Placement of Blind, Post-Pyloric Feeding Tubes by Registered Dietitians: Success Rates, Outcomes and Cost Effectiveness

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Objectives
- Define post-pyloric feeding tube access
- Describe risks and benefits associated with blind, post-pyloric feeding tube insertion
- Discuss steps for implementing change in acute care
- Review current literature and data to support Registered Dietitians placing feeding tubes at the bedside

Outline
1. Options for feeding hospitalized patients
2. Tube feeding route of administration
3. What is post-pyloric access?
4. Obtaining post-pyloric access
5. Emerging clinical practice for Registered Dietitians
6. Anticipated benefits of post-pyloric tube placement
7. Considerations associated with post-pyloric tube placement
8. Implementing change in acute care
9. Developing a tube placement team
10. Supplies required
11. Procedure overview
12. Understanding radiographic imaging
13. Monitoring outcomes
14. Summary
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Feeding Hospitalized Patients
- Oral
- Enteral
- Parenteral

"While few studies have shown a differential effect on mortality, the most consistent outcome effect from EN is a reduction in infectious morbidity (generally pneumonia and central line infections)... In many studies, further benefits are seen from significant reductions in hospital length of stay, cost of nutrition therapy, and even a return of cognitive function (in head injury patients)."


Route of Administration
- Gastric or small bowel feeding tubes can be used
- Post-pyloric access is preferred in patients who are intolerant to gastric feeding or at an increased risk for aspiration of stomach contents

Obtaining Post-Pyloric Access
- Surgeon in operating theatre following another procedure
- MD at the bedside using portable fluoroscopy
- Radiologist using fluoroscopy in the radiology suite
Obtaining Post-Pyloric Access

- Surgeon in operating theatre following another procedure
- MD at the bedside using portable fluoroscopy
- Radiologist using fluoroscopy in the radiology suite
- Insertion by a competent Registered Dietitian or ICU Registered Nurse at the bedside

Emerging Clinical Practice

"At the Expert stage (Advanced level), the RD thinks critically about nutrition support therapy, exhibits a range of highly developed clinical and technical skills (which may include but are not limited to) performing comprehensive nutrition-focused physical assessment, placement of enteral feeding tubes, and management of high acuity patients. Expert practice in nutrition support therapy is often evidenced by competency-based actions authorized by physician approved protocols."


Anticipated Benefits

- Less travel for patients and staff
- Increases time in radiology suite for other procedures
- Quicker delivery of medications, fluids and tube feeding
- Reduced radiographic exposure
- Cost savings

Anticipated Benefits

- How do we identify appropriate patients?
- Which staff members will perform the procedure?
- Efficacy of insertion
- Staff availability
- Risk of negative health outcomes, including inadvertent lung intubation

Kremble K, Practical Gastroenterol. 2011; 32(6).

Considerations
Memorial Health System

Implementing Change
- Develop a strong relationship with nursing and physician colleagues
- Maintain close communication
- Draft an insertion policy with procedure checklist
- Discuss with facility's legal department
- Obtain approval from facility's Medical Executive Committee
- Develop a team of trained, competent staff

Developing a Tube Placement Team

Obtaining "Competency"
- Perform at least 6 procedures per year to maintain competency

Insertion of a Non-Weighted Feeding Tube with Stylet at the Bedside:

The Bedside Technique

Procedure
- Completed "blind" at the bedside using a modified 10-10-10 method
- Procedure time usually 15 – 60 minutes
- Follow stepwise procedure to ensure patient safety
Preparing for Tube Insertion

- Verify physician order
- Review medical record
- Coordinate care with nursing and respiratory staff
- Obtain and prepare supplies

Supplies Required

Feeding Tube Insertion at Memorial Medical Center

Radiographic Imaging
**Methods**

- Approval obtained from the Springfield Committee for Research Involving Human Subjects (SCRIHS)
- 4 year historical time span
- Excluded encounters with incomplete information
- Statically analysis performed using SAS software
  - Chi-square test of independence
  - Fisher's exact test
  - Significance defined as p-value ≤ 0.05

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**Results: Tip Location**

<table>
<thead>
<tr>
<th>Bedside Placement</th>
<th>Fluoroscopic Placement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stomach 26.87%</td>
<td>Stomach 24.98%</td>
</tr>
<tr>
<td>Post-Pyloric 71.13%</td>
<td>Post-Pyloric 75.44%</td>
</tr>
</tbody>
</table>

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**Results: Ok to Use Tube**

<table>
<thead>
<tr>
<th>Bedside Placement</th>
<th>Fluoroscopic Placement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stomach 15.3%</td>
<td>Stomach 11.2%</td>
</tr>
<tr>
<td>Post-Pyloric 84.7%</td>
<td>Post-Pyloric 88.8%</td>
</tr>
</tbody>
</table>

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**Monitoring Outcomes**

- Purpose was to evaluate success rate, outcomes and cost-effectiveness of blind bedside placement of post-pyloric feeding tubes by Registered Dietitians
- Retrospective review of 570 patient encounters
  - 285 procedures performed by RDT at the bedside vs. 285 procedures performed by physician under fluoroscopy

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**Methods**

- Data points included:
  - Time span between MD order for insertion and procedure completion
  - Feeding tube tip location
  - MD clearance to use the tube if tip in stomach
  - Complications related to procedure
  - Presence of gastric abnormality
  - Number of radiographic images required to confirm placement
Results: Radiographic Imaging

Number of X-ray Images Required to Confirm Bedsides Placement

- 90.00%
- 80.00%
- 70.00%
- 60.00%
- 50.00%
- 40.00%
- 30.00%
- 20.00%
- 10.00%
- 0.00%

1 2 3

Results: Time Span (Hours)

Number of Hours

- Bedside Placement
- Fluoroscopic Placement

1 2 3 4 5 6

4.7 3.7 4.7

p=0.0381

Results: Bowel Abnormalities

<table>
<thead>
<tr>
<th>Abnormality</th>
<th>Bedside Placement</th>
<th>Fluoroscopic Placement</th>
<th>% of Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluid accumulation</td>
<td>0</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Hydrostatic ileususgravity</td>
<td>0</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>None of the above</td>
<td>0</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Bowel dysfunction</td>
<td>0</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Ileus of unknown origin</td>
<td>0</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Distal obstruction</td>
<td>0</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Results: Cost Savings

- $5,000
- $1,000
- $500
- $100
- $50
- $10

Summary

Conclusions

- 73% of feeding tubes inserted by dietitians were post-pyloric
- Majority of tubes required 1 x-ray to confirm placement
- 90% of tubes were "ok to use" in stomach or small bowel
- Procedure completed in less than 4 hours after physician consult
- 66% cost savings associated with bedsides placement
Questions?

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