Nasogastric Feeding Tube in Adults and Ongoing Care Clinical Guideline

V7.0

December 2018
1. **Aim/Purpose of this Guideline**

1.1. The purpose of this guideline is to provide clinical staff with clear standards in the safe insertion and confirmation of position of fine bore nasogastric feeding tubes.

1.2. This guideline applies to confirmation of nasogastric tube position in adults. Children, infants and neonates are excluded from the scope of this guideline.

1.3. The guideline has been written taking into account National Patient Safety Agency’s Alert (NPSA) March 2011 “Reducing the harm caused by misplaced nasogastric feeding tubes in adults, children and infants” which highlights the risk that nasogastric tubes can be misplaced during insertion or may partially move out of the stomach at a later stage, increasing the risk of aspiration. In addition the guideline acknowledges the rapid response report March 2012 “harm from flushing of nasogastric tubes before confirmation of placement and lists the recommendations and actions.

1.4. The guidance aims to:

- Guide the assessment and decision-making process for insertion of nasogastric feeding tubes.
- Ensure correct equipment and testing methods are used by staff to confirm safe position for feeding.
- Provide staff with evidence based guidance to support practice.

This guideline also supports the competency framework associated with enteral feeding and staff should use this guideline in association with the RCHT Guideline- Use of fine bore nasogastric tube with Nasal Bridle (AMT Bridle) which is an appendix in the restrictive practice policy.

1.5 The DPA18 covers how the Trust obtains, hold, record, use and store all personal and special category (e.g. Health) information in a secure and confidential manner. DPA18 is applicable to all staff; this includes those working as contractors and providers of services. For more information about your obligations under the DPA18 please see the ‘information use framework policy’, or contact the Information Governance Team rch-tr.infogov@nhs.net

1.6 The Trust has a duty under the DPA18 to ensure that there is a valid legal basis to process personal and sensitive data. The legal basis for processing must be identified and documented before the processing begins. In many cases we may need consent; this must be explicit, informed and documented. We can’t rely on Opt out, it must be Opt in.

The DPA18 covers how the Trust obtains, hold, record, use and store all personal and special category (e.g. Health) information in a secure and confidential manner. This Act covers all data and information whether held electronically or on paper and extends to databases, videos and other automated media about living individuals including but not limited to Human Resources and payroll records, medical records,
other manual files, microfilm/fiche, pathology results, images and other sensitive data.

DPA18 is applicable to all staff; this includes those working as contractors and providers of services.

For more information about your obligations under the DPA18 please see the ‘information use framework policy’, or contact the Information Governance Team rch-tr.infogov@nhs.net

2. The Guidance

2.1. Competency:

2.1.1. All patients requiring nasogastric feeding tube should be managed and supported by appropriately trained clinical staff assessed as competent in the procedure and who are practicing within the scope of their role. Skills and competencies should be reviewed regularly and updated to reflect new practice in the management of a nasogastric feeding tube. A useful training resource for medical staff in x-ray interpretation of nasogastric feeding tube position is available at www.trainingngt.co.uk

2.1.2. Appropriately trained clinical staff must be able to:

- Insert a nasogastric feeding tube
- Know what action to take if aspirate is unobtainable
- Know what action to take if gastric aspirate pH is greater than 5.5
- Administer feeds / medication via an nasogastric feeding tube
- Undertake mouth care
- Interpret nasogastric feeding tube placement

Although this procedure can safely be undertaken by one competent practitioner it is advisable to have a second person present to assist with positioning of the patient and to provide reassurance to the patient as and when required.

Insertion of a nasogastric tube is a clean procedure.

2.2. Ethical considerations:

The suitability of the patient for a nasogastric tube should be discussed and agreed within the multidisciplinary team. A detailed explanation of the procedure (need and process) should be discussed with the patient / relative / carers and consent sought and documented prior to insertion. For patients who lack capacity, due process must be followed regarding best interests including the involvement of an Independent Mental Capacity Advocate (IMCA) where necessary.

2.3. Risk Assessment:

Practitioners will have different levels of experience in placing nasogastric feeding tubes. Some contraindications, therefore, are relative and may be dictated by level of experience and/or speciality.
2.3.1. Before a decision is made to insert a nasogastric feeding tube, an assessment should be undertaken to identify if nasogastric feeding is appropriate for the patient, and the rationale for any decision is recorded in the patient’s medical notes.

2.3.2. A decision must be made that balances the risks with the need to feed or administer medications. Patients who are comatose or semi-comatose, have swallowing dysfunction or recurrent retching or vomiting, have a higher risk of placement error or migration of the tube. Patients on antacid medication may likely have a pH level of 6 and above, making confirmation of the tube position more difficult. Medical advice should be sought for patients on anticoagulants.

2.3.3. Action to reduce all identified risks and the rationale behind these actions should be documented prior to insertion of a nasogastric feeding tube. Therefore the decision to insert a nasogastric feeding tube must be made following careful assessment of risks by at least two competent healthcare professionals, including the senior doctor responsible for the patient’s care.

2.3.4. Details of assessment must be recorded in the patient’s medical notes prior to commencement of feed and should include signed, dated and timed entry of the process of initial risk assessment that evaluates the risks of introducing a nasogastric feeding tube for the purpose of feeding.

