Guideline for the management of a baby with a stoma

Types of Stomata:

1. **End stoma without mucus fistula**
   - The proximal bowel end is brought out through the abdominal wall as a stoma and the distal end is closed, and left within the abdominal cavity.

2. **Stoma with mucus fistula**
   - In this type of stoma the bowel is divided, and both ends are brought out through the abdominal wall together or separately. The proximal end is the functioning stoma and the distal end is the mucus fistula – mucus drains through this opening especially if the distal bowel is not patent. The surgeon's operation note should make it clear where the stoma and mucus fistula are situated on the abdomen.

3. **Loop stoma**
   - This is formed by suturing a loop of bowel to the abdominal wall and making an opening into bowel, the bowel always remains in continuity.

Colour of the stoma should be pink (same as the inside of the oral cavity), however, it may become dusky when the baby is crying.

**Management:**
- The care of a stoma is a specialist skill that requires liaison with the surgical centre team and with the local stoma care team.

**Application of the stoma bag:**
- Empty stoma bags when 2/3 full rather than at set times. If the stoma is a split stoma and mucus fistula, fit the stoma bag over the stoma only (where possible) and leave the mucus fistula exposed and dressed with a paraffin gauze dressing (e.g. Jelonet) or Vaseline and non-sterile gauze dressing. If the stoma and mucous fistula are sited close together, both can be incorporated into the same stoma bag. Change the bag every 3 days (maximum) or if it leaks. Remove using a stoma adhesive remover wipe. Clean the stoma with warm water and dry with non-sterile gauze. Change the bag when the flange appears to be lighter in colour around the stoma- this indicates the stool is leaking under the flange.

**Monitoring:**
- Examine the baby, the abdomen and the stoma daily for the first few days after transfer from the surgical centre. These babies are at risk of dehydration and poor growth if the stoma losses are high. There are also risks of intestinal obstruction, skin excoriation around the stoma site and bleeding, prolapse, retraction or ischaemia of the stoma. If these problems are identified, contact the surgical team for advice (urgently if the stoma becomes dark/black and/or it has stopped working).

**Weight:**
- Measure and record weight daily initially until the weight stabilises. Inadequate weight gain or weight loss may be secondary to:
  - insufficient calorie intake/absorption
  - dehydration
  - electrolyte abnormalities, particularly sodium deficiency.
Stoma effluent:
Maintain an accurate fluid balance chart for the first few days after transfer. Record:
• fluid intake
• stoma losses (including colour and consistency of stoma effluent)
• urine output.

Serum electrolytes:
Measure twice weekly initially after transfer from the surgical centre – look for hyponatraemia and/or hypokalaemia.

Urinary sodium and potassium:
Babies with a stoma (especially small bowel stoma) are at risk of losing significant amounts of sodium into the effluent because the colon’s normal function is being bypassed e.g. in ileostomy patients, and they may often fail to gain weight if the total body sodium is depleted. The serum sodium is an unreliable indicator of total body sodium as serum sodium can be maintained by homeostasis even in the presence of significant sodium depletion.
Monitoring urinary electrolytes is important to ensure adequate nutrition and growth, and it is a better indicator of adequate sodium intake. Measure urine electrolytes twice weekly initially and weekly until discharge. Measure urinary sodium concentration and Na:K ratio. Sodium supplements are usually required in babies with a small bowel stoma until the stoma reversed.

Adequate sodium intake will give a urinary sodium concentration of greater than 20 mmol/L. If the urinary sodium is <20 mmol/L or the ratio of concentration of urinary sodium to potassium is less than 3:1, start or increase sodium supplements.
Start at 2mmol/kg/day and increase dose as necessary.

Nutrition:
Babies transferred from a surgical centre are usually fully enterally fed, but if still receiving some parenteral nutrition, check the neonatal/surgical discharge letter and operation notes for instructions on increasing enteral feeds. Watch for signs of feeding intolerance:
• vomiting and abdominal distension
• bile in nasogastric aspirates
• large nasogastric losses
• low stoma losses – indicating dysmotility/obstruction
• high stoma losses – indicating malabsorption
• reducing substances or fat globules in the stool/stoma effluent
In general, the further distal the stoma, the better the tolerance of feeds will be. The presence of reducing substances in the stoma effluent may help diagnose malabsorption. However, the testing sticks for reducing substances are unavailable in many hospitals eg in UHW they are not used.
For babies with ileostomies breast milk should always be the feed of choice, but if this is not available consider using a hydrolysed formula which contains minimal lactose, medium chain triglycerides and a hydrolysed protein source, e.g.Pepti Junior. This milk can be used at a standard concentration of 12.8% for term infants or concentrated to 15% for preterm infants. Amino acid based formulas are rarely required but may be tried if a hydrolysed formula has failed.
The further a protein is hydrolysed in a milk formula the higher the Osmolality.

