“Bedside placement and care of a Naso-Jejunal Tube”

| Version: | 1 |
| Approval Committee: | Children’s Services Review Group |
| Date of Approval: | 15th August 2018 |
| Ratification Group (eg Clinical network): | Children’s Services Review Group |
| Date of Ratification | 15th August 2018 |
| Signature of ratifying Group Chair | John Pappachan – Chair CSRG |
| Author(s) and title | Karen Dick, Paediatric Surgical CNS |
| Date issued: | 16th August 2018 |
| Review date: | 16th August 2021 |
| Key words: | NJ tube, Jejunal feeding |
| Main areas affected: | Child Health, PICU, HDU, E1. |

Other stakeholders consulted e.g. other clinical networks, departments

Summary of most recent changes (if updated guideline):

Relevant national or international Guidance e.g. NICE, SIGN, BTS, BSPED

Consultation document completed: Yes

Total number of pages:

Type of document: Level 1

Is this document to be published in any other format?

Does this document replace or revise an existing document? If so please state existing document(s)
Contents

Flowchart

1 Introduction

1.2 Scope

1.3 Aim/Purpose – outline objectives and intended outcomes

1.4 Definitions

2 Beside Placement of a Naso-jejunal Tube

3 Implementation (including training and dissemination)

4 Process for monitoring compliance/effectiveness of this policy

5 References

Appendices

<table>
<thead>
<tr>
<th>Appendix</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appendix A</td>
<td>Equipment required for jejunal tube placement</td>
</tr>
<tr>
<td>Appendix B</td>
<td>Aspiration of a Naso-Jejunal tube</td>
</tr>
<tr>
<td>Appendix C</td>
<td>Measuring for a Naso-jejunal tube</td>
</tr>
<tr>
<td>Appendix D</td>
<td>X-ray interpretation</td>
</tr>
<tr>
<td>Appendix E</td>
<td>Potential Complications of jejunal tube placement</td>
</tr>
<tr>
<td>Appendix F</td>
<td>Consultation signatures</td>
</tr>
</tbody>
</table>
Flowchart – placement and basic care

Preparation
- Explain procedure to patient, gain consent
- Choose appropriate long term tube - size (fr) and length (cm)
- Assemble equipment, see appendix A
- Measure required length, see appendix C
- Make patient comfortable

Gastric placement
- Position the child appropriately to pass a nasogastric tube
- Lubricate the tip of the tube with water only
- Pass tube to Nose Ear Xiphisternum measurement (NEX).
- Confirm placement with pH indicator strip
- Remove guidewire

Jejunal placement
- Lie the patient on the right side
- Advance the tube slowly until it is at the required jejunal length (Appendix C)
  - neonate - 5 cm every 15 minutes
  - young child - 2-5 cm every 5 -10 minutes
  - older child - 4-6 cm every 5 minutes
- Tape in position (consider a Nasal Bridle)
- MAXIMUM TWO attempts before discussion with X-ray about fluoroscopic placement

Confirmation
- Request an abdominal x-ray - clinical indication, to confirm placement of NJ tube tip
- X-ray is the only way to confirm definite jejunal placement (Appendix D)
- Document NEX measurement in notes, consider marking the tube at the nose with a permanent marker.
- The tube length / mark at the nostril must be checked and documented:
  - After insertion (use safety sticker provided)
  - Before any liquid, feed or medications is introduced via the tube
  - 4 hourly during feed
- Document any signs of gastric reflux. Consider tip displacement

See local NG guidelines
General Tips

- Do not routinely aspirate an NJT as it can cause it to collapse and retract back into the stomach.
- Aspiration of tube should only happen if there are concerns that the tube has moved (see appendix B).
- Use Naso-jejunal Tube Position Check Pathway (appendix F) to confirm tube is safe to use.
- Feeding must be via a pump as the small bowel cannot tolerate large volumes of feed.

Maintance of Tube patency

- Tube should be flushed with 5ml of sterile water (2ml for neonates) using turbulent flush technique.
- prior to and after each feeding session.
- prior to and after administration of medications.
- 6 hourly when tube is not in use.
- consideration of fluid volume must be taken into account in neonates and patients on a fluid restriction.

Feed administration

- Confirm tube is safe to use (see Appendix F).
- Flush NJT with appropriate amount of sterile water.
- Attach feed giving set to NJT.
- Commence feed at prescribed rate and volume (see feed plan from dietitian) - pump feeds only.
- At end of feed (or every 6 hours) flush NJT with appropriate amount of water (see maintenance above).

Medications

- Confirm tube is safe to use (see Appendix F).
- Medication should be administered either just before or after feed to reduce number of times the tube is accessed.
- Confirm measurement at nose.
- Flush before, after and in between multiple medications with a turbulent flush.