2.3.5. Patients with altered anatomy e.g. oesophageal fistula, pharyngeal pouch or in certain conditions will require referral to a specialist team i.e. Interventional radiology, ENT, endoscopy for consideration of their suitability for nasogastric insertion and the procedure only attempted under fluoroscopic control. For example:

- Neuro-disabilities / complex health needs
- Maxillo-facial disorders, surgery or trauma
- Oesophageal tumours or surgery

**Do not insert nasogastric tube in an unconscious patient who has sustained a head injury. Orogastric placement is the route of choice unless cranial fracture has been excluded.**

2.4. **Types of Nasogastric Feeding Tubes**

2.4.1 **Polyurethane tubes**

Fine bore (\leq12FG) polyurethane tubes overcome the complications associated with wide bore (>12FG) tubes and can remain in situ for 6-8 week or as manufacturer’s instructions.

The Corflo fine bore feeding tube (8 /10 FG) is supplied with an introducer wire to aid passage and are NPSA compliant. They cause fewer traumas to the nasopharynx and oesophagus. However, they are more easily displaced by coughing or vomiting than larger bore tubes and there is a greater chance of being passed into a bronchus and this therefore requires regular position checks before
administration of feeds and/or medicines and if there is any doubt about position (appendix 7). The narrow design of such tubes allows for better patient comfort and is less obtrusive, increasing patient compliance.

2.4.2 Polyvinylchloride (PVC) tubes

Wide bore (>12FG) Ryles (not radio-opaque) are frequently inserted for the purpose of gastric drainage and decompression; however, the non-radio opaque tubes are not NPSA compliant; therefore, **must not** be used for the purpose of enteral feeding (NPSA 002, 2011).

In certain circumstances, such as the critical care setting, it may be necessary to administer enteral feed via a wide bore gastric tube. This tube must meet NPSA requirements of having radio-opaque/centimetre markings. The Corflo 12FR tube can be used for these patients. Patients should not be fed through Ryles drainage tubes as they are not NPSA compliant.

In rare circumstances where **there are medical contraindications for exchanging Ryles for feeding tubes**, there must be robust risk assessment supported by documentation and this must be reviewed on a daily basis and changed for a fine bore feeding tube as soon as possible.

These feeding tubes may be associated with the following complications:

- Rhinitis
- Pharyngitis
- Oesophageal ulceration
- Gastric erosion (Payne James et al 2001)
- Increased tendency for reflux
- Patient discomfort
- Difficulty in swallowing

The specific manufacturer will provide guidance on the maximum length of time a tube can remain in situ. PVC material has the risk of leaching plasticizers within the tube causing it to become brittle and increasing the risk of gastric erosions and ulcerations.

2.5. Appropriate times:

2.5.1 Placement of nasogastric feeding tubes should not occur outside office hours or at times when there is insufficient support available to accurately confirm placement should any ambiguity arise. Unless clinically urgent, nasogastric placement should be delayed until support is available.

This placement time correlates with a greater risk of complications to patients due to reduced staffing numbers and expertise on duty overnight.
2.5.2 If the risk of delay in feeding or administering medication to an acutely unwell patient is considered by senior clinical staff responsible for that patient to outweigh the risk of interpretation of tube position and commencing feeding, then this decision and the rationale must be clearly documented in the patient's medical notes.

2.6. Insertion of nasogastric feeding tube procedure* (See Appendix 3)

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Direct click through link available here requires NHS Open Athens login to access.

2.6.1 Do not pre-flush water down the feeding due prior to insertion as this can affect the pH of the aspirate giving a false positive result.

2.6.2 Nasogastric tubes must not be flushed, nor any liquid/feed/medications introduced through the tube following initial placement until the stomach tip is confirmed by pH testing or x-ray, to be in the stomach.

2.6.3 Guidewires

Before inserting a NG feeding tube gently manipulate the guidewire to ensure it moves freely within the tube and ensure the guidewire is locked firmly into place.

Note that if a guidewire is removed and the nasogastric tube requires repositioning, UNDER NO CIRCUMSTANCES SHOULD THE GUIDEWIRE BE RE-INSERTED INTO THE TUBE WHILST THE TUBE REMAINS IN THE PATIENT.

The guidewire must be removed before using the NG Feeding tube and/or once position confirmed, remove according to manufacturers’ guidance. The guidewire does not need to remain in place for the purpose of X-ray check as the NG is radiopaque along the entire length and tip.

2.7. Confirmation of nasogastric tube position

2.7.1 The NPSA alert highlighted that many methods used to check placement of nasogastric tubes are inaccurate on their own and can increase the risk of a misplaced tube being used for feeding.

Therefore:

2.7.1.1. Auscultation of air insufflated through the feeding tube ("whoosh test") is unreliable and should not be used at any time.

2.7.1.2. Testing of aspirate with litmus paper not recommended for use for gastric testing should not be used. It is not sensitive enough to distinguish between bronchial and gastric secretions. Only pH indicator strips that are CE marked and intended by the manufacturer to test human gastric aspirate must be used.

2.7.1.3. Do not rely on monitoring bubbling at the end of the tube as this
is unreliable as the stomach also contains air bubbles and could falsely indicate respiratory placement.

2.7.1.4. Do not rely on only on observing the appearance of the tube aspirate; gastric and respiratory secretions may look similar.

