High Stoma Output - Full Clinical Guideline - DERBY

Reference No.:CG-GASTRO/2018/023

1. Summary

This is a practical guideline to aid in the management of high output stoma. It is not a replacement for referral to the appropriate teams, e.g stoma nurses, colorectal surgeons, dietitians and Nutrition support team.

2. Introduction

High output stoma is a considerable problem in some people with significant morbidity and mortality. It needs to be managed appropriately and effectively to minimise long term harm.

3. Aim and Purpose

To offer guidance for all clinical staff treating adult patients with high output stoma.

4. Abbreviations

AKI – acute kidney injury

CKD – chronic kidney injury

Na – Sodium

K – Potassium

Mg – magnesium

UC – ulcerative colitis

IBD – inflammatory bowel disease

E Mix – St Mark's Electrolyte Mix

WHO – World Health Organisation

Guideline

A high stoma output can be defined as a volume of >2000ml/day, or sufficient to cause problems with negative fluid balance or difficulty managing output with conventional stoma bags.

There are a number of problems associated with a high stoma output. There are high water, sodium and magnesium losses causing a negative fluid and sodium balance. This may lead to AKI and ultimately CKD. Hypo or hyperkalaemia may occur. There is relatively little potassium loss in stoma fluid, hypokalaemia may be secondary to low magnesium and hyperkalaemia due to AKI and CKD. The consequences of sodium losses can lead to severe hyponatraemia with headache, nausea and vomiting, lethargy, confusion, muscle weakness, seizures, coma and death.

Undernutrition occurs primarily due to negative fluid balance and reduced absorptive capacity and is a late complication of high stoma output. Stoma bag leakage can occur with damage to skin and difficult skin care.

Causes of high stoma output
The following need to be considered as potential causes of a high stoma output;

- Surgery leaving a residual small bowel of <2m to stoma is likely to result in high stoma output. High stoma output occurring immediately after surgery is not uncommon, particularly after formation of stoma during emergency surgery (Baker, Williams, & Nightingale, 2010).
- Abdominal sepsis and if likely should be investigated with cross-sectional imaging.
- Intermittent obstruction can cause a high output stoma with or without bacterial overgrowth.
- Internal fistulae should be considered particularly, but not solely, in the context of tumour, radiation or Crohn's disease.
- Short bowel should be investigated by direct conversation with the operating surgeon, review of the operation note or if no information is available CT or barium studies.
- Enteric infection should be investigated with conventional stool culture, C. Diff and norovirus if immunocompromised.
- The medication chart should be reviewed and prokinetics stopped.
- Opiate withdrawl may precipitate high stoma output
- Primary and secondary adrenal insufficiency should be considered, particularly if the potassium is unexpectedly normal to high.

Treatment

1. Oral fluids
    a. Do not encourage water intake.
    b. Limit hypotonic i.e. normal fluids to a maximum of 1 L/day, once the stoma output has settled, this fluid restriction can be relaxed to 1.5-2L per day
    c. Give 1L hypertonic fluids per day. First line E Mix (St Mark's), does NOT contain potassium or WHO oral rehydration solution **NB contains potassium**

or 1.5-2x strength dioralyte **NB contains potassium.** Potassium containing mixes should not be used in people with CKD and high potassium, but can be considered for palatability and convenience in people with normal renal function.

2. Drugs
   a. Antimotility:
      i. Loperamide up to 8mg qds, open capsules, may be mixed with yoghurt or custard
      ii. Then add Codeine Phosphate up to 60 mg qds, consider starting at 15mg qds if older and more frail

   Give together, 30-60 minutes before food and at bedtime. Get the patient to self-medicate.

   b. Anti-secretory:
      i. omeprazole 40mg od-bd has been shown to be more effective than ranitidine (Nightingale, Walker, Fathing, & Lennard-Jones, 1991)
   c. Magnesium supplements:
      i. Maalox- may cause an increase in stoma output
      ii. Magnaspartate 1-2 sachets bd
      iii. iv replacement may be required at least initially
   d. Vitamin D replacement
3. Nutrition:
      i. Low residue diet, although there is no good evidence that this is effective
4. Losses should be replaced intravenously until a fluid balance is achieved. A negative fluid balance will not be corrected with fluid restriction. A urine output of ~20-30ml/kg/day should be aimed for.

Composition of commonly used intravenous crystalloids (BNF, 2016):

	Na mmol/L	Cl mmol/L	K mmol/L	HCO_3 mmol/L	Ca^{2+} mmol/L	Mg^{2+} mmol/L	Glucose g	Osm mOsml/L
0.9% Saline	150	150	0*	0	0	0#	0	300
Hartman's	131	111	5	29	2	0	0	278
0.18% Saline/4% dextrose	30	30	0*	0	0	0#	40	
0.45% Saline/5% dextrose	77	77	0*	0	0	0#	50	

*20-40 mmol/L as ready prepared bags for ward administration.

#can be added by pharmacy, usually 10-20 mmol/L

Electrolyte concentration of gastrointestinal secretions (CG174, 2013):

	H^+ mmol/L	Na mmol/L	K mmol/L	Cl mmol/L	HCO_3 mmol/L
Gastric	40-60	20-80	5-20	100-150	
Biliary		120-140	5/15	80-120	30-50
Pancreatic		120-140	5/15	40-80	70-110
Jejunum		140	5	135	8
Established Ileostomy		50-100	4-5	25-75	0-30
Newly formed stoma, high stoma, high output ileostomy		100-140	4-5	75-125	0-30

Monitoring

Patients with a high stoma output should have close monitoring with an accurate fluid balance chart, minimum of twice weekly weights, daily electrolytes, magnesium, phosphate and calcium, 3x weekly full blood count , inflammatory markers and LFTs and baseline and twice weekly urine sodium. A urine sodium of >30 is indicative of adequate sodium balance, <10 is indicative of both salt and water depletion in this context.

Further management:

We would strongly advise that all patients with a high output stoma longer than a few days in the immediate post-operative period are referred to the ward dietitian.

Any patient known to have a stoma with less than 1.5 m small bowel proximal to the stoma should be referred to the Nutrition team.

Appendix

E-Mix (St Mark's) recipe:

- 3.5g NaCl
- 2.5g $NaHCO_3$

(Na combined of 90 mmol/L)

- 20g Glucose
- Made up to 1000ml with water

WHO oral rehydration solution:

- 2.6g NaCl
- 1.5g KCl (20 mmol/L)

(Na combined of 75 mmol/L)

- 2.9g sodium citrate
- 13.5g glucose
- Made up to 1000 ml with water

Dioralyte composition per sachet: In order to be effective in this context, needs to be made up to 1.5-2x usual strength: 2 sachets per 300ml (1.5) water or 2 sachet per 200ml (double strength)

- 470mg NaCl (combined 60mmol/L Na)
- 530 mg sodium citrate
- 300mg KCl (20 mmol/L)
- 3.5g Glucose

1.5 – 2x →

90-120 mmol Na

30-40 mmol KCl

5.25 -7g glucose

References:

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Documentation Controls

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