Displacement of Tube - Stop Feeds

- Consider tip displacement if the following symptoms are observed:
  - Retching
  - Vomiting milk
  - Excessive coughing
  - Respiratory distress
  - Tube has been dislodged (measurement at nostril is different).
- Confirm placement by aspirating the tube to test pH or consider an X-ray.
1.1 Introduction
The aim of this document is to provide a short summary guideline for the bedside placement of a Naso-Jejunal tube (NJ tube). A routine nasogastric tube (NG tube) is not needed but in special circumstances both an NG tube and an NJ tube maybe required.

1.2 Scope
This guideline is for use by all Registered Nursing staff (band 4 and up) that provide care for children with differing physical, psychological, social and emotional needs who require a NJ tube. The aim of this guideline is guide staff in the placement of an NJ tube on the ward.

1.3 Purpose
The guideline outlines the clinical standards required for safe and competent care when placing and feeding a child via an NJ tube.

1.4 Definitions
- **Nasogastric Tube** (NG tube): is a narrow bore tube passed into the stomach via the nose. It is used for short / medium / long term nutritional support; also for aspiration of stomach contents – e.g. for decompression of intestinal obstruction
- **Naso/oro jejunal tube** (NJ tube): is a narrow bore long term tube passed into the small bowel (jejunum) via the nose. It is used for short / medium / long term nutritional support. For the purposes of this guideline naso/oro jejunal tubes will be referred to as NJ tube, although it is recognised in some circumstances an orogastric tube will be required.
- **NEX measurement**: Nose; Ear; Xiphisternum measurement – this is how to measure the length of an NG tube.
- **pH indicator strip**: an indicator strip that shows level of acidity
- **Gastric decompression**: the removal of pressure caused by gas or fluid from the stomach.
- **Turbulent Flush**: Using a push stop, push stop technique on the syringe rather than a slow steady push

2 Beside Placement of a Naso-jejunal Tube
Please see flow diagram 1 and 2

**Placement of a feeding tube into the small bowel**
The decision to place the tube in the duodenum (the first section of the small bowel) or the jejunum (the second section of the small bowel) depends on the clinical condition of the child. It must be document in the child’s health records.

**Jejunal feeding**
Jejunal feeding may be initiated in any age group of patients following discussion with the wider multi-disciplinary team.
Please consider the following points before initiating jejunal feeding (advice from a consultant paediatric gastroenterologist).

- **Consideration and documentation** of the following is imperative before placing an NJ tube:
  - Indication of placing an NJ tube?
  - Growth (height and weight)
  - Continuous gastric feeding with breaks should be tried. A regimen of 10 hours of continuous feeding followed by a 2 hours break and repeat.
  - Fully understand the risks and benefits associated with NJ tubes (audit results as in link available in references) including the risk of recurrent displacement.
  - Full and frank discussion with multi-disciplinary team

- Recurrent replacement of an NJ tube is an invasive procedure so the first two previous points should be fully explored and considered first.

- Displacement is more likely in:
  - younger children
  - neurologic children with movement disorders
  - those with recurring vomiting (particularly retch) as they will vomit out the tube

- If you are already considering a referral to the paediatric gastroenterology team then please discuss the placement of an NJ tube with the gastroenterology team first.

- NJ tubes can be placed on ward. Advice may be taken from the paediatric nutrition specialist nurse.

- If NJ placement is unsuccessful on the ward (following 2 attempts) discussion with radiology is required for fluoroscopic placement.

### Consideration for jejunal feeding
- Severe gastro oesophageal reflux
- Delayed gastric emptying
- Persistent vomiting
- Trauma e.g. traumatic brain injury (TBI)
- Malignancy

### Contraindication for jejunal/ enteral feeds
- Bowel obstruction
- Oesophageal atresia/stenosis
- Significant upper GI bleeding
- Necrotising enterocolitis (conservative management)
- Ischaemic bowel

### Consideration for orojejunal rather than naso-jejunal tube:
- Basal skull fracture
- Maxillo facial abnormalities
- Nasopharyngeal abnormalities

### 3 Implementation
Training and dissemination will be via the Wessex Paediatric Gastroenterology, Hepatology & Nutrition Network (WESPGHAN) and the PIER website.
4 Process for Monitoring Effectiveness

<table>
<thead>
<tr>
<th>What aspects of compliance with the document will be monitored</th>
<th>What will be reviewed to evidence this</th>
<th>How and how often will this be done</th>
<th>Detail sample size (if applicable)</th>
<th>Who will coordinate and report findings (1)</th>
<th>Which group or report will receive findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Documentation of:</td>
<td>Patient records</td>
<td>Annually</td>
<td>Current inpatients</td>
<td>Surgical nursing team</td>
<td>Nursing practice group</td>
</tr>
<tr>
<td>• Indication</td>
<td>NJ tube stickers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• date of insertion</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• measurement in cm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• confirmation of placement by X-ray</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5 References

