioralyte oral powder sachets blackcurrant (Dose: 1 dose(s) - oral - four times a day)
- Dioralyte oral powder sachets blackcurrant (Dose: 1 dose(s) - oral - three times a day)
- Dioralyte oral powder sachets blackcurrant (Dose: 1 dose(s) - oral - twice a day)
- Dioralyte oral powder sachets blackcurrant (Dose: 2 dose(s) - oral - four times a day)
- Dioralyte oral powder sachets blackcurrant (Dose: 2 dose(s) - oral - three times a day)
- Dioralyte oral powder sachets blackcurrant (Dose: 2 dose(s) - oral - twice a day)
- Dioralyte oral powder sachets blackcurrant (dose(s) - oral)
- Dioralyte oral powder sachets plain
- Dioralyte oral powder sachets plain (Dose: 1 dose(s) - oral - four times a day)
- Dioralyte oral powder sachets plain (Dose: 1 dose(s) - oral - three times a day)
- Dioralyte oral powder sachets plain (Dose: 1 dose(s) - oral - twice a day)
- Dioralyte oral powder sachets plain (Dose: 2 dose(s) - oral - four times a day)
- Dioralyte oral powder sachets plain (Dose: 2 dose(s) - oral - three times a day)
- Dioralyte oral powder sachets plain (Dose: 2 dose(s) - oral - twice a day)
- High Alert Dioralyte oral powder sachets (made up to double strength) (Dose: 1 dose(s) - oral - once a day - Discard after 24 hours. Dilute e...)
- High Alert Dioralyte oral powder sachets (made up to double strength) (Dose: 1 dose(s) - oral - once a day - Discard after 24 hours. Dilute e...)

1. Go to requests and prescribing and click add.
2. Type in "Dioralyte" and select the high alert option "Dioralyte oral powder sachets (made up to double strength)
3. Check the prescription and add in any extra instructions. Do not modify the existing instructions.

Other Solutions

Other isotonic solutions exist. Please discuss with the nutrition team dieticians for other options.

How much fluid?

This should be guided by the ward dietician and senior gastroenterology doctors but typically patients with high output stomas should aim to drink at least 1000ml of **isotonic** fluid a day and 500 ml of **hypotonic** fluid in addition.

Other medications and stomas

- Avoid modified release and enteric coated tablets in patients with a stoma, especially an ileostomy
- Oral iron can cause diarrhoea, constipation and soreness around the stoma site
- Magnesium and potassium containing products can cause diarrhoea/ increase stoma output, whilst calcium and aluminum preparations can cause constipation
- Care is required with digoxin due to increased toxicity with hypokalemia
- Care is required with diuretics as there is an increased risk of dehydration

- Be conscious of laxatives and prokinetic drugs and review whether they are still indicated

Nutrition

Patients with high output stomas and fistulas are at risk of being nutritionally deplete due to lack of absorption through the gut. Parenteral nutrition (PN) is indicated if stoma/fistula output cannot be adequately controlled; however, optimizing medications and fluid intake should be attempted in patients with enough viable bowel alongside PN with the intention to wean off PN once control is established. On average a person requires at least 50cm functioning jejunum + colon or 100cm jejunum to maintain nutritional balance without PN.

AT DISCHARGE

- Ensure that output is managed and is not exceeding 1200ml/24 hours for stoma or 500ml/24 hours for fistula
- Ensure cause of high output is established and managed
- Ensure electrolytes including magnesium, phosphate and calcium are in range
- Ensure patient is aware of how to manage their high output stoma/fistula including how to measure output, how to adjust medications if needed and who to contact if concerned
- Ensure supply of medications on discharge as the patient may require large amounts of medications (e.g. loperamide)

- Ensure appropriate follow up with the gastroenterology or nutrition team, dieticians and stoma nurses

References

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Appendix 1

