1.0 BACKGROUND:

The practice of auscultating an air bolus or “whoosh test” to confirm placement of nasally or orally inserted gastric feeding tubes has proven unreliable. Auscultation of air bolus cannot distinguish between tubes inserted into the esophagus or the main bronchus of lungs and can lead to patient harm. There are limitations to each method of confirmation of tube placement and bedside confirmation of placement is strengthened when more than one assessment is combined.

2.0 PURPOSE:

2.1 To describe and direct a standard process to confirm placement of a newly inserted or existing nasogastric or orogastric tube.

2.2 To provide necessary adjunctive resources to the Mosby Nursing Skills on-line references for the insertion of nasogastric or orogastric tubes for the purpose of feeding, medication delivery or gastric decompression.

3.0 DEFINITIONS:

3.1 Nasogastric feeding tube (NG)
A tube inserted through a nare, down the esophagus into the stomach.

3.2 Orogastric feeding tube (OG)
A tube inserted through the mouth, down the esophagus into the stomach.

4.0 PRACTICE GUIDELINES:

4.1 The following healthcare providers HCP: Nurse* or Student Nurse*(refer to definition in 80.105.003), and authorized prescribing practitioner inserts tube following guidelines found on Nursing Skills Online.

4.2 An authorized prescribing practitioner order is required for insertion of a NG or OG for gastric feeding.

4.3 Tube placement is verified by the HCP on:

4.3.1 Insertion
4.3.2 Just prior to medications administration
4.3.3 Just prior to bolus tube feeds including oral feeds with NG/OG tube top up
4.3.4 Just prior to bolus tube feed of water
4.3.5 Placement is confirmed a minimum of every 4 hours when patient is on continuous feeds and following any episodes of emesis, retching or coughing
4.3.6 Changes to patient’s baseline respiratory and behavioral status
4.3.7 Placement is confirmed a minimum of every 4 hours when patient is on intermittent gastric drainage

4.4 Confirmation of tube placement includes comparison to patient’s baseline assessment of respiratory status and behavior and two of the following verifiers (see 5.3 and appendix B for additional details):

4.4.1 Abdominal X-ray verifying tube is in stomach
4.4.2 Aspiration of stomach contents
4.4.3 Gastric aspirates with pH of 5.5 or less
4.4.4 External tube length is measured and compared to external tube length documented at time of insertion. See 5.3.3.4 and Appendix A

4.5 If unable to confirm tube placement after completing trouble-shooting algorithm (see Appendix B) notify the authorized prescribing practitioner.

5.0 PROCEDURE:

5.1 Confirm physician’s order to insert NG or OG tube and verify patient using 2 identifiers.

5.2 Measure depth of tube insertion from the nose to earlobe to midpoint between the xiphoid and umbilicus. Mark measure on tube with permanent ink.
Note: for oral tubes start the measurement from the corner of the mouth

5.3 To confirm placement:
Compare baseline assessment of respiratory and behavioral status with status just prior to events listed in 4.3
5.3.1 Respiratory status: Observe for signs of respiratory distress or an increase in respiratory distress. Choking, coughing, cyanosis, and decreased oxygenation are indications tube may be in the trachea.
5.3.2 Behavioral status: Observe for signs of agitation or discomfort, or an increase in agitation. Increased agitation or discomfort may indicate the tube has misplaced.
5.3.3 Obtain two of the following:
5.3.3.1 Abdominal X-ray is the most accurate method of confirmation. Indicate on requisition that confirmation of tube placement is needed. Note: minimization of patient’s exposure to radiation needs to be considered.
5.3.3.2 Measure pH of stomach contents using pH paper. Gastric pH is typically 5.5 or less, secretions from the tracheobronchial tree and small intestine has a pH of 6 or greater. See Appendix A for considerations for pH Testing and see Appendix B for troubleshooting.
5.3.3.3 Aspirate stomach contents. Note any resistance and the total volume aspirated. Observe the visual characteristics of the aspirates, noting the color and consistency.
5.3.3.4 Measure external tube length. Measurement includes the point at which the tube leaves the nare or mouth to the end of the tube; see Appendix A. Compare measurement to the previously documented length from time of original insertion.

6.0 DOCUMENTATION:

6.1 Document in Integrated Progress Note (IPN): type of tube, French size, external length of tube measurement and due date for when the tube should be replaced.

6.2 Transfer information from 6.1 onto patient care plan communication tool (e.g Kardex) and external tube length measurement onto daily flow sheets for comparison when confirming tube placement.