9 Appendices

Appendix A – Equipment required for jejunal tube placement

- Naso-jejunal tube (6 – 8 Fr long term tube with a guidewire) – Consider the child’s age, nasal cavity size and other relevant anatomical considerations when deciding on size of tube
- Plastic apron and gloves – mouth and eye protection should be available
- Hand gel
- Tape
- Tape measure
- Syringe
- Water for lubrication
- Sterile water in hospital
- pH indicator strip (check expiry date)
- Vomit bowl and Tissues
- Oxygen and suction
- Prepared medication or feed
- Drainage bag if to have an NG on drainage as well
- A drink with a straw or a dummy for a child to suck on (if appropriate)

Appendix B – Aspiration of a Naso-Jejunal tube

This should only be attempted if there are concerns that the NJ tube has displaced based on clinical judgement.

- Gently push 5ml of air into the tube, briefly remove the syringe, reattach and then attempt to draw back. If a vacuum is present, this is an indicator that the tip of the tube is within the intestine.
- The smallest size syringe that must be used to aspirate the tube is a 10ml.
- A vacuum should be felt when aspirating an NJ tube, this is normal for a Jejunal aspirate.
- Fluids pass through the jejunum and do not accumulate within it, as in the stomach, obtaining an aspirate can be a timely process and may not be possible, thus if the other indicators are fine, an aspirate is not required.
- Pulling against a vacuum is the only way to achieve an aspirate from the jejunum, but excessive pressure on the tube can contribute to its displacement from the intestine.
- If air can be drawn back up the tube, this is a strong indicator that the end of the tube is in the stomach.
- If an aspirate is obtained, test pH (if below 5 most likely gastric content)
- A record must be maintained showing the length of the NJ tube at the nostril, as from initial placement, which was confirmed by screening fluoroscopy or x-ray.

- **Of Note**
  - Prior to feed/medication/water being administered, the length of the tube should be checked and documented (see appendix F).
  - As the numbers wear off the NJ tube once it has been in place for a while, the tube should be marked with a black line at the nostril, to indicate correct placement length.
Appendix C– Measuring for a Naso-jejunal tube

It important to determine the length of NJ TUBE required to reach the jejunum prior to insertion. This should be done in two measurements A and B:

- **Distance A**: This is the NEX measurement (nose, ear, xiphisternum) as per a nasogastric tube
- **Distance B**: The length of tube required to place an NJ tube in the small bowel. See pictures below for the different age groups. Oral jejunal tubes should be measured from the mouth and not the nose for all age groups. The measurements are obtained as follows:

  **Both lengths should be clearly documented in the patient notes.**

  **Distance B (is measured according to age)**

**Distance B - Neonates**
- Place the tip at the bridge of the nose.
- Run down to the ankle of a fully extended leg.

**Distance B - Infants under 1 year**
- Place the tip of the tube against the nose
- Run the tube along the face to the ear
- Run the tube down to the mid-point between xiphisternum and umbilicus
- Continue to right iliac crest

**Distance B - Children over 1 year**
- Place the tip of the tube against the bridge of the nose
- Run the tube along the face to the ear
- Run the tube down to the mid-xiphisternum
- Continue to right iliac crest
Appendix D - X-ray interpretation:

- The NJ tube tip should been seen to go through the pylorus and around the c-shaped duodenum. The tip should ideally lie either in the midline (over a vertebral body) or to the left of the patient’s midline in the jejunum (picture 1).
- If NJ tube is too far in e.g. seen to curl in small bowel loops gently withdraw as necessary. You can measure the exact distance to withdraw on the X-ray.
- If NJ tube is through the pylorus but lies short, then loosen the securing tapes and advance further as necessary. Re-X-ray to confirm final position before feeding is commenced.
- If there is any uncertainty about the position of an NJ tube, please discuss with a radiologist before the tube is removed.
- If NJ tube is coiled in the stomach, without going through the pylorus discuss with radiology before attempting a second placement.
- If the NJ tube has taken an unusual path within the bowel discuss with the radiologist before removal of the tube (picture 2).