Even post discharge, tolerance of enteral feeds can fluctuate over time. Babies 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.

Complications:
High stoma output:
A daily output >20 mL/kg/day in premature or low-birth-weight babies and 30 mL/kg/day in term babies indicates a high stoma output. In these babies it is especially important to measure serum and urinary electrolytes twice weekly until weight gain is established and the stoma loss reduces. Particularly if the baby has not yet reached full enteral feeds, or has only recently reached full enteral feeds:
Replace excess stoma losses (ie losses of greater than 20ml/kg/day in preterm/low birth weight infants or greater than 30ml/kg/day for term infants) as follows:

- Replace these excess losses mL-for-mL with 10 mmol potassium chloride in 500 mL sodium chloride 0.9% IV.
- Calculate the time over which the loss occurred and replace at the same rate. E.g. if the total stoma loss is 30ml every 6 hours in a 2kg preterm baby this equates to 120ml in 24 hours, or 60ml/kg/day. Of this, 40ml/kg/day is excess – replace at this rate IV.

Test stoma effluent for reducing substances and fat globules if possible. If present, consider reduction of enteral feed or changing type of enteral feed after consultation with the surgical team or nutrition team.

Check blood gas, as the stoma effluent may be rich in bicarbonate and as a result of bicarbonate loss, a metabolic acidosis may be present. If so, consider sodium bicarbonate supplementation.

If babies are older and well established on enteral feeds, consider the use of loperamide, if other measures have been unsuccessful. Use crushed loperamide tablets rather than liquid as the liquid preparation contains sorbitol which has a laxative effect. Increase the dose in proportion to the baby's weight. If none of the above measures are effective, consider stopping enteral feeds, starting parenteral nutrition and consult the surgical team to discuss surgical options.

**NB Increasing enteral feeds in a baby with poor weight gain and a high output stoma, may worsen the situation – consult surgical or nutrition team if in doubt**

**Stomal stenosis:** May be present if:

- Abdominal distension is seen
- No air in the stoma bag
- Stomal output reduces or stoma stops functioning
- Stoma effluent becomes watery
- Call surgical team for advice

**Prolapse:**

This is not an uncommon complication; it may be possible to reduce the prolapse but often it recurs. Call the surgical team for advice. A pink stoma does not require urgent surgical review, but a dusky one needs to be reviewed and may need reduction under GA +/- revision.

**Parastomal Hernia:**

Discuss with surgical team

**Skin irritation due to Leakage of Stoma Effluent:**

This is a common complication especially if the stoma is an ileostomy rather than a colostomy, and requires a high level of nursing input. If stoma effluent leaks over the abdominal skin the skin may develop a severe contact dermatitis and skin breakdown due to irritants in the effluent – mainly enzymes. Every effort must be made to avoid contact between the effluent and the stoma.

- The skin should be cleaned with sterile water – either irrigate with syringes of water or with soaked gauze. Use dry gauze swabs to dry the area once it has been cleaned and further dry the area with funnel oxygen. This can only be done when the stoma is not functioning. If it is functioning continually then you will need to reapply the stoma bag as quickly as possible.
- Avoid using barrier creams as these will stop the stoma bag sticking to the skin. If it is considered necessary to use a barrier, use Cavilon wipes or Calamine lotion.
- Cut the hole for the stoma in the centre of the stoma bag, unless the stoma is close to eg the groin crease and then the hole could be cut off centre. Ensure that the hole is only just big enough for the stoma and not so big that the stoma losses can come in contact with the abdominal wall skin. Digital dilation of the stoma bag opening is preferable to cutting a hole using the eye of faith. It can be done in very small increments to provide a better seal than ragged borders generated by scissors. Edges can be smoothed by running a finger around the rim. This also minimises abdominal skin contact with stoma effluent.
- Even if the skin has broken down do not use any creams on the skin because this will cause the stoma bag to detach causing further problems. Ensure the bag sticks even if it needs to stick to an area where there is broken skin. Avoidance of contact with stoma effluent is the key to broken skin healing.
• Ensure the bag adheres well.
• Consider using a hydrolysed formula, which can be concentrated depending on the babies gestation to reduce stoma output.
• As a last resort, consider stopping enteral feeds and using TPN until the skin starts to heal.

