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Bowel Management Guidelines in an Adult Intensive Care Unit: Development, Implementation, and Patient Outcomes

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Introduction

Maintenance of normal bowel function for the critically ill is essential. Patients in the intensive care unit (ICU) are at a higher risk of diarrhea and constipation. Depending on the chosen definition, the reported prevalence of diarrhea has been 5–70% (Heidegger *et al.*, 2016) and the incidence of constipation 16 – 80% (McPeak *et al.,* 2011). The etiologies of diarrhea and constipation related to disease, medications and diet (Blaser *et al.,* 2015) as well as adverse patient outcomes such as dehydration, electrolyte disturbances, skin maceration, health care associated infections, delayed weaning or prolonged mechanical ventilation, bowel obstruction or perforation, and increased length of stay are well documented in the literature (Knowles *et al.,* 2013). Critically ill patients are also vulnerable to urinary tract infections and other nosocomial infections such as wound infections, local or systemic intravascular catheter related infections and ventilator associated pneumonia (Garcia *et al.,* 2012). Although the importance of bowel management is well known by clinicians, it is often viewed as a low priority in the ICU, due to more immediate life-threatening issues. In addition, the literature shows that bowel management documentation and reporting rates remain low (Knowles *et al.,* 2013; McPeak *et al.,* 2011).

A few studies have described development and implementation of bowel management guidelines in adult ICUs. (Knowles *et al.,* 2015; Knowles *et al.,* 2013; McKenna *et al.,* 2001; McPeak *at al.,* 2011) The results also show that approximately 21-32% of intensive care units have a bowel management guideline or protocol. Despite the availability of these tools to standardize and improve patient outcomes, the use of these tools have remained low (Knowles *et al.*, 2015; Knowles *et al.,* 2013). Establishing and sustaining change in clinical settings has been described as challenging, often resulting in small to moderate improvements, and thus making it hard to achieve measurable outcomes. Our assumptions, based on the literature (Knowles *et al.,* 2015; Knowles *et al.,* 2013), were that the development and implementation of bowel management guidelines require an understanding of what clinicians already do in practice, how these guidelines can be adopted within routine practice, and that there was a need to give

staff a voice regarding their practice change by actively seeking their input and feedback.

Background

Our organization is a 637 licensed-bed tertiary care, Magnet-designated teaching hospital located in Northern New England. We have a 32 bed Special Care Unit (SCU) that serves critically ill neuro-, trauma, and medical- surgical patients. The SCU employs 140 RNs, 6 APPs, 25 MDs and Residents. The start of this project was motivated by staffs' observations of the high incidence of diarrhea in critically ill patients, and nurse managers' concerns based on laboratory tests showing that urinary tract infections (UTIs) were often caused by organisms specific to gut flora (i.e. *E coli /Escherichia coli*). In 2018, we conducted a retrospective chart review to investigate the incidence and prevalence of diarrhea and constipation in our critically ill patients (IRB# 1006399). The aim was to better understand the prevailing bowel management practices in our ICUs. The data for the study were retrieved from the electronic medical records and included all adult patients (n=4,118) admitted to the ICU in calendar years 2016-2017. The findings of our study showed, among other things, that 68% of the patients had diarrhea at one point during their ICU stay. Half of the patients did not have a bowel movement. Furthermore, the documentation varied over time, between staff members and providers.

Methods

Aims

The purpose of this presentation is to describe the development of bowel management guidelines created by our inter-professional team, to discuss the multifaceted strategies utilized for implementation of the guidelines, and to review patient outcomes before, during, and after the enrollment of the new guidelines. The goals of our project were to:

1. develop evidence-based bowel management guidelines for critically ill adult patients;
2. engage bedside staff in the development of the guidelines by asking for their feedback;
3. utilize implementation strategies, described in the literature, that have demonstrated effectiveness in practice and to evaluate the efficacy by conducting quarterly audits;
4. improve documentation of bowel management in critically ill adult patients.

Design

Development of the Guidelines

This initiative started with a literature search and review that was completed by our inter-professional team in 2017. In January 2018, the team also systematically reviewed fourteen published bowel management guidelines, which are listed at the end of this paper and marked with an asterisk(*), for:

- Constipation guidelines? (Y=yes, N=no)
- Diarrhea guidelines? (Y/N)
- Medications? (Y/N)
- Algorithm with variables supporting clinical decision-making? (Y= yes, and easy to follow, N= no, difficult/confusing with too much information to support decision-making)
- Clear standards for documentation? (Y/N)

The focus of this review was pragmatic, and it revealed to the team the strengths and weaknesses of the published guidelines. Only three of the reviewed guidelines addressed both: diarrhea and constipation; thirteen gave recommendations regarding medications, four were found easy to follow and four provided clear standards for

documentation. The team was not ready to adopt any of these guidelines as written or with revisions, therefore decided to proceed with the development of our own guidelines to address the identified needs.

