Coordinating Video Fluoroscopic Swallow Studies with Fluoroscopically-Guided Nasoenteric Tube Placements: A Quality Initiative to Eliminate Unnecessary Repeat Trips to the Radiology Department

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Disclosures

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Background: Fluoroscopically-Guided Nasoenteric Tube Placement

Safe and effective means to provide enteral nutrition.
- Recommended for patients with high aspiration risk, documented aspiration, or intolerant of gastric feeding [1].

Typically performed in patients unable to tolerate oral intake due to high aspiration risk.
- Utilized as a temporary measure in patients with traumatic injury, cerebrovascular accident (CVA), or acute decompensation.
- Tube removal typically occurs if there is eventual improved swallowing function.

Under fluoroscopic guidance, post-pyloric placement of feeding tube is achieved [Figure 1]:
- Confirmation of tip location is obtained via administration of water-soluble contrast via the nasoenteric tube.

FIGURE 1. Post-pyloric nasoenteric tube placement under fluoroscopy.

Background: Video Fluoroscopic Swallow Study

Also known as:
- Modified barium swallow
- Swallow motility study
- Swallow study with speech pathology

Routinely performed in conjunction with speech pathology to assess swallowing function and aspiration risk.

Typically performed using oral ingestion of various barium-coated consistencies.
- Video fluoroscopy used to evaluate which consistencies are most prone to aspiration.

FIGURE 2. Single image from lateral video fluoroscopy of a thin-barium swallow.
Background: Need

Both video fluoroscopic swallow studies and fluoroscopically-guided nasoenteric tube placements require visits to the radiology department for fluoroscopy.

Typical scenario is fluoroscopically guided nasoenteric tube placement request following “failed” video fluoroscopic swallow study (i.e., high aspiration risk and recommendation for npo status by speech pathology service).

By combining both studies, there would be decrease in number of separate trips to the radiology department, thereby:

- Increasing patient satisfaction.
- Receiving nutrition via feeding tube sooner.
- Decreasing burden on patient transportation staff.

FIGURE 3. Typical scenario.
Scope of the Problem and Possible Solutions

SCOPE OF THE PROBLEM

- Over the course of one month, the number of inpatients who “failed” video fluoroscopic swallow studies that eventually required fluoroscopically guided nasoenteric tube placement were determined.

- Patients were separated into two categories:
  1. Patients who received both studies during one trip to the radiology department.
  2. Patients who required multiple trips to the radiology department.

POSSIBLE SOLUTIONS

- Education of referring providers:
  - MICU attending physicians and trainees.
  - SICU attending physicians and trainees.
  - Neurology attending physicians and trainees.

- Education of radiologic technologists:
  - Asking referring providers about possible need for fluoroscopically guided nasoenteric tube placements prior to video fluoroscopic swallow study.

- Change in computerized physician order entry (CPOE) system:
  - Alert ordering provider whether patient would require a fluoroscopically guided nasoenteric tube placement if “failed” video fluoroscopic swallow study.
  - Allow for the ability to order both studies simultaneously.
Study Design

Four data collection points (one month each separated by two months):
- Determining percentage of patients receiving video fluoroscopic swallow study and fluoroscopically guided nasoenteric tube placement in a single trip to radiology.
- Labeled “Baseline,” “Data Point 1,” “Data Point 2,” and “Final Data Point”

Two “interventions” between each data collection point (two months each):
- Intervention 1:
  - Education of MICU, SICU, and neurology attending physicians and trainees on requesting both studies simultaneously.
  - Education of radiologic technologists to ask referring provider whether the referring physician would like both studies at the time of requisition.
- Intervention 2:
  - Implementation of a CPOE order set, allowing the referring physician to order both studies simultaneously.

No intervention between Data Point 2 and the Final Data Point.
- To assess for the sustainability of the results.
# Results

<table>
<thead>
<tr>
<th>Data Collection Point</th>
<th>Eligible Patients*</th>
<th>Eligible Patients* Receiving Both Studies During One Trip (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td>11</td>
<td>1 (9.1%)</td>
</tr>
<tr>
<td>Data Point 1</td>
<td>14</td>
<td>7 (50.0%)</td>
</tr>
<tr>
<td>Data Point 2</td>
<td>8</td>
<td>7 (87.5%)</td>
</tr>
<tr>
<td>Final Data Point</td>
<td>10</td>
<td>8 (80.0%)</td>
</tr>
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* "Eligible Patient" is defined as a patient who was recommended for *npo* status following video fluoroscopic swallow study but lacked other route of enteral nutrition (*e.g.*, gastrostomy or pre-existing nasoenteric tube) and subsequently obtained a fluoroscopically guided nasoenteric tube placement procedure within the following 72 hours.
Results (cont.)

There was gradual increase in percentage of eligible patients receiving both video fluoroscopic swallow studies and fluoroscopically guided nasoenteric tube placements with each intervention.

Between each intervention, there was an increase \((p < 0.05)\) in the percent of eligible patients receiving both studies during a single trip to the radiology department [Table 1]:

- **Intervention 1:**
  - From Baseline to Data Point 1, there was an increase from 9.1\% to 50.0\% \((p = 0.03)\).
- **Intervention 2:**
  - From Data Point 1 to Data Point 2, there was an increase from 50.0\% to 87.5\% \((p = 0.03)\).

After two months of no intervention, the Final Data Point demonstrated sustained increase in eligible patients receiving both studies during a single trip.

- From Baseline to Final Data Point, there was an increase from 9.1\% to 80.0\% \((p < 0.01)\)

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† Statistically significant increase \((p < 0.05)\) in the percentage of eligible patients receiving both studies during a single trip with respect to the previous data collection point.
SUMMARY

In patients who require both a video fluoroscopic swallow study and a fluoroscopically guided nasoenteric tube placement, minimizing separate trips to the department can be achieved through:

- Education of referring physicians.
- Education of front-line radiologic technologists.
- Changing parameters within the computerized physician order entry (CPOE).

By minimizing separate trips:

- Improved patient satisfaction.
- Decreased burden on transportation services within the hospital.
- Earlier time to feeding via the feeding tube.

TAKE HOME POINTS

- A similar approach and quality improvement initiative could be used for other radiologic studies and interventions that are often ordered consecutively.

- Being proactive to minimizing unnecessary trips to the radiology department can be beneficial to the staff, department, and the institution at-large.