



Maintaining the Patency of Gastrostomy-Jejunostomy Tubes on a General Medicine/Transplant Unit in a Pediatric Hospital

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Background



- The General Medicine/Transplant Unit (GMTU) has a large population of children with enteral feeding tubes, including gastrostomy-jejunostomy (GJ) tubes
- Clogged feeding tubes are responsible for a significant delay in delivery of enteral feeds and medication administration and can increase risks and costs to patients in the event that they must be replaced
- An evidenced based review was done which focused on the care of GJ tubes and maintaining their patency

Project Aims



- Search evidenced based research articles to find effective ways to decrease the occurrence of clogged enteral tubes and to find an effective agent to unclog tubes and avoid the need for replacement
- Synthesize findings from literature review to update the current policy
- Obtain appropriate committee approvals for practice change
- Implement and evaluate evidence-based practice changes

Methodology



- Devise PICO questions
 - In the pediatric patient with a GJ tube, what is the best way to prevent clogging of the gastrostomy- jejunostomy tube?
 - In the pediatric patient with a GJ tube, what is the most effective agent to unclog tubes?
- Performed a review of literature for evidenced based practice
- Benchmarked with other pediatric facilities
- Engaged stakeholders: GI physician, pharmacy, Clinical Nurse Specialist (CNS), Interventional Radiology, unit nursing leadership team and staff nurses
- Piloted research findings on patients with clogged tubes to evaluate effectiveness

Evidenced Based Findings

Reference	Evidence Presented
Bourgault, A. M., Ipe, L., Weaver, J., Swartz, S., & O'Dea, P. J. (2007). Development of evidenced-based guidelines and critical care nurses' knowledge of enteral feeding. <i>Critical Care Nurse</i> , 27(4), 17-29.	<ul style="list-style-type: none"> Occlusion in feeding tubes are often caused by coagulation of protein based formulas that come in contact with acidic environments and certain medications (p. 20). Routine flushing with water is the best way to maintain patency. However the volume of water to be used varies.
WOCN Society Clinical Practice Ostomy Subcommittee. (2008). <i>Management of the Gastrostomy Tube Complications for the Pediatric and Adult Patient</i> . Retrieved from Wound, Ostomy and Continence Nurses Society: http://c.ymcdn.com/sites/www.wocn.org/resource/resmgr/Publications/Mgmt_of_G-Tube_Complications.pdf	<ul style="list-style-type: none"> Use at least 3-5 ml as the flush volume for pediatric patients Consult primary care provider for specific flush volumes if patient is on fluid restriction Water has been found to be a more effective irrigant than colas or cranberry juice When giving medicine by tube, use liquid form when possible. If using tablets, completely crush them to powder (do not use timed release, enteric coated or sustained release medications) and mix with water. If unsure whether a medication can be crushed, check with a pharmacist (p. 8). "Use of pancreatic enzyme (ex. Viokase) crushed with one tablet of sodium bicarbonate (324 mg) dissolved in 5 ml of water just prior to injection into blocked tube" (p 8). Recommended instilling the medication into the clogged tube and then clamping for 5-10 minutes to let agent take effect. If a pancreatic enzyme is unavailable, the authors suggested using a mixture of 1/8 teaspoon of baking soda dissolved in 5 mL of warm water and administering in similar method (p. 8).
Nijs, E. L., & Cahill, A. M. (2010). Pediatric enteric feeding techniques: insertion, maintenance, and interventional radiology. <i>CardioVascular and Interventional Radiology</i> , 33, 1101-1110.	"If clogging occurs,...sodium bicarbonate solution, or Viokase 8 (a pancreatic lipase substitute) ...mixed with sodium bicarbonate- can be used and administered in a back-and-forth motion" (p. 1106).
Itkin, M., DeLegge, M. H., Fang, J. C., McClave, S. A., Kundu, S., d'Othee, B. J., . . . Cardella, J. F. (2011). Multidisciplinary practical guidelines for gastrointestinal access for enteral nutrition and decompression from the Society of Interventional Radiology and American Gastroenterological Association (AGA) Institute, with endorsement by Canadian Intervention. <i>Gastroenterology</i> , 144(2), 742-765. doi: http://dx.doi.org/10.1053/j.gastro.2011.06.001	<ul style="list-style-type: none"> "If simple water flushing fails to unclog a feeding tube, the installation of pancreatic enzymes can reopen an additional 50% of occluded tubes" (p. 20). "For persistent tube occlusions, pancrelipase (Viokase) with the pH increased to 7.9 with sodium bicarbonate has been successful both in unclogging feeding tubes and in prolonging time to occlusion when used prophylactically" (p. 20).

Results

- Incorporated evidence-based findings regarding routine flushing into hospital policy
- Stakeholders determined that pancreatic enzyme/sodium bicarbonate mixture would be an appropriate option for de-clogging tubes
- Pharmacy reviewed evidence and concurred that sufficient evidence was available to incorporate the agent into practice
- General Medicine Transplant Unit piloted the agent on patients with nasogastric tubes, gastrostomy tubes, and G-J tubes, all with success
- Interventional Radiology Department has successfully used the de-clogging agent when they encounter a clogged tube

Implications

- Utilization of a sodium bicarbonate/pancreatic enzyme agent has positively impacted patient care by:
 - Effectively unclogging tubes
 - Reducing delays in administration of enteral feedings and medications
 - Decreasing stress and discomfort to patients having to undergo a tube replacement
 - Providing significant healthcare savings related to the cost of sedation and procedure



Next Steps



- Texas Children's Hospital will be incorporating the use of a sodium bicarbonate and pancreatic enzyme into the G-J policy
 - Goals are to reduce amount of time tube feeds and medications are delayed and the cost associated with tube replacement
- Currently working with Information Services to develop an electronic order set for the de-clogging agent
- Hospital wide education scheduled to roll out in December 2014
- Continue to monitor effectiveness of the de-clogging agent and disseminate results with other organizations

Electronic Order Set



Order set for pancreatic enzyme/sodium bicarbonate mixture as one-time medication for unclogging G-tubes and NG/NDs

Supplies:

- 1 pancreatic enzyme: Viocase C tablet 10,000 U crushed
- 1 sodium bicarbonate 650mg tablet crushed

Order Set Instructions:

- Dissolve sodium bicarbonate table in 10 cc warm water until dissolved
- Add pancreatic enzyme to mixture and dissolve
- Instill into clogged tube with gentle pressure
- Instill as much solution as possible
- Clamp tube for 15 minutes
- Attempt to flush tube with 5 cc warm water
- If not successful, repeat and let dwell for 30 minutes
- If unsuccessful, notify Practitioner

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