1.0 Introduction
The term “stoma” is of Greek derivation and literally means "mouth". A stoma connects a portion of a body cavity to the external environment. Parts of the gastrointestinal tract which could be involved in the creation of a stoma are the oesophagus, stomach, duodenum, small bowel and colon. Stomata in neonates are usually temporary and the most common conditions for which stomata may be fashioned in neonates are necrotizing enterocolitis, anorectal malformations and Hirschsprung’s disease. This guideline is applicable to neonates with stomata of the duodenum, jejunum, ileum and colon.

2.0 Types of stomata
The aim of a stoma is to divert gastrointestinal contents away from a diseased or malformed segment. Stomata may be fashioned in different ways as follows:

Split stoma and mucus fistula
The bowel is divided and both ends are brought out through the abdominal wall separately. The proximal end is the functioning stoma and the distal end is the mucus fistula. The operation note should make it clear where the stoma and mucus fistula are situated on the abdomen and would ideally include a diagram. The stoma and mucus fistula may sometimes be fashioned side-by-side without a skin bridge. The wound is closed with dissolvable sutures.

fig 1: Split stoma and mucus fistula
**End stoma without mucus fistula**

The proximal bowel end is brought out through the abdominal wall as the stoma and the distal end is closed and left within the abdominal cavity.

*Fig 2: End stoma without mucus fistula*

**Loop stoma**

A loop stoma is formed by suturing a loop of bowel to the abdominal wall and making an opening into the bowel, which remains in continuity.

*Figure 3: Loop stoma (slightly prolapsed)*

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### 3.0 Practical management guide

Contact Gail Fitzpatrick (Mobile 07771905107) to inform her that a neonate with a stoma has been transferred to your unit.

### 3.1 Application of stoma bag

- The stoma should be fitted with an appropriately-sized stoma bag once the stoma is working & the bag should be emptied 4-6 hrly.
- In a neonate with a split stoma and mucus fistula, the stoma bag should be fitted on the stoma only where possible and the mucus fistula should be left exposed and dressed with a jelonet or vasoline and non-sterile gauze dressing.
- Change the bag every 3 days or if it leaks. It should not be removed without using a stoma adhesive remover wipe.
- The stoma should be cleaned with warm tap water & dried with non-sterile gauze.
- Template should be checked on alternate days initially & weekly thereafter.
3.2 **Examine the child, including the abdomen and stoma on daily basis**

Signs to look out for are dehydration, abdominal distension, wound infection or breakdown, peri-stomal skin excoriation, granulation tissue formation, stomal bleeding, discolouration of the stoma or mucus fistula, stomal prolapse or retraction, stoma bag leakage & rectal discharge.

- If the stoma is dusky or black, call the surgical team at Birmingham Children’s Hospital (BCH).
- If the skin surrounding the stoma is excoriated, identify the cause & treat.

3.3 **Measure and record weight on a daily basis**

Inadequate weight gain or weight loss may be secondary to:

- Insufficient calorie intake
- Malabsorption
- Dehydration
- Electrolyte abnormalities

3.4 **Measure and record stoma effluent**

A regularly updated fluid balance chart is an essential component of management. This document should indicate fluid intake and losses and stoma losses should be carefully measured and recorded on the chart. The colour & consistency of the stoma effluent should be recorded on the fluid balance sheet.

3.5 **Measure serum electrolytes**

Serum electrolytes should be measured at least every 2 days in the first seven post-operative days.

3.6 **Measure Urinary Sodium and Potassium twice weekly**

Neonates with stomata (especially small bowel stomata) are at risk of loosing a significant amount of sodium into the effluent. Babies will often fail to gain weight if their total body sodium is depleted. Serum sodium is an unreliable indicator of total body sodium. Urinary sodium and NA:K ratio are better indicators of total body sodium.

- Sodium supplements are usually required in neonates with a small bowel stoma until the stoma is closed.
- If urinary sodium is below 20 mmol/l or the ratio of concentration of urinary sodium to potassium is less than 3:1, sodium intake should be increased.
4.0 Nutrition

Baby returns from surgical unit:

4.1 On total parenteral nutrition and no enteral feeds.

Please check surgical discharge letter and operation note for instructions on when enteral feeds may start. Enteral feeds should be introduced slowly and increased gradually in accordance with local unit’s feeding regimen.