7.0 REFERENCES:


APPENDIX A

COMPARISON CHART FOR NASAL AND ORAL FEEDING TUBES

<table>
<thead>
<tr>
<th>PVC</th>
<th>Polyurethane</th>
<th>Silastic with Stylet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indwell time: 3 days</td>
<td>Indwell time: 30 days</td>
<td>Indwell time: 30 days</td>
</tr>
</tbody>
</table>
This tube is ideal for short term tube feeding or gastric decompression. If need for feeding great than 2 weeks, select polyurethane tube. | This tube is ideal for tube feeding that is expected to last longer than two weeks. To insert – place tube in cold water to stiffen and lubricate. **Note:** if tube falls out or is pulled out, wash with soap and water then re-insert. | Note: this tube will no longer be used for NG. This tube is only for insertion by trained health care team members of nasojejunal feeding tubes. |

LIMITATIONS TO CONFIRMATION METHODS FOR NG/OG TUBES

<table>
<thead>
<tr>
<th>Method</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abdominal X-ray</td>
<td>Not suited for use with the routine placement of NG or OG feeding tubes. Considerations must be taken to limit the patient’s exposure to radiation. Confirms placement at the time of x-ray.</td>
</tr>
<tr>
<td>pH testing</td>
<td>Gastric aspirate pH is typically 5.5 or less. Secretions from the tracheobronchial tree and small intestine have a pH of 6 or greater. Consideration for pH testing:Patients on protein pump inhibitors (for example omeprazole, nexium, ranitidine or antacids) will have higher gastric pH. Gastric pH will be altered by formula for patients on continuous feeds or feeds less than 2 hours apart. In these situations, pH testing may have minimal benefit as a method of confirming tube placement. Patient conditions in which respiratory secretions are swallowed on a regular basis may increase gastric pH when tested (for example post physiotherapy).</td>
</tr>
<tr>
<td>Aspiration of stomach contents</td>
<td>Consider the volume and appearance of the aspirates. If the tube is inadvertently placed in the lungs or coiled in the esophagus small amounts of aspirates may still be obtained.</td>
</tr>
<tr>
<td>External tube length measurement</td>
<td>This only assesses the tube placement from the point at which it leaves the nare or mouth. It would not identify a tube placed in the lungs or coiled in the esophagus.</td>
</tr>
</tbody>
</table>

TROUBLESHOOTING WHEN UNABLE TO OBTAIN ASPIRATES

If unable to obtain aspirates, consider:
- turning patient on their side
- using a larger sized oral syringe
- injecting 1 to 2 mL of air (not for auscultation) to displace any potential gastric mucosa that may be covering the end of the tube
- waiting 15 to 30 minutes to retry
- instilling 2 to 3 mL of sterile water and re-aspirating
- removing tube and reinserting (unless contraindicated)

EXTERNAL LENGTH MEASUREMENT

The external length is the measured length of tube from the nare (or mouth) to the far end of the feeding port.

Figure 1
Respiratory Status and Behaviour

Rule out line misplacement with any changes to baseline status

Use two additional methods to confirm placement

X-Ray

Is it clinically indicated?

Yes

Hold feeds/meds until verbal or written confirmation of correct placement is obtained

Note: X-ray confirms placement of tube at time x-ray was taken. Use other methods for ongoing confirmation

No

Use other methods to confirm placement

Are you able to obtain aspirates?

Yes

Consider:
- Turning patient on their side
- Using a larger sized oral syringe
- Injecting 1 to 2 mL of air (not for auscultation) to unblock any potential gastric mucosa that may be covering the end of the tube
- Waiting 15 to 30 minutes to retry
- Instilling 2 to 3 mL of sterile water and re-aspirating

No

Re-insert tube and reassess placement

Aspirates

Factors to consider:
- Any resistance with withdrawal?
- Volume and appearance? (ex. Partially digested feed)

Yes

Aspirates consistent with proper placement, use a second method to confirm

No

Re-insert tube and reassess placement

Is the patient on frequent/continuous feeds or medication that may affect gastric pH?

Yes

pH consistent with proper placement, use a second method to confirm

No

pH testing may not be a possible method to confirm placement

Gastric pH

Is it less than 6?

Yes

pH testing may not be a possible method to confirm placement

No

External Length

Is it the same? Newly inserted – is it at the measured depth?

Yes

Yes

Yes

Yes

Yes

Yes

No

No

No

No

No

Re-insert tube and reassess placement

Reposition/re-insert tube and reassess placement