Picture 1 – Correct placement of NJ Tube

Picture 2
### Appendix E – Potential Complications of jejunal tube placement

<table>
<thead>
<tr>
<th>Potential Complications</th>
<th>Signs</th>
<th>Action required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tube is misplaced in or near the respiratory tract</td>
<td>May be no signs, but child may show signs of respiratory distress, cyanosis, cough</td>
<td>Do not feed jejunal tube medical review</td>
</tr>
<tr>
<td></td>
<td>May show a pH of greater than 7</td>
<td></td>
</tr>
<tr>
<td>Feeding into the lungs</td>
<td>As above</td>
<td></td>
</tr>
<tr>
<td></td>
<td>This can cause death</td>
<td></td>
</tr>
<tr>
<td>Nose bleeding</td>
<td>Bleeding</td>
<td>Immediate first aid</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Discuss with medical team regarding removal of tube</td>
</tr>
<tr>
<td>Nasal stenosis in long term use</td>
<td>Narrowing of nasal passages resulting in difficulty in passing tube</td>
<td>Ensure alternate nostrils are used</td>
</tr>
<tr>
<td>Mucosal damage/ gastric erosion to gastrointestinal tract</td>
<td>Pain, bleeding</td>
<td>Medical review to discuss remove jejunal tube</td>
</tr>
<tr>
<td>Nose - intracranial penetration</td>
<td>Pain, bleeding, reduced consciousness, deterioration in vital signs</td>
<td>URGENT medical review</td>
</tr>
<tr>
<td>Oesophageal tear</td>
<td>Pain, mediastinal infection</td>
<td>Urgent medical review</td>
</tr>
<tr>
<td></td>
<td></td>
<td>discuss removal jejunal tube</td>
</tr>
<tr>
<td>Duodenal/ jejunal tear or perforation</td>
<td>Pain, peritoneal infection</td>
<td>Urgent medical review</td>
</tr>
<tr>
<td></td>
<td></td>
<td>discuss removal jejunal tube</td>
</tr>
<tr>
<td>Vagal stimulation,</td>
<td>Include bradycardia, fainting, and the patient feeling cold and sweaty</td>
<td>Urgent medical review</td>
</tr>
<tr>
<td></td>
<td></td>
<td>discuss remove jejunal tube</td>
</tr>
</tbody>
</table>
Appendix F - Naso-jejunal Tube Position Check Pathway - **Document All Decisions & Actions**

**Initial position confirmed by X-ray and tube marked at nostril with indelible pen at time of insertion.**

**Patient is due feed, flush or medicines.**

Is the mark/length of tube at the nostril?

- **YES**
  - **TUBE MAY HAVE MOVED**
    - Request abdo X-ray to check position
  - **Position satisfactory**
    - Re-mark tube at nostril and start feed
  - **Position unsatisfactory**
    - Remove and replace tube

- **NO**
  - Request Medical review

Are there new or unexplained respiratory symptoms including:
- increased work of breathing
- coughing
- increased secretions/ need for suctioning
- low O₂ saturations/ increased O₂ requirement
- reflux, retching or vomiting

- **YES**
  - Start feed
  - Observe for any new symptoms
  - **Is the tube coiled in mouth?**
    - **NO**
      - Start feed
      - Observe for any new symptoms
    - **YES**
      - **Aspirate tube**
        - Acid aspirate (pH 5 or lower), suggests tube tip in stomach. Request an X-ray to confirm placement of the tube. Discuss with medical team about next steps.

- **NO**
  - **Start feed**
  - **Observe for any new symptoms**
  - **Aspirate tube**
    - No aspirate or pH 6 or above
    - Clinically well/stable/medical review satisfactory
    - Start feed
    - Continue to observe for new symptoms
    - If remains clinically unwell, review safety of re-starting feeds

- **Document**
Appendix G - Documentation of regional consultation:

<table>
<thead>
<tr>
<th>Trust</th>
<th>Name of person consulted* (print)</th>
<th>Designation</th>
<th>Signature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chichester</td>
<td>Mike Linney</td>
<td>Consultant Paediatrician</td>
<td>Confirmed by email</td>
</tr>
<tr>
<td>Dorchester</td>
<td>Julie Doherty</td>
<td>Consultant Paediatrician</td>
<td>Confirmed by email</td>
</tr>
<tr>
<td>Poole</td>
<td>Mark Tighe</td>
<td>Consultant Paediatrician</td>
<td>Confirmed by email</td>
</tr>
<tr>
<td>Portsmouth</td>
<td>Jenny Pridgeon</td>
<td>Consultant Paediatrician</td>
<td>Confirmed by email</td>
</tr>
<tr>
<td>Southampton</td>
<td>Nadeem Afzal</td>
<td>Consultant Paediatric Gastroenterologist</td>
<td>Confirmed by email</td>
</tr>
</tbody>
</table>

*this person agrees they have read the guidelines, consulted with relevant colleagues and members of MDT, managers and patients, young people & their families as appropriate. Any queries raised during consultation and review process should be documented with responses and any changes made to the guideline.*