2.7.1.5. Do not interpret the absence of respiratory distress as an indicator of correct position of tube. Feeding tubes can enter the respiratory tract with few/no symptoms.

2.7.2 Nasogastric feeding tubes must NOT be flushed, nor any liquid/feed/medications introduced through the tube following initial placement, until the tube tip is confirmed by pH testing or x-ray, to be in the stomach.

2.7.2.1. NOTHING should be introduced down the tube before gastric placement has been confirmed.

2.7.2.2. DO NOT FLUSH the tube before gastric placement has been confirmed.

2.7.2.3. Internal guidewires/ stylets should NOT be lubricated before gastric placement has been confirmed.

2.7.3 First Line test method: pH paper

2.7.3.1 pH testing is used as the first line test method, with pH between 1 and 5.5 as the safe range, and that each test and test result is documented on a chart kept at the patient’s bedside.

2.7.3.2 The aspirate must be obtained using a 60mL syringe as smaller syringes may fracture the tube through the use of excessive pressure. At least 0.5 - 1mL of aspirate is required to sufficiently cover the testing area. Allow for 10 seconds for the colour to change sufficiently. Instill 10-20mL of air in the tube to help clear other substances from the tube.

2.7.3.3 It should be noted that in some cases pH level of gastric contents may be elevated due to medications. The initial risk assessment needs to identify actions that staff should take in this scenario and document them in the care plan.

2.7.3.4 pH readings should be between 1 and 5.5 in order for feeding to commence safely. Readings that fall within the range 5.5 and above should be checked by a second person competent in nasogastric procedures.

2.7.3.5 All pH tests and test results must be recorded on a RCHT nasogastric care plan (CHSA 2821) and kept at the patient’s bedside (appendix 5).
2.7.3.6 Documentation following pH testing should include:

- whether aspirate was obtained;
- what the aspirate pH was;
- who checked the aspirate pH;
- when it was confirmed to be safe to administer feed and/or medication (i.e. gastric pH between 1 and 5.5).

2.7.3.7 This should be documented by the person who passed the tube. The method of testing the tube position must be documented. Each test and test result should be documented on a chart kept at the patient’s bedside.

2.7.3.8 Factors that may affect the pH are proton pump inhibitors (PPI), H² antagonists and antacids. Patients on PPIs will often have a raised gastric pH. If a gastric pH is consistently above 5.5 and a chest x-ray has confirmed the correct initial positioning of the nasogastric tube, it is usually not in the patient’s best interests to undergo daily x-rays to ascertain tube positioning. If there is no reason to suspect displacement (see Appendix 5 and 6) however If there is any subsequent evidence that the tube has displaced or there are signs of respiratory distress, a chest x-ray would be appropriate to ascertain tube positioning.

2.7.3.9 If obtaining a suitable pH is persistently difficult and results in delayed feeding, the ward pharmacist/medical team should review the medication and administration times. Temporary cessation of proton pump inhibitors, H² antagonists and antacid preparations may be considered by the patient’s medical team, as appropriate (See Appendix 6: Algorithm to assist in confirming nasogastric position – reproduced with kind permission from East Cheshire Trust)

2.8. Second line test method: X-ray confirmation

2.8.1 X-ray is used as a second line test when no aspirate could be obtained or pH indicator paper has failed to confirm the location of the nasogastric tube and that:

2.8.2 The request form must clearly state that the purpose of the x-ray is to establish the position of the nasogastric tube for the purpose of feeding.

2.8.3 It is the radiographer’s responsibility to ensure that the nasogastric tube can be clearly seen on the x-ray to be used to confirm tube position.

2.8.4 X-rays must only be interpreted and nasogastric tube position confirmed by someone assessed as competent to do so.

2.8.5 If there is any difficulty in interpretation the advice of a radiologist should be sought.

2.8.6 Any nasogastric tubes identified to be in the lung should
immediately be removed whether in the x-ray department or clinical area.

2.8.7 **Position checks and documentation by medical staff**

Medical staff involved with nasogastric tube position checks must have been assessed as competent through theoretical and practical training. Documentation following X-ray should include

- Who authorised the x-ray
- Who confirmed the position of the nasogastric tube. This person must be evidenced as competent to do so
- Confirmation that any x-ray viewed was the most current x-ray for the correct patient.
- The rationale for the confirmation of position of the nasogastric tube, i.e. how placement was interpreted, and clear instructions as to required actions. For example:

**19 January 2019, 10:30 – Dr A. Smith – core surgical trainee**

X-ray taken at 10:15 today
nasogastric tube passed down midline, past level of diaphragm and deviates to left Tip is seen in stomach
Plan: nasogastric tube safe to use for feeding

The radiographer taking the x-ray must ensure that exposure of the x-ray is adjusted so that the nasogastric tube is visible to the bottom of the film and that it shows the abdomen as far as possible below the diaphragm; shows the bottom of both hemidiaphragms (midline). X-rays that do not include the above will not allow accurate interpretation of nasogastric tube placement and should not be allowed out of the x-ray department (see clinical imaging protocol).

2.8.8 The radiologist on reporting the placement film must document the position of the nasogastric tube and tip and whether it is safe to proceed with the administration of liquids via the tube.

