

CLOSING THE RESEARCH-PRACTICE GAP: INCREASING EVIDENCE-BASED PRACTICE FOR NASOGASTRIC TUBE INSERTION USING EDUCATION AND AN ELECTRONIC ORDER SET



Authors: Ranee Solomon, MSN, RN, and Karen Jurica, BSN, RN, Akron, OH

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Problem: Patients and practitioners rate the insertion of a nasogastric tube as one of the most painful and distressing procedures performed. Research supports using lidocaine and a nasal vasoconstrictor to significantly decrease patient discomfort. The recommended medications were not being used routinely in a large urban emergency department.

Methods: We identified departmental barriers using a nurse survey and physician interviews. We educated the nursing and physician staff about the comfort medications for nasogastric tube insertion recommended in the literature. In collaboration with the information technology department, we created an order set for the department's computerized physician order entry system linking the order for a nasogastric tube with the recommended comfort medications.

Results: Six months after the educational campaign and availability of the new electronic order set, we compared the

data from pre- and post-project chart reviews and found the use of literature-recommended comfort medications had increased from 23% to 93%.

Implications for Practice: Nurses have a professional obligation to use the most current evidence-based practice available and to advocate for adequate pain management before, during, and after painful procedures. The use of evidence-based practice has been associated with an increase in both patient and staff satisfaction, improved clinical outcomes, and greater patient safety. An electronic order set combined with staff education resulted in a dramatic increase in the use of evidence-based practice for nasogastric tube insertion.

Key words: Nasogastric tube insertion; Computerized physician order entry; Research utilization

The literature consistently reports a delay between the availability of research evidence and the implementation of research findings in practice, commonly referred to as the research-practice gap. As a result of the research-practice gap, patients are denied treatment of demonstrated benefit because the delay in research utilization is unacceptably long, especially regard-

ing the use of simple pain management techniques for painful procedures. Although patients and practitioners rate the insertion of a nasogastric tube (NGT) as one of the most painful and distressing procedures performed, the medications that have been shown to significantly decrease the amount of pain associated with the procedure are not routinely used in practice.¹⁻⁴

Research provides overwhelming evidence that using topical lidocaine for NGT insertion, either as a gel, atomized spray, or nebulized aerosol, significantly reduces the amount of pain that patients experience.³⁻⁷ Many of the clinical trials on this topic are 5 to 15 years old, suggesting that this research question has been asked and definitively answered. No clinical trials with contrary results were found. In fact, it is arguable on the basis of the available evidence that it is no longer justifiable to insert a NGT tube in a nonemergency situation without the use of a topical analgesic.³

The scientific evidence also recommends using a nasal vasoconstrictor, such as oxymetazoline, prior to NGT insertion because it shrinks sinus tissue and dilates the nasal

Ranee Solomon, Emergency Department, Akron City Hospital, Akron, OH.
Karen Jurica, Summa Health System, Emergency Department, Akron City Hospital, Akron, OH.

For correspondence, write: Ranee Solomon, MSN, RN, Emergency Department, Akron City Hospital, 525 East Market St, Akron, OH 44304; E-mail: solomonr@summahealth.org.

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passage, easing tube insertion.^{3,8-10} It is the insertion of the tube into the sinus cavity and the shearing of the nasal sinus tissue that can cause severe pain. Nasal vasoconstrictors also constrict blood vessels in the sinus cavity and may help prevent epistaxis during or after tube insertion, which can be distressing for patients.^{3,8-10}

During our review of the literature, we found 2 summaries of national conference presentations describing practice improvement projects that aimed to increase the use of lidocaine for NGT insertion.^{11,12} One project used atomized lidocaine alone, and one project used a combination of viscous lidocaine and atomized lidocaine. Both presentations reported a decrease in the amount of pain patients experienced during the procedure. Neither presentation reported any adverse events related to the lidocaine protocol for NGT insertion.

Local Problem

A research-practice gap existed for NGT insertion in an urban Magnet-designated hospital's level I adult trauma center, which averages 90,000 patient visits per year. Although the recognition and alleviation of pain are increasingly recognized as key elements of high-quality patient care,² no protocol existed for using medications for NGT insertion in this emergency department. This department uses a computerized physician order entry (CPOE) system, and the electronic order set for the insertion of a NGT did not include any medications. The hospital's policy and procedure manual only suggested the use of a lubricant for the insertion of an NGT.

We performed a retrospective chart review after receiving the hospital's Institutional Review Board approval for the project. Three months of electronic medical records involving NGT insertions ($n = 182$) in this emergency department were populated for our review onto an Excel spreadsheet by the information technology department using the billing code for NGT insertion. We excluded charts for several reasons: documentation that the patient was lethargic or unconscious; if we deemed the procedure emergent; if the NGT was not inserted while the patient was in the emergency department; and if an allergy to lidocaine or oxymetazoline was documented. A total of 55 charts were excluded, and as a result, 127 charts were included in the chart review. Only 29 of 127 (23%) of nonemergent NGTs were inserted using topical analgesics, and only 4 of 127 (3%) were inserted using a nasal vasoconstrictor.

In preparation for this current project, we performed a departmental needs assessment by electronically surveying registered nurses (RNs) and interviewing attending physi-

cians to assess their knowledge regarding evidence-based medications for NGT insertion and perceived barriers to using them. Nurses ($n = 33$, 30%) indicated that the biggest barriers were the lack of knowledge regarding evidence-based medications, the lack of medication orders prior to the procedure, and poor communication with physicians. Physicians ($n = 25$, 50%) indicated a need and a desire for knowledge regarding evidence-based NGT insertion medications and interest in a more convenient method of ordering these medications.

In this emergency department, RNs are the primary practitioners responsible for NGT insertion. Some nurses had expressed a concern on the survey about using lidocaine for NGT insertion, fearing it would result in more inadvertent tracheal tube placements. This concern is not substantiated by the literature; in fact, fewer tracheal intubations occurred when lidocaine was used.^{3,7} Studies show that in the absence of analgesia, there is typically a 20% rate of unsuccessful NGT insertions.⁷ Evidence suggests that coughing and gagging during tube placement increases the likelihood of tracheal intubation. Because lidocaine suppresses coughing and gagging during tube placement, it may have been the reason why, in one study, there were fewer tracheal intubations in the lidocaine group versus the placebo group.^{3,7}

Based on the data collected from the surveys and interviews, we determined that a staff educational campaign was needed. We also determined that physicians desired a more convenient method of ordering the recommended medications. We had 2 aims for this project. Our first aim was to increase the use of evidence-based comfort medications for NGT insertion in a large emergency department to decrease patient discomfort during a painful procedure. Our second aim was to evaluate the effectiveness of using staff education in conjunction with an evidence-based electronic order set as a viable method of rapid research utilization.

Methods

Because our needs assessment indicated that physicians wanted a more convenient method of ordering the recommended medications for NGT insertion and research demonstrates that order sets for CPOE systems can significantly influence physician ordering practices and increase evidence-based practice,^{13,14} we collaborated with the information technology department to create an evidence-based electronic order set linking the NGT order with the recommended medications. We selected the medications for the new order set with the support of an attending emergency physician after an extensive review of

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