The development process and content of our guidelines were supported by the available literature and included input from pharmacists, registered dietitians, registered nurses (RN), and physicians. The guidelines were designed to support clinical decisions made by nursing staff including managers, educators, and leaders.

Implementation of the Guidelines

The multifaceted implementation interventions started on January 30, 2018 and included: express in-service posters, one-on-one education, 30 minute education sessions, and reminder emails. The content of the education focused on the rationale for the use of the new guidelines and standardized documentation through the incorporation of the Bristol Stool Chart. A “Bowel Management Sidebar” was developed and added as a daily rounding tool in the Electronic Health Records. This tool automatically retrieves from the patient record: (a) date of last bowel movement and Bristol Stool Chart score, (b) bowel medication ordered and administered including liquid medications that may cause diarrhea (last 72 hours) (c) diet orders including tube feed order, and (d) intake/output summary.

Evaluations and Outcomes

We started to evaluate the outcomes and collect feedback in March of 2018. Three different approaches were used:

1. nursing staff feedback surveys,
2. open discussion forums and
3. retrospective chart review comparing pre-, during-, and post-implementation outcomes

The nursing feedback surveys were conducted during two time periods (T1: 3/5/18-3/19/18 and T2: 8/27/18 – 9/4/18). The findings showed that patients bowel history was discussed (T1) 68.6% (T1) and 70.6% (T2) of the times during daily rounds. The discussion was mostly initiated by RNs (T1: 38.5%, T2: 31.6%), the guidelines, as written, were followed half of the time (T1: 53.6%, T2: 33.3%), and certain aspects were used (T1) 39% and (T2) 90% of the time. The findings from the second survey (T2) showed that, on a scale from 1=not at all to 10=very comfortable, staff felt comfortable using the revised guidelines (Mean 8.89, SD 1.73). Regarding “confidence that the guideline works” the staff reported, on a scale from 1= not at all to 10=very confident, that they were moderately confident (Mean 6.88, SD 1.93). The open forums (March 9, 12, 14, 16, 2018) provided important insights for the revisions of the guidelines, including laxative dose and timing of bulking agents. The open forums also catalyzed valuable discussions between our team and the clinicians.

The evaluation of the patient outcomes from chart reviews (pre-implementation 10/30/2017-1/30/2018; guideline and education rollout 1/30/2018-3/26/2018; and post-implementation 3/27/2017-5/29/2018) compared diarrhea and constipation incidence rates. The incidence in diarrhea increased significantly from pre-implementation to guideline and education rollout (2.1%-4.4%, $p<.0001$) reflecting improved and more consistent documentation. From the guideline and education rollout to post-implementation, the incidence of diarrhea decreased significantly (4.4%-2.4%, $p<.0001$). An interesting finding was that the incidence of constipation did not change significantly during these time periods. These results reflect, most likely, the definition of constipation

(i.e. no bowel movement ≥ 3 days) and many patients' shorter length of stay in critical care. The number of indwelling catheter-days increased from 2016 (5146 days) to 2017 (5284 days). However, the number of catheter associated urinary tract infections (CAUTIs) reduced from 21 to 7, and the infection rate decreased from 4.1 to 1.32 infections per 1000 device days. In 2018, the number of the indwelling catheter-days has continued to decrease (January – November: 5152 days), but the infection rate has slightly increased (2.14 infections per 1000 device days).

Conclusions and Discussion

Diarrhea and constipation are common in critically ill adult patients. Findings from this project have provided useful insights into the development and implementation process of the bowel management guidelines. The collaborative project utilized multifaceted strategies for implementation and a variety of approaches to evaluate patient outcomes. Further research is, however, required to explore the long-term effectiveness of the use of the guidelines on patient outcomes and staff satisfaction. The next steps include: part two of the study focusing on years 2018–2019 and confirming plans for sustainability for guideline utilization.

Title:
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Keywords:
Bowel Management Guidelines, Critically Ill Adults and Retrospective Chart Reviews

References:

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Abstract Summary:
This presentation describes development and implementation of bowel management guidelines. Retrospective chart reviews were conducted to evaluate the patient outcomes. The incidence of diarrhea increased significantly from pre to education rollout due to improved documentation and decreased from the rollout to post. However, the incidence for constipation did not change.

Content Outline:
Introduction

- **Overview of the literature describing bowel management guidelines developed in critically-ill patient populations**
- **Challenges identified by other researchers that can inform bowel management guideline development and implementation**

Background

- **Description of the site and context of our project**

Aims and Purpose

- **Description of the purpose and goal statements**

Design

- **Description of the development of the guidelines**
- **Implementation of guidelines**
- **Evaluation and outcomes**

Conclusions and Discussion

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