2.9. **Ongoing confirmation of gastric positioning of the nasogastric tube**

Repeated checks after the initially correct placement has been confirmed are required. The RCHT care plan CHA 2821. Should be used at all times for any patient with a nasogastric tube in situ and completed daily. See appendix 4 on how to obtain aspirates

2.10. **Misplacements.**

2.10.1 All misplacement incidents should be reported locally by completing the risk reporting system (Datix). (A misplaced feeding tube can be considered as a tube which on testing for position does not satisfy the correct guidance and is then used for feeding). Incidents will be uploaded to the NRLS to enable national monitoring of misplaced nasogastric feeding tubes.

2.10.2 (The NPSA will automatically receive information on incidents through the National).
2.11. **Transfer of care to community settings**

Before a patient with a NG feeding tube is discharged from hospital there should be a full multidisciplinary supported risk assessment that documents safe discharge. This should include a robust management plan i.e.

What to do if;

The NG becomes dislodged, falls out, becomes blocked or damaged, Patients should not be admitted to ED for replacing and/or troubleshooting NG feeding tubes and alternative plans should be made prior to discharge and clearly documented in the medical notes.

Before discharge patients/ family and or carers should be trained by competent staff to managing the NG feeding tube and provided with appropriate contact numbers and "managing your nasogastric feeding tube leaflet "

There is limited support in the community for patients with NG feeding tubes and this must be considered before discharge.

### 3. Monitoring compliance and effectiveness

| Element to be monitored | a) Misplacement of nasogastric tubes  
| b) Correct pH stock  
| c) Correct documentation and completion of care plans |
| Lead | See section “acting on recommendations and leads” Nutrition steering group |
| Tool | Root cause analysis of Datix incidents b&c) retrospective case note review |
| Frequency | As they arise b&c annually |
| Reporting arrangements | Incidents that are uploaded to the NRLS are included in the risk and safety / clinical governance reports and presented at committee. All serious incidents are subject to root cause analysis along with recommendations and actions. Outcomes of case notes review will be reported to the Strategic Nutrition Steering Group |
| Acting on recommendations and Lead(s) | The SNSG is responsible for interrogating required SI actions and to designate a named lead where appropriate. This is documented in meeting minutes. Designated Leads will then take forward where appropriate the lessons to be shared with all the relevant stakeholders. |
| Change in practice and lessons to be shared | As monitoring includes using incidents, complaints and serious incidents as a resource for monitoring practice it is actions identified from root cause analysis that determine whether local, divisional or corporate learning will need to be shared and changes implemented. |
4. **Equality and Diversity**

4.1. This document complies with the Royal Cornwall Hospitals NHS Trust service Equality and Diversity statement which can be found in the ‘Equality, Diversity & Human Rights Policy’ or the Equality and Diversity website.

4.2. The Initial Equality Impact Assessment Screening Form is at Appendix 2.
### Appendix 1. Governance Information

<table>
<thead>
<tr>
<th>Document Title</th>
<th>Nasogastric Feeding Tube in Adults and Ongoing Care Clinical Guideline V7.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date Issued/Approved:</td>
<td>April 2018</td>
</tr>
<tr>
<td>Date Valid From:</td>
<td>December 2018</td>
</tr>
<tr>
<td>Date Valid To:</td>
<td>December 2021</td>
</tr>
<tr>
<td>Directorate / Department responsible (author/owner):</td>
<td>Tracy Lee, Nutrition Specialist</td>
</tr>
<tr>
<td>Contact details:</td>
<td>01872 252301</td>
</tr>
<tr>
<td>Brief summary of contents</td>
<td>This policy sets the standards of clinical safety that all RCHT staff must adhere to when undertaking insertion of nasogastric fine bore feeding tubes and verifying correct placement. The document complies with NPSA guidance.</td>
</tr>
<tr>
<td>Suggested Keywords:</td>
<td>Fine bore / nasogastric Tube / Feeding Tube / nasogastric Placement</td>
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<td>Target Audience</td>
<td>RCHT</td>
</tr>
<tr>
<td>Executive Director responsible for Policy:</td>
<td>Director of Nursing, Midwifery and Allied Health Professionals</td>
</tr>
<tr>
<td>Date revised:</td>
<td>01 March 2018</td>
</tr>
<tr>
<td>This document replaces (exact title of previous version):</td>
<td>Guideline for insertion and placement confirmation of a fine bore nasogastric feeding tube in adults only v6.3</td>
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<tr>
<td>Approval route (names of committees)/consultation:</td>
<td>Strategic Nutrition Steering Group (16.3.15) CSSC Governance DMB (14.4.15)</td>
</tr>
<tr>
<td>Divisional Manager confirming approval processes</td>
<td>Karen Jarvill Divisional Director CSSC</td>
</tr>
<tr>
<td>Name and Post Title of additional signatories</td>
<td>Not Required</td>
</tr>
<tr>
<td>Signature of Executive Director giving approval</td>
<td>{Original Copy Signed}</td>
</tr>
<tr>
<td>Publication Location (refer to Policy on Policies – Approvals and Ratification):</td>
<td>Internet &amp; Intranet</td>
</tr>
<tr>
<td>Document Library Folder/Sub Folder</td>
<td>Clinical / Dietetics</td>
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Links to key external standards


