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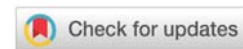
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Research Article

Stools for Stools—combining a multi-disciplinary approach with conservative measures to reduce constipation in the elderly inpatient population

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Abstract

Introduction: Constipation is a common cause of morbidity in the elderly. Its management is particularly challenging in the inpatient population where many factors exacerbate constipation. We describe a Quality Improvement Project to reduce constipation in a Care of the Elderly ward, including conservative measures to complement medical treatment.

Aims: To increase bowel motion frequency to at least once every two days in elderly inpatients, and to increase bowel chart documentation.

Methods: Weekly monitoring of ward inpatients. Measurements taken were: days since last bowel motion, laxatives prescribed, documentation on bowel charts and ward rounds, and episodes of diarrhea. A new intervention was introduced every two weeks, over a total of 10 weeks.

Interventions: The 4 interventions introduced were: 1) Recording bowel motions at the daily 'Board Round' Multi-Disciplinary Meeting. 2) Ward staff education sessions. 3) Footstools for use with commodes and toilets. 4) High-fibre foods for patients with constipation.

Results: Bowel motion frequency improved, with 100% of patients moving bowels every 2 days from a baseline of 66.6%. Ward round and bowel chart documentation improved to 100% and 92.9% (from 41.6% and 33.3%). Laxative prescriptions increased from 50% to 78.6%, with no increase in episodes of diarrhea.

Conclusions: Constipation improved with our interventions but was accompanied by increased laxative prescriptions, which carry a risk of side effects. Our next steps will be to optimize our conservative measures to reduce laxative prescriptions, and to this end, we have developed high-fiber snack boxes to aid constipation in elderly patients.

Introduction

Constipation rates in the elderly population are as high as 50% in the community [1]. These rates are higher still in the hospitalized elderly population, with elderly females having the highest rates of constipation [2]. The etiology of constipation in the elderly is multifactorial. Physiological changes in the aging bowel play a role, such as reduced large bowel peristalsis [3].

Polypharmacy contributes, with common culprits being

opiates, iron supplements, diuretics, tricyclic antidepressants, and anti-parkinsonian drugs. Other contributory factors for inpatients include prolonged immobilization, reduced fluid, and food intake, and low-fiber and -calorie diets.

The diagnosis of constipation in inpatients is often delayed [4]. Many elderly patients cannot report bowel motions to staff, either due to cognitive impairment or acute confusion, and fecal loading with liquid stool bypassing the blockage is often misdiagnosed as diarrhea [5]. Furthermore, accurate

monitoring of bowel chart motions is challenging due to the frequent change-over of nursing staff.

While seemingly innocuous, constipation has a significant impact on morbidity and mortality in the elderly population. Older adults with chronic constipation have worse physical functioning, perception of bodily pain, and mental health [6,7]. In a study of over 5000 elderly women, mortality rates were higher in those with persistent constipation compared to those without [2]. In the acute hospital setting, constipation in the elderly can lead to pain, urinary retention, and acute delirium, contributing to delayed discharges and increased risk of nosocomial infections [8].

We present a quality improvement project aimed at reducing rates of constipation in a female Care of the Elderly Ward. Our interventions focused on improving multi-disciplinary documentation and communication, and on the use of conservative treatments as an adjunct to common pharmacological interventions. Among them was the introduction of footstools, which have shown benefit in encouraging a posture that limits straining when toileting [9].

Methods

Design

Quality Improvement Project over 4 PDSA cycles on a 15-bed female Care of the Elderly ward at St. Mary's Hospital, Imperial College Healthcare NHS Trust, London, UK. The project ran over a total of 10 weeks, with a new intervention introduced every two weeks. Following a staff survey to gain knowledge, the management of constipation was separated into factors relating to Prevention, Identification, and Treatment, with interventions proposed for each. The project was specifically aimed at targeting acute constipation amongst inpatients, rather than managing longstanding chronic constipation.

Aims

- a) 90% of patients have their bowels opening at least once every 2 days
- b) 100% documentation of bowel movements on bowel charts and ward round notes.

Interventions

- i. Recording bowel motions at the daily 'Board Round' Multi-Disciplinary Team Meeting. Ward patients are discussed at a daily Board Round. At each Board Round the 'Days since last bowels opened' was recorded for each patient, to identify patients with constipation to the whole Multi-Disciplinary Team.
- ii. Ward staff education sessions. Education sessions for staff on the importance of constipation, and its identification and management
- iii. Footstools for use with commodes and toilets. Footstools were introduced to the ward for use with toilets and commodes to reduce straining with bowel motions [10].

- iv. High-fiber foods for patients with constipation. High-fiber food was prescribed on the daily ward round to be eaten during the day, using the Cerner Millennium electronic prescribing system [11].