Useful indicators of tolerance of feeds are the absence of symptoms and signs such as vomiting and abdominal distension, absence of bile in nasogastric (NG) aspirates, small size of nasogastric aspirates, low volume of stoma effluent and absence of reducing substances and fat in the stoma effluent.

4.2 On a combination of parenteral nutrition and enteral feeds

Enteral feeds should be increased gradually in accordance with local unit’s feeding regimen. It is not possible to predict how much enteral feed the patient will be able to tolerate. As a general rule, the more distal the stoma, the better the tolerance of feeds. Sole reliance on absence of symptoms can however be misleading. The amount of stoma effluent and presence/absence of reducing substances in the stoma effluent should also guide the advancement of enteral feeds.

4.3 On full enteral feeds

Tolerance of enteral feeds can fluctuate with time and infants with stomata are at high risk of life-threatening dehydration and electrolyte abnormalities as a result of gastroenteritis. There should be a low threshold for readmission to hospital and appropriate resuscitation.

5.0 Complications

5.1 High stoma output

This is defined as daily output greater than 20ml/kg/day in premature or low birth weight neonates and 30ml/kg/day in term neonates.

- Measure serum and urinary electrolytes.
- Perform arterial blood gas; stoma effluent may be rich in bicarbonate and metabolic acidosis may be present; consider sodium bicarbonate supplementation.
- Stoma losses should be replaced ml for ml with intravenous 0.9% saline with 10mmol of potassium added to 500 ml.
- Test stoma effluent for reducing substances and fat.
  - If reducing substances are > 0.25 or fat globules are present, consider reduction of enteral feed or changing the type of enteral feed, after consultation with a dietician.
If a mucus fistula is present, consider recycling of stoma effluent. Consult surgical team to establish whether a contrast study through the mucus fistula is needed prior to recycling. If a contrast study is advised, please make arrangements for the study to be performed at BCH and inform surgical team when the study will take place. Surgical team will review the investigation and provide advice on whether recycling may start. To start recycling, please refer to “Recycling Guideline” & contact Sister Bernadette Reda, Surgical Outreach Liaison Nurse (see contact details below). If she is not available, contact Gail Fitzpatrick, Stoma Nurse Specialist (see contact details below). Monitor bowel actions: if stools are frequent and loose and contain reducing substances and/or fat, reduce amount of enteral feeds and obtain dietetic advice.

If the neonate is not thriving, consider the institution of PN. Please note that increasing enteral feeds in a baby with poor weight gain and a stoma, increasing feeds may actually make the situation worse.

If none of the above measures are effective, stop enteral feeds, start PN and consult the surgical team to discuss stoma closure.

5.2 Stomal stenosis
This complication may be present if:

- Stomal output reduces or stoma stops functioning.
- Stoma effluent becomes watery

Call surgical team for advice

5.3 Prolapse
Call surgical team for advice. If stoma is discoloured, emergency action is required.

6.0 Planning Stoma Closure
Stoma closure is best performed when the baby is well and thriving. This would normally be after discharge from hospital. Indications for early closure are:

- Failure to achieve full enteral feeds.
- Recurrent stomal prolapse with or without stomal discoloration
- Stomal stenosis.
- High stoma output not responding to measures outlined above.

If these factors are present, please inform surgical team at BCH.

7.0 Discharge planning & Parental Teaching
Babies must be well, tolerating their feeds and thriving before discharge can be considered. When discharge is planned please inform:

- Gail Fitzpatrick, Stoma Care Specialist. Gail needs to be informed first so she can complete teaching, order equipment & organise on-going support via home visits or telephone contacts.
- Bernadette Reda – Surgical Outreach Liaison Nurse
- Secretary of the Surgical Consultant who fashioned the stoma, to arrange out-patient follow-up.
8.0  **Who to call when you need help?**

- **Gail Fitzpatrick**, Stoma Care Specialist (mobile 07557001653) for management for stoma-related complications & for parental & staff training.
- **Bernadette Reda**, Surgical Outreach Liaison Nurse, will visit neonatal units and provide advice, support and training regarding surgical management.
- **Surgical team**
  - It is best to call the team of the consultant surgeon who performed the surgery as they will be familiar with the baby.
  - In an emergency out of hours, the surgical on call registrar is available on bleep 55420 at BCH.

9.0  **Useful Information** – click for internet links

- [Information about the Neonatal Surgical Unit at Birmingham Children's](#)
- [How to get to Birmingham Children's Hospital](#)