RCHT Guideline- Use of fine bore nasogastric tube (nasogastric) with Nasal Bridle (AMT Bridle TM)
RCHT Clinical Imaging Protocol for the Thorax Incl. Nasogastric Tube Placement
RCHT Consent policy
NPSA 2011— reducing harm caused by misplaced nasogastric feeding tubes in adults, children and infants. PSA002
NPSA (2005) Patient safety alert 05 Reducing the harm caused by misplaced nasogastric feeding tubes London NPSA
NPSA 2012 Rapid response report ‘harm from flushing of nasogastric tubes before confirmation of placement

Related Documents:

RCHT Guideline- Use of fine bore nasogastric tube (nasogastric) with Nasal Bridle (AMT Bridle TM)
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Training Need Identified? Yes

Version Control Table

<table>
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<tr>
<th>Date</th>
<th>Version No</th>
<th>Summary of Changes</th>
<th>Changes Made by (Name and Job Title)</th>
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<tr>
<td>Previous version history not known</td>
<td>15 Jun 12</td>
<td>V6.0 Section 2.6.3 added, listed Rapid Response Report (RRR) recommendations.</td>
<td>Tracy Lee Nutrition Specialist</td>
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<tr>
<td>25 Jan 13</td>
<td>V6.1</td>
<td>Detail added to para 2.5. Insertion of nasogastric tube</td>
<td>Tracy Lee Nutrition Specialist</td>
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<tr>
<td>07 April 14</td>
<td>V6.2</td>
<td>Detail added to para 2.3.5. Types of nasogastric tubes. Addition of appendices 10 &amp; 11.</td>
<td>Tracy Lee Nutrition Specialist</td>
</tr>
<tr>
<td>01 Feb 15</td>
<td>V6.3</td>
<td>Title and content amended to reflect that guideline now applies to adults only</td>
<td>Tracy Lee Nutrition Specialist</td>
</tr>
<tr>
<td>01 March 18</td>
<td>V7.0</td>
<td>Content changed regarding supporting safe discharge into the community with NG feeding tube.</td>
<td>Tracy Lee Nutrition Specialist</td>
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Appendix 2. Initial Equality Impact Assessment Screening Form

This assessment will need to be completed in stages to allow for adequate consultation with the relevant groups.

<table>
<thead>
<tr>
<th>Name of the strategy / policy / proposal / service function to be assessed</th>
<th>Directorate and service area: Clinical Support Services &amp; Cancer Division, Therapies Dept, Nutrition support team</th>
<th>Is this a new or existing Policy?</th>
<th>Name of individual completing assessment: Tracy Lee</th>
<th>Telephone: 01872 252409</th>
</tr>
</thead>
</table>
| 1. **Policy Aim*** | **Who is the strategy / policy / proposal / service function aimed at?**
To provide a consistent standard for insertion and placement confirmation of a fine bore nasogastric tube | 2. **Policy Objectives***
To prevent adverse events associated with incorrectly placed nasogastric tubes through consistent checks and supporting documentation. | 3. **Policy – intended Outcomes***
Prevent or reduce adverse consequences associated with misplaced or migrated nasogastric tubes. | 4. **How will you measure the outcome?**
As per NHSLA events | 5. **Who is intended to benefit from the policy?**
All adult inpatients and clinical staff |

6a **Who did you consult with**

<table>
<thead>
<tr>
<th>Workforce</th>
<th>Patients</th>
<th>Local groups</th>
<th>External organisations</th>
<th>Other</th>
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<tr>
<td>✔</td>
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b) **Please record specific names of groups**
RCHT Operational Nutrition steering group Senior matrons and matrons, Clinical Governance Lead – Clinical Imaging

What was the outcome of the consultation?
Approved at therapies governance MDT ready for ratification
7. The Impact
Please complete the following table. If you are unsure/don't know if there is a negative impact you need to repeat the consultation step.

Are there concerns that the policy could have differential impact on:

<table>
<thead>
<tr>
<th>Equality Strands:</th>
<th>Yes</th>
<th>No</th>
<th>Unsure</th>
<th>Rationale for Assessment / Existing Evidence</th>
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<tbody>
<tr>
<td>Age</td>
<td></td>
<td>X</td>
<td></td>
<td>The policy will prevent discrimination or inappropriate feeding or withholding of artificial feeding for older people through proper assessment of the clinical need, risk assessment, assessment of mental capacity and consideration of best interests.</td>
</tr>
<tr>
<td>Sex (male, female, trans-gender / gender reassignment)</td>
<td>X</td>
<td></td>
<td></td>
<td>This guideline relates to clinical need and documentation</td>
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<tr>
<td>Race / Ethnic communities /groups</td>
<td>X</td>
<td></td>
<td></td>
<td>This guideline relates to clinical need and documentation</td>
</tr>
<tr>
<td>Disability - Learning disability, physical impairment, sensory impairment, mental health conditions and some long term health conditions.</td>
<td>X</td>
<td></td>
<td></td>
<td>This guideline emphasises the additional needs of patients who have a disability or lack capacity</td>
</tr>
<tr>
<td>Religion / other beliefs</td>
<td>X</td>
<td></td>
<td></td>
<td>This guideline relates to clinical need and documentation</td>
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<td>Marriage and Civil partnership</td>
<td>X</td>
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<td>Pregnancy and maternity</td>
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<td>Sexual Orientation, Bisexual, Gay, heterosexual, Lesbian</td>
<td>X</td>
<td></td>
<td></td>
<td>This guideline relates to clinical need and documentation</td>
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You will need to continue to a full Equality Impact Assessment if the following have been highlighted:
- You have ticked “Yes” in any column above and
- No consultation or evidence of there being consultation - this excludes any policies which have been identified as not requiring consultation. or
- Major this relates to service redesign or development

