**Stepwise Approach to the Management of High Output Stomas**

These guidelines generally apply to patients with a stoma output of >1.5 l in 24 hours.

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| STEP 1a - Assessment  |
| Ensure full and accurate documentation of fluid balance on fluid balance chart daily – aim for urine output >800ml/24hr or 0.5ml/kg/hour |
| Discuss dietary management with patient (see next page) |
| Check creatinine, urea and electrolytes (Na+ K+ Mg2+ PO4- Ca2+) – correct any abnormalities intravenously (oral supplements often further increase output), check daily throughout all steps |
| Check urinary sodium level if hyponatraemia - normal level >20mmol/L |
| Treat any potential causes of HOS (e.g. sepsis/infection)– rule out C. Difficile |
| Review and rationalise any medications which could cause high-output e.g. pro-kinetics, medications known to cause diarrhoea, withdrawal of steroids/opiates, those given with large fluid volumes |
| Inform relevant teams - Surgical on-call team immediately via switchboard, stoma nurses via email bsu-tr.stomacaredepartment@nhs.net and dieticians via intranet referral form |
| STEP 1b – Rehydration and Stabilisation |
| Reduce oral hypotonic fluids to 500ml in 24 hoursMeet other fluid/electrolyte requirements by intravenous route where possible |
| Start loperamide 4mg PO QDS Given 30-60mins before meals/bed time, capsules can be opened, if short bowel/capsules seen in stoma output consider use of tablets, avoid using liquid |
| Start lansoprazole 30mg PO ODGive IV if <50cm small bowel remaining, lansoprazole dispersible tablets 30mg OD can be substituted if swallowing difficulties/enteral feeding tube |

Allow 2-3 days to assess efficacy

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| STEP 2 – Consider gut rest |
| Consider a 24 hour trial of NBM with fluid/electrolyte requirements met fully by intravenous route – this will help to ascertain if high output is down to fluid intake or net-secretory effect |

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| STEP 3 – Fluid Optimisation |
| Start St. Mark’s Solution 1L sipped over 24 hours + allow 1L oral hypotonic fluids - total volume can be adjusted to match fluid requirements in 50:50 ratio (e.g. 1.5L St. Marks : 1.5L hypotonic fluids) |

Allow 2-3 days to assess efficacy

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| STEP 4 – Medicines Optimisation |  |
| Consider increasing dose of loperamide in steps of 4mg PO QDS (max. 24mg QDS) every 2-3 daysRequires baseline ECG to check QT interval before increasing beyond max licensed dose of 4mg QDS, and once target dose acheived | **Consider trial of codeine 60mg PO QDS**(Max. 30mg QDS if GFR<20ml/min) Evidence of greater efficacy when used in combination with loperamidePotential for addiction/sedation |
| Consider trial of octreotide 50-200micrograms SC TDS (SPECIALIST ADVICE ONLY)Generally only effective for a short period of time owing to development of tolerance to medication |

**OTHER MEDICATIONS**

Consider use of Artificial Saliva spray as required to help overcome excessive thirst/dry mouth

**GOALS OF TREATMENT**

* Maintain fluid balance
* Correct electrolyte disturbance
* Maintain stable weight
* Reduce volume of stoma output to manageable level

**DIETARY MANAGEMENT**

* Encourage a high energy and high protein diet
* Encourage low fibre starchy (carbohydrate) foods with every meal e.g. potatoes (avoiding skins), white rice/pasta/bread, low fibre breakfast cereals e.g. rice crispies or cornflakes
* Encourage snacks between meals
* Avoid high fibre food e.g. whole grains, beans, pulses, the skins/stalks/seeds of fruits & vegetables, nuts, seeds and porridge
* Limit oral drinks and advise to sip slowly throughout the day
* Discourage drinking fluids with meals – aim to leave a gap of 30 minutes before and after meals
* If evidence of persistent hyponatraemia the patient may benefit from adding salt to food and including salty snacks
* Foods to include to help thicken the output: low fibre carbohydrates (pasta, rice, white bread, potatoes without skins), gelatine containing foods (marshmallows, yoghurt, jelly, fruit gums), eggs, cheese, milk puddings, 1 banana a day
* Foods to avoid which may loosen the output: raw fruit and fresh fruit juice, raw vegetables (includes salad), spicy foods, fried and fatty foods, leafy green vegetables, some sweeteners or foods and sweets that contain sweeteners e.g. Sorbitol, xylitol or mannitol

**EXIT STRATEGY**

Consider acceptability/tolerability to each patient on an individual basis

1. Octreotide is generally only effective for a short period of time owing to development of tolerance to medication.
2. Codeine is generally poorly tolerated/addictive/sedative, so its suitability/efficacy should be reviewed on a regular basis. Can cause rebound increase in output on withdrawal.
3. Aim to reduce loperamide to minimum effective dose, ideally not more than licensed dose (4mg QDS) to minimise risk of QT-prolongation.
4. Proton Pump Inhibitors can cause a variety of GI side effects. Long term treatment has been associated with hypomagnesaemia and increased risk of fractures. Hyponatraemia is rare.

**USEFUL CONTACTS**

* Stoma Nurses –Bleep 8267, 8321, 8377 Email:bsu-tr.stomacaredepartment@nhs.net
* Nutrition Pharmacist – Bleep 8266
* Dieticians – Bleep 8289, 8069

**ST. MARKS SOLUTION**

* 6 teaspoons (20g) glucose powder
* 1 level teaspoon sodium chloride (table salt)
* ½ teaspoon sodium bicarbonate
* 1 litre tap or bottled water

Mix all the ingredients together and chill in the refrigerator.

The solution can be flavoured with cordial or squash but it must not be diluted with any more water.

The solution should be sipped throughout the day.

**REFERENCES**

1. ESPEN guidelines on chronic intestinal failure in adults – Jan 2017
2. Association of Stoma Care Nurses UK, National Clinical Guidelines – 2016
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4. J Nightingale, J M Woodward: Guidelines for management of patients with a short bowel, Gut Journal - Jul 2006
5. M. L. Baker, R. N. Williams and J. M. D. Nightingale: Causes and management of a high-output stoma: Colorectal Disease – 2010
6. UKMI Q&A: Can high dose loperamide be used to reduce stoma output? – Oct 2018
7. British Intestinal Failure Alliance (BIFA) statement – Sep 2017
8. Renal Drug Database – monograph for codeine accessed July 2019