Mucus Fistula and Recycling of Stoma Losses:
NB: Recycling of stoma effluent into the distal stoma/mucus fistula may reduce the risk of the complications, but do not recycle unless instructed to do so by the surgical team. Generally, recycling is mainly carried out on babies post NEC. A contrast study through the mucus fistula may be advised by the surgeons before recycling can be considered. This can be arranged via the Consultant Radiologist.
Indications may include high stoma output (see above), malabsorption, complications of central line use, and difficult venous access. Advantages include optimal nutrition, hydration and electrolyte balance, stimulation of gut hormones and enzymes, maturation of distal intestinal tract and preparation for reversal. Contraindications to recycling include compromised integrity of distal bowel, anal stenosis or imperforate anus, Hirschspring’s disease or dysmotile gut and effluent being too thick to infuse.
Adverse reactions to recycling are rare, but may include bleeding from the mucus fistula, distal stoma perforation of bowel by the catheter, leakage of stoma effluent onto peristomal skin causing excoriation. The procedure may cause distress to the baby and to parents. Please see Appendix 1.

Stoma Closure/Reversal:
This is often performed after discharge from hospital when the baby is well and thriving. However, the closure may be performed sooner if there is failure to achieve full enteral feeds, recurrent stomal prolapse with or without stomal discoloration, stoma stenosis or high stoma output/failure to grow and not responding to measures outlined above.

Rotavirus vaccine:
Ideally, babies with stomas should be given the first two rotavirus vaccines as usual at 8 weeks and 12 weeks of age. Both doses should preferably be given before 16 weeks, and the second dose should always be given at least four weeks after the first.
However, because the vaccine can cause diarrhoea, consider delaying this vaccine in babies with high stoma losses. The first dose however should not be given beyond 15 weeks. It is probably best to give this whilst the baby is in hospital if possible so that the baby can be monitored.
Be very vigilant following the vaccination. Weigh the baby frequently and monitor the urine output, stoma losses, electrolytes and urine electrolytes.

Discharge Planning:
Discharge when baby well, tolerating feeds and gaining weight adequately. Parents will need to be taught to care for the stoma. Ensure that the advice given is in accordance with this guideline and guided by the surgical team and stoma care specialist nurse.
Ensure parents have all necessary equipment and that there is a mechanism in place to be able to obtain continuing supplies (liaise with stoma care nurse and GP). Ensure the parents are aware of the importance of seeking early medical attention should the baby develop signs of gastroenteritis (increasing stoma output, watery effluent, vomiting).

Ensure follow-up arrangements are in place:
• to monitor urine electrolytes weekly at home if previous urine sodium levels not consistently above 20mmol/L (neonatal community nurses can arrange this) – ensure community team have biochemistry request forms and that the name of the nominated consultant neonatologist is on the form.
• to monitor weight gain at home – weekly or twice weekly as deemed appropriate.
• Neonatal follow up within 4-6 weeks with nominated consultant neonatologist – to ensure baby is fit for further surgical correction, including adequate haemoglobin level.
• Surgical follow up with the relevant surgeon (contact surgeon’s secretary).
• Babies may require distal contrast study and possibly rectal biopsy before final closure – this can be clarified with the surgical team prior to discharge.
Appendix 1

Procedure for Recycling

**Equipment**
- Tube (enteral) size 6 or 8 Fr
- Lubricating gel (if catheter not lubricated)
- Enteral syringe (60 mL)
- Stoma pot to collect stoma effluent
- Plastic apron and gloves
- Tape and dressing

**Preparation**
Note the condition of the peristomal skin, place all necessary equipment at cot side, wash hands and put on gloves and apron. Ensure baby is in supine position and is kept warm. Use a clean stainless steel trolley with all necessary items at the ready. Extraneous items should be removed from the cot/incubator to prevent contamination. An assistant should be present to swaddle and comfort the infant.

**Procedure**
- Pass lubricated feeding tube into mucus fistula up to 2 cm past end holes
- Secure to the abdomen with tape
- Cover mucus fistula with paraffin gauze dressing (e.g. Jelonet)
- Collect stoma fluid from acting stoma into enteral syringe, connect to catheter via extension tube and start re-cycling
- Aim to infuse stoma loss over about 10 minutes. Discard any effluent older than 4 hr
- Re-cycling should result in bowel actions per rectum of a consistency thicker than the stoma loss
- If bowel actions watery and/or frequent, send samples for culture and sensitivity, virology and detection of fat globules and reducing substances. Discuss with surgical team.
- If baby develops signs suggestive of sepsis, stop recycling, perform septic screen and treat infection as per unit guidelines. Discuss with surgical team.