8. Please indicate if a full equality analysis is recommended. Yes | No | X

9. If you are not recommending a Full Impact assessment please explain why.

No potential for differential impact identified
<table>
<thead>
<tr>
<th>Signature of policy developer / lead manager / director</th>
<th>Date of completion and submission</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tracy Lee</td>
<td>24/05/18</td>
</tr>
</tbody>
</table>

| Names and signatures of members carrying out the Screening Assessment | 1. Tracy Lee | 2. Human Rights, Equality & Inclusion Lead |

Keep one copy and send a copy to the Human Rights, Equality and Inclusion Lead
c/o Royal Cornwall Hospitals NHS Trust, Human Resources Department, Knowledge Spa, Truro, Cornwall, TR1 3HD

This EIA will not be uploaded to the Trust website without the signature of the Human Rights, Equality & Inclusion Lead.

A summary of the results will be published on the Trust’s web site.

Signed  Tracy Lee

Date 24/05/18
Appendix 3. Procedure*

*Content from the Royal Marsden Manual. Reproduced with kind permission of Wiley. Available online here (requires NHS Open Athens login to access).

Essential equipment

- Clinically clean tray
- Hypoallergenic tape
- Fine-bore nasogastric tube with internal guidewire or stylet that is radio-opaque through its entire length and has externally visible length markings (NPSA [172])
- Adhesive patch if available
- Glass of water, if appropriate
- Receiver
- Lubricating jelly
- Sterile water
- CE-marked indicator strips with pH range of 0-6 or 1-11 with gradations of 0.5
- 50 mL enteral syringe

Pre-procedure

1. Explain and discuss the procedure with the patient.
   To ensure that the patient understands the procedure and gives their valid consent (NMC [165], C).

2. Arrange a signal by which the patient can communicate if they want the nurse to stop, for example by raising their hand.
   The patient is often less frightened if they feel that they have some control over the procedure. E

3. Assist the patient to sit in a semi-upright position in the bed or chair. Support the patient’s head with pillows.
   Note: the head should not be tilted backwards or forwards (Rollins [203]).
   To allow for easy passage of the tube. This position enables easy swallowing and ensures that the epiglottis is not obstructing the oesophagus. E

4. Select the appropriate distance mark on the tube by measuring the distance on the tube from the patient’s earlobe to the bridge of the nose plus the distance from the earlobe to the bottom of the xiphisternum (the NEX measurement) (see Action figures 4a, 4b).
   To ensure that the appropriate length of tube is passed into the stomach (NPSA [172], C).

5. Wash hands with bactericidal soap and water or bactericidal alcohol handrub, and assemble the equipment required.
   Hands must be cleansed before and after patient contact to minimize cross-infection (Fraise and Bradley [79], E).

6. Follow manufacturer’s instructions to activate the lubricant on the tip of tube, for example dipping the end in tap water and/or lubricating the proximal end of the tube with lubricating jelly.
   Contact with water activates the coating on the tip of the tube. This lubricates the tube, assisting its passage through the nasopharynx. E
**Procedure**

1. Check that the nostrils are patent by asking the patient to sniff with one nostril closed. Repeat with the other nostril. To identify any obstructions liable to prevent intubation. E

2. Insert the rounded end of the tube into the clearer nostril and slide it backwards and inwards along the floor of the nose to the nasopharynx. If any obstruction is felt, withdraw the tube and try again in a slightly different direction or use the other nostril. To facilitate the passage of the tube by following the natural anatomy of the nose. E

3. As the tube passes down into the nasopharynx, unless swallowing is contraindicated, ask the patient to start swallowing and sipping water. To focus the patient’s attention on something other than the tube. A swallowing action closes the glottis and the cricopharyngeal sphincter opens, enabling the tube to pass into the oesophagus (Lamont et al. [115], E).

4. Advance the tube through the pharynx as the patient swallows until the predetermined mark has been reached (NEX measurement). If the patient shows signs of distress, for example gasping or cyanosis, remove the tube immediately. The tube may have accidentally been passed down the trachea instead of the pharynx. Distress may indicate that the tube is in the bronchus. However, absence of distress is not sufficient for detecting a misplaced tube (NPSA [167], C; NPSA [172], C).

5. Do not flush any fluid down the NG tube until the position has been checked. There is a risk of introducing fluid into the lungs if the tube is incorrectly positioned (NPSA [172], C).

6. Secure the tape to the nostril with adherent dressing tape, for example Elastoplast, or an adhesive nasogastric stabilization/securing device (Burns et al. [43]). Alternatively Tegaderm/Deoderm can be applied to the cheek and then covered in Mepore to secure the nasogastric tube; this can help to prevent skin irritation. A hypoallergenic tape should be used if an allergy is present. To hold the tube in place. To ensure patient comfort. E

**Post-procedure**

1. Measure the part of the visible tube from tip of nose and record this and the NEX measurement in the care plan. Mark the tube at the exit site with a permanent marker pen (nares). To provide a record to assist in detecting movement of the tube (Metheny and Titler [143], E; NPSA [172], C).

