Improving Patient Outcomes with the use of Electromagnetic Placement Device for Small Bore Feeding Tube Placement in the ICU Setting

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Objectives

- Describe the education, training and preparation involved for a successful implementation of electromagnetic placement device (EMPD) for small-bore feeding tube (SBFT) insertion.
- List the steps to achieve buy-in from physicians to change practice of radiographic confirmation as primary verification of SBFT placement.
- Evaluate the effectiveness of using the EMPD in improving patient outcomes.

Nutrition in critically ill patients

- Critical illness associated w/ catabolic state
- Early enteral nutrition support as proactive therapeutic strategy that may…
  - Reduce disease severity
  - Diminish complications
  - Decrease LOS in ICU
  - Favorably impact patient outcomes

Enteral feeding – preferred if gut is functional

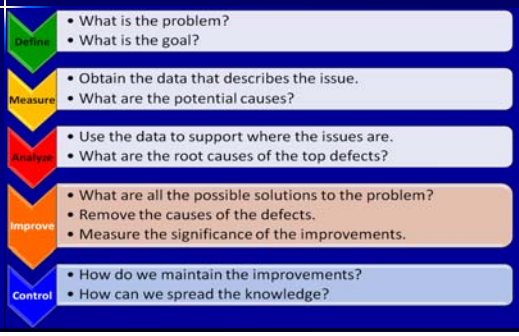
Safety issues with Feeding Tube Insertion

- Blind insertions resulting in misplacements
  - Tracheobronchial tree – 187 / 9931 (1.9%)
    - 35 pneumothoraces, 5 deaths
  - Unexpected parts of the GI tract
    - Esophagus – increased risk for aspiration
  - Brain
- Displacements
  - Regular monitoring practices should be in place

Radiographic Confirmation

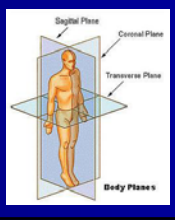
- Recommended to confirm correct placement after blind insertions or displacement
  - Does not eliminate risk of entry to resp tract or incidence of pneumothorax
  - Decreases risk of aspiration
- Other findings:
  - Multiple x-rays obtained until terminal location reached
    - Prolongs insertion-to-feeding time (delayed treatment)
    - Repeated interruption in care
  - Limited 1D view results in inaccurate interpretation

Process Improvement Framework: DMAIC



Improvement Process

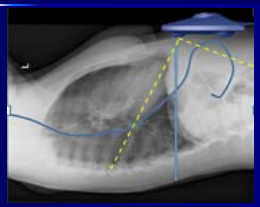
- Possible solutions: Technology
  - Cortrak® Enteral Access System (EAS)
    - Allows real-time visualization using 3D views



Education & Training

- Literature Review
  - Recommend core group of inserters or “feeding tube champions”
- Education
  - 3-hr didactic including real-time insertion or simulation
  - 2-hr Advanced placement interpretation class
- Competency
  - Initial: 3-5 proctored insertions
  - Ongoing: 3 insertions annually

Training is Critical!!!



IT IS **CRITICAL** FOR APPROPRIATE INTERPRETATION THAT THE RECEIVER IS ALIGNED APPROPRIATELY – WITH THE FIRST FOOT OF RECEIVER PLACED **AT THE XIPHOID** AND **PARALLEL WITH THE SPINE**.

- If perpendicular alignment is skewed, the tip location can be misinterpreted and injury can occur.

Policy & Procedure

- *Insertion…using the electromagnetic tracking system at the bedside is restricted to FTT RNs or champions*
- *Obtain radiographic confirmation if image displayed on monitor does not show expected path as observed by a FTT RN (i.e., if tracing does not represent typical anatomy)*
- *Documentation: Includes 3D view printout and FTT RN interpretation*

Physician Buy-In

- Real-time display of previous insertions using Corview®
  - 3D views
  - Differentiation between R/L lung insertion, gastric, post-pyloric and small bowel insertion
- Review of radiographic images with incorrect interpretation

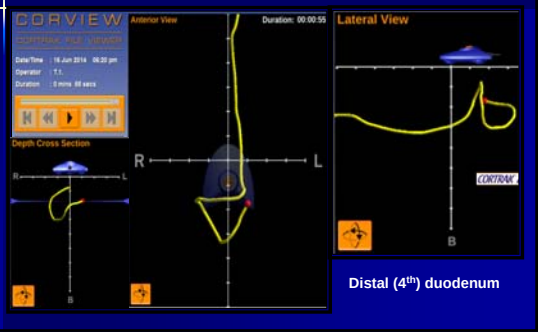
Initial Reading (Before Contrast)
Feeding tube looped in the stomach

3rd Reading (After Contrast)
Tip of tube is in the proximal jejunum, past the ligament of Treitz.

Sample Tracings

Left bronchus/lung

Sample Tracings



Distal (4th) duodenum

Outcomes

- Elimination of radiographic confirmation for FT placement confirmation
- Significant reduction of IR-inserted feeding tubes
- Improved insertion-to-feeding time
- Fewer complications, reduced use of TPN, decreased interruption of treatment and nursing care
- Decreased cost

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