Monitoring

Monitoring of all ward inpatients once a week every Friday. Data collected: number of days since last bowel motion, laxatives prescribed, bowel chart documentation, ward round documentation, and episodes of diarrhea over the past week. One episode of diarrhea was defined as 3 stools in 24 hours that were Type 6 or Type 7.

Results

A total of 65 patients were admitted to the 15-bed Care of the Elderly Ward over the course of the 10-week project. The mean age was 84.83, with a median of 86 and a range of 41 (61 to 100).

Prior to starting the project 66.6% (8/12) of patients had bowel motions in the previous two days. Bowel chart documentation was 33.3% (4/12) and ward-round documentation of bowel motions was 41.6% (5/12). 50% of patients (6/12) were prescribed laxatives, and there were no episodes of diarrhea.

At the end of the project rates of constipation had been successfully reduced, with 100% of patients moving their bowels every two days. This improvement was a steady rise from the start of the project, with a sustained peak at 90-100% over the last three weeks of the project.

Bowel chart documentation improved from 33.3% to 92.9%, and ward-round documentation improved from 41.7% to 78.6%. Laxative prescriptions increased from 50% of patients to 78.6% of patients, with no increased episodes of diarrhea. There were no falls in relation to the use of footstools on toilets or commodes.

A total of 185 laxative prescriptions were recorded on weekly monitoring over the course of 10 weeks. Macrogol and Senna in combination were the most commonly prescribed at 79.9%. Other laxative prescription rates were: Bisacodyl 7.6%, Docusate 4.3%, Glycerol suppositories 4.3%, Phosphate enema 3.2%, and Lactulose 0.54%. Bisacodyl was used as an alternative to Senna due to its smaller size. Glycerol suppositories and phosphate enemas were used in patients with constipation despite oral laxatives, or who could not take oral medication. Lactulose was avoided due to the side effect of bloating.

Discussion

This project presents a holistic approach to the management of constipation in hospital inpatients. Interventions were chosen to target three core drivers: Prevention, Identification, and Treatment of constipation. These drivers could not be fully addressed without the involvement of the whole multi-disciplinary team, and so an emphasis was placed on the roles that all allied health professionals can play in tackling inpatient constipation. Finally, the use of conservative measures offers an



alternative to treatment with laxatives which, while effective, have an adverse side effect profile and can be challenging for elderly inpatients to take.

Rates of constipation in this project were successfully improved in a sustained manner. The elements contributing to this are likely multifactorial. Laxative prescriptions increased, which is not unexpected in inpatient constipation projects, and certainly added to favorable constipation rates. However, laxatives alone would have failed without a united staff effort to identify constipation, identify patients at risk of constipation, and highlight patients unable to take, or refusing their prescribed laxatives. Multi-disciplinary team communication was improved at the daily 'Board Round' meeting, where patients with constipation or at risk were identified, and the barriers to treatment of individual patients could be discussed. Staff education sessions stressed the benefit of prevention, identification, and treatment of constipation, and encouraged communication amongst the ward team when a case of constipation was suspected.

Conservative measures for constipation were introduced in this project as an adjunct to standard medical therapy, namely the use of footstools to optimize toilet positioning and the introduction of high-fiber foods. These were proposed following our staff survey, which found that laxative administration in the elderly can be challenging due to tablet size, volume, and taste, in addition to acute delirium and cognitive impairment. Constipation rates improved following the introduction of these measures with no associated negative effects, demonstrating that they are both feasible and safe when used appropriately.

There are several limitations to this project. Our 15-bed ward was a small sample size with all patients female. It is also difficult to separate the impact of sequential interventions, to clarify exactly which ones had the greatest effect. Ideally, we would aim to repeat the project with a larger number of patients, over a longer period of time, and with daily monitoring of stool frequency.

We found that ordering high-fiber foods through our electronic prescription system was challenging and impractical, as it had to be requested 24 hours in advance. Our department has had previous success in making high-fiber foods more available inwards, where high-fiber foods or juices are offered to patients on "Prune Rounds" several times a week [12].

To this end, we have designed high-fiber snack boxes that can be given to elderly inpatients with constipation. 'Bento Boxes' are snack boxes available across all Imperial College Hospital NHS Trust sites, as a charity initiative to improve the oral intake of patients with cognitive impairment. Following discussions, we have produced 'bowel-friendly' Bento Boxes, which contain a combination of different high-fiber foods for patients to eat. They are now available across all Imperial College Hospital NHS Trusts for inpatients in the care of the elderly wards with constipation.

Conclusions

This project demonstrates how constipation rates can be improved with a focus on multi-disciplinary team communication, staff education, and the addition of conservative measures to standard medical therapy. Constipation improved with our interventions. Our next steps will be to reduce laxative use while maintaining low rates of constipation, and to this end, we are trialing high-fiber snack boxes to aid constipation in elderly inpatients.

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