2. Check the position of the tube to confirm that it is in the stomach by using the following methods. Placement devices for NG tube insertion do not replace the following checks to confirm that the tube is in the stomach. No fluids must be given via the tube until the correct position of the tube has been confirmed (NPSA [172], C).

   To confirm that the tube is in the correct position (NHS England, [155]).
First-line test method: pH indicator strips

- Aspirate 0.5-1 mL of stomach contents and test pH on indicator strips (NPSA [172]; Rollins [203]). When aspirating fluid for pH testing, wait at least 1 hour after a feed or medication has been administered (either orally or via the tube). Before aspirating, flush the tube with 20 mL of air to clear other substances (Metheny et al. [144]). A pH level of between 1 and 5.5 is unlikely to be pulmonary aspirates and it is considered appropriate to proceed to feed through the tube (Metheny and Meert [142]; NPSA [172]).

- pH indicator strips should have gradations of 0.5 or paper with a range of 0-6 or 1-11 to distinguish between gastric acid and bronchial secretions and must be CE marked and intended to check gastric aspirate (NPSA [172], C).

- To prove an accurate test result because the feed or medication may raise the pH of the stomach (NPSA [172], C).

- If a pH of 6.0 or above is obtained or there is doubt over the result in the range of pH 5-6 then feeding must not commence until a second competent person checks the reading or retests. The nasogastric tube may need to be repositioned or checked with an X-ray.

- There is an increased risk of the nasogastric tube being incorrectly placed (NPSA [172], C).

- Do not flush the tube with any form of fluid until the placement of the tube has been confirmed (NHS England [155]).

- This may result in fluid being flushed into the lungs (NPSA [172], C).

Second-line test method: X-ray confirmation

- Take an X-ray of chest and upper abdomen. The X-ray request form should clearly state that the purpose of the X-ray is to establish the position of the nasogastric tube for the purpose of feeding (NPSA [172]).

- X-ray of radio-opaque tubes is the most accurate confirmation of position and is the second-line method of choice in patients for whom it is not possible to confirm correct placement with gastric aspirate and pH indicator strips (NPSA [172]). X-rays must only be interpreted and the position confirmed by someone assessed as competent to do so. When confirmed, the person interpreting the X-ray must document the tip position in the patient's notes in an entry that is signed with date and time.

- To record the position and document that it is safe to feed through this nasogastric tube (NMC [163]; NPSA [172], C).

- Once placement of the nasogastric tube is confirmed, then the guidewire/stylet can be removed. The internal lubricant of the tube must be activated immediately before the stylet is removed. Follow manufacturers guidelines regarding activation of internal lubricant. To facilitate easy removal of guidewire/stylet (NHS England [155], C).
Action Figure 4a
Measuring for a nasogastric tube: measure from the patient's ear lobe to the bridge of the nose.

Action Figure 4b
Measuring for a nasogastric tube: measure from the ear lobe to the bottom of the xiphisternum.
## Appendix 4: Procedural Guidance to Obtain and Check Gastric Aspirate

The table below suggests techniques to maximise successful aspiration of gastric contents. Patience is required - Studies suggest a 90% + success rate in obtaining aspirate.

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<table>
<thead>
<tr>
<th>Action</th>
<th>Rational</th>
</tr>
</thead>
<tbody>
<tr>
<td>Place a 60cc uncontaminated ENFit syringe on to the access port and pull back the plunger</td>
<td>To withdraw fluid from the stomach</td>
</tr>
<tr>
<td>Place aspirated fluid on to a CE accredited pH strip and compare with the colour chart on the pH strip container (0.5mls is sufficient to cover the pH strip). Record the corresponding result.</td>
<td>First line testing method as per NPSA alerts</td>
</tr>
<tr>
<td><strong>If no aspirate:</strong> Insert 10 - 20 mls of air, then aspirate. Repeat 2-3 times, aspirating after each injection of air. <strong>If no aspirate:</strong> Alter the position of the tube and retry. Lie the patient on their left side and retry. <strong>If no aspirate:</strong> If safe to swallow offer an acidic drink such as orange juice. If unsafe, give mouth care to stimulate acid production, then retry.</td>
<td>Pushes the tube away from the gastric mucosa, which may occlude the tube. Allows the stomach to inflate and redistribute the position of fluid slightly (Colagiovanni 1999). The tube may be positioned insufficiently, or too far into the stomach. Gastric fluid will pool in a different position. Stimulates acid production</td>
</tr>
<tr>
<td>Flush the tube with water following successful aspiration</td>
<td>Gastric acid causes the protein in the feed to coagulate and increases the risk of tube blockage.</td>
</tr>
</tbody>
</table>

### pH result and action required

**If <pH 5.5** it is most likely safe to use the tube  
**HOWEVER**  
X-ray may still be indicated if:  
- Known abnormality/recent treatment to UGI tract  
- Fractured base of skull  
- Difficult insertion

**If >pH 5.5,** consider causes for a raised pH and if appropriate wait 30 mins and retest.

**Causes include:**  
- Medication i.e. H2 antagonists and proton pump inhibitors which inhibit or reduce acid production. PH value will be raised.  
- Bile  
- Recent food/fluid  
- Lung placement
Appendix 5. Care Plan (Form to Print)

CHA2821: Fine Bore Nasogastric Tube Insertion and Continuing Care Pathway in Adults
Appendix 6 Decision tree for accessing NG placement in adults
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APPENDIX 4 Decision tree for assessing NG placement in ADULTS

- Estimate NEX measurement (Place exit port of tube at tip of nose. Extend tube to earlobe, and then to xiphisternum and note measurement marking on the tube)
- Insert fully radio-opaque nasogastric tube for feeding (follow manufacturer’s instructions)
- Confirm and document secured NEX measurement
- Aspirate with a syringe using gentle suction

Aspirate Obtained?

No

Try each of these techniques to help gain aspirate:
- If possible, turn patient onto left side
- Inject 20-30ml air into the tube using a 60ml syringe
- Wait for 15-30 minutes before aspirating again
- Advance or withdraw tube by a few centimeters
- Give mouth care to patients who are nil by mouth (stimulates gastric secretion of acid)
- Do not use water to flush

Aspirate Obtained?

No

X-ray

Yes

Test aspirate on CE marked pH indicator paper for use on human gastric aspirate

If pH between 1 and 5.5 and no known abnormality to UGI tract and no cause for concern during insertion

If pH NOT less than 5.5

PROCEED TO FEED or USE TUBE Complete safety sticker in NG pack and place in clinical notes and subsequently on bedside NG monitoring form before each feed/medication/flush.

Wait 30 mins and retest.
If still > pH 5.5, proceed to x-ray; ensure reason for x-ray documented on request form.
Community patients: Contact department/specialist as agreed in discharge plan.

Senior clinician/radiologist (trained and competent in reporting X-rays) available to review x-ray and document confirmation of nasogastric tube position in stomach

DO NOT FEED or USE TUBE Consider re-siting tube or call for senior advice

- A pH of between 1 and 5.5 is reliable confirmation that the tube is not in the lung, however it does not confirm gastric placement as there is a small chance the tube tip may sit in the oesophagus where it carries a higher risk of aspiration. If this is any concern, the patient should proceed to x-ray in order to confirm tube position.
- Where pH readings fall between 5 and 6 it is recommended that a second competent person checks the reading and/or re-tests.
Appendix 7: Algorithm to assess if NG tube still in the stomach (after confirmation of gastric placement post insertion)

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**NO ASPIRATE:** Try the following:
- Inject 20–30ml air into the tube using a 60ml enteral syringe
- If possible, turn patient onto left side
- Alter the position of the tube
- Repeat the above and retry

**IF STILL NO ASPIRATE:** CHECK FOR TUBE DISPLACEMENT AS BELOW

<table>
<thead>
<tr>
<th>NO ASPIRATE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td><strong>HAS THE EXTERNAL LENGTH OF THE TUBE CHANGED?</strong> Check on mark at distal end of tube and compare with insertion data on safety sticker and NG monitoring charts.</td>
</tr>
<tr>
<td><strong>YES</strong></td>
</tr>
<tr>
<td><strong>NO</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>HAS THE PATIENT VOMITED/HAD DEEP SUCTION?</strong></td>
</tr>
<tr>
<td><strong>NO</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>HAS THERE BEEN AN INCREASE IN THE PATIENT’S RESPIRATORY DISTRESS</strong> e.g. breathlessness, stridor, cyanosis or wheezing.</td>
</tr>
<tr>
<td><strong>NO</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>IS THE NG TUBE VISIBLE IN THE MOUTH?</strong></td>
</tr>
<tr>
<td><strong>NO</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>REPOSITION TUBE OR REMOVE AND REPLACE</strong> - repeat confirmation checks as seen in decision tree for NG tube position check.</td>
</tr>
<tr>
<td><strong>YES</strong></td>
</tr>
</tbody>
</table>

**INCONCLUSIVE ASPIRATE (pH > 5.5): CONSIDER THE FOLLOWING WITH TUBE DISPLACEMENT CHECKS.**

<table>
<thead>
<tr>
<th>INCONCLUSIVE ASPIRATE (pH &gt; 5.5)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td><strong>RESIDUAL FLUID IN TUBE</strong></td>
</tr>
<tr>
<td>Flush a small amount of air through the tube to clear residual feed/fluid then retry.</td>
</tr>
<tr>
<td><strong>DILUTION OF GASTRIC ACID</strong></td>
</tr>
<tr>
<td>1. Recent feed/flush: wait half an hour and retry.</td>
</tr>
<tr>
<td>2. Continuous feeds: consider stopping the feed for half an hour.</td>
</tr>
<tr>
<td>Caution: If the patient is having insulin infusions for tight glycaemic control, consult with senior doctor/specialist before stopping the feed.</td>
</tr>
<tr>
<td><strong>MEDICATION</strong></td>
</tr>
<tr>
<td>If on a PPI e.g. lanoprazole/tomeprazole or H2 antagonist e.g. ranitidine.</td>
</tr>
<tr>
<td>Look at previous pH readings, if consistently high, treat as normal, if a one off, consider why. Request expert review.</td>
</tr>
<tr>
<td><strong>TUBE DISPLACEMENT:</strong> Complete displacement checks</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>IF REMAIN UNSURE AFTER THE ABOVE, CONSIDER X-RAY.</strong></td>
</tr>
<tr>
<td>Consult a more experienced member of staff prior to requesting an X-ray. Document decision and rationale.</td>
</tr>
</tbody>
</table>