

# Laxative-prescribing habits: a summative impact evaluation of a constipation programme implemented in two hospitals in New Zealand

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## ABSTRACT

**AIMS:** To evaluate the impact of a multifaceted intervention aimed at improving adherence to a list of preferred laxatives in two hospitals in New Zealand.

**METHODS:** A constipation programme was developed at Capital & Coast District Health Board to improve adherence to safe and effective (preferred) laxatives over potentially dangerous and less effective (non-preferred) agents. The intervention included a new constipation guideline, a poster of preferred laxatives, a patient information leaflet, hospital formulary adjustments and staff education. The evaluation compared the number of dispensations of each laxative during two periods: a 12-month period prior to programme implementation and a 12-month period following programme implementation. Data were retrospectively gathered from multiple sources on all laxatives dispensed on 14 adult wards across two New Zealand hospitals.

**RESULTS:** Prior to the programme, there were 111,771 laxatives dispensed, the majority of which (62%) were non-preferred agents. Following the programme, there were 91,005 laxatives dispensed, the majority of which (82%) were from the preferred list, indicating a large shift in prescribing habits.

**CONCLUSIONS:** Inpatient laxative prescribing habits require attention and are amenable to quality improvement initiatives. This may reduce waste, prevent harm and improve patient outcomes.

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Constipation among hospitalised adults is a common, burdensome and costly condition that is poorly studied. A universally accepted definition for constipation does not exist. It is a vague term that health professionals and patients may use to indicate altered stool frequency or consistency, abdominal discomfort, defecation difficulties, or the requirement for laxatives or manual manoeuvres to defecate. It is a prevalent condition, affecting as many as 39–43% of patients upon admission into medical wards and hospices, respectively.<sup>1,2</sup> It is also a common hospital-acquired complication, affecting up to 43–83% of inpatients in medical wards and intensive care units, respectively.<sup>1,3</sup> Constipation has deleterious effects on patients' physical and mental wellbeing and overall quality of life.<sup>4</sup> Constipation also has enormous financial implications; in England alone, £168 million was spent on constipation-related emergency care in one year.<sup>5</sup> In 2020, the global laxative market was valued at \$5,239 million USD.<sup>6</sup>

Laxatives have an important role in managing constipation. Unfortunately, the little evidence available indicates widespread use of ineffective and potentially harmful laxatives in the management of constipation among inpatients. A particular example is docusate, which remains one of the most commonly prescribed laxatives despite increasing evidence of ineffectiveness.<sup>7</sup> Indeed, docusate was not better than placebo when added to sennoside in a randomised, double-blinded, placebo-controlled trial.<sup>8</sup> Yet, docusate accounts for up to 64% of all laxatives given to medical and surgical inpatients.<sup>9</sup> In one study, 53% of internal medicine inpatients were taking docusate before admission and 67% of the remaining group were started on docusate during their admission.<sup>10</sup> The common use of ineffective laxatives may delay or prevent the use of safer and more effective laxatives.

Another issue is using colonoscopy preparation agents, such as phosphate and sodium citrate-based enemas, for constipation. These agents are potentially harmful and were not evaluated in the

treatment of constipation.<sup>11</sup> The U.S. Food and Drug Administration attached a black box warning, and the American Gastroenterological Association advised against using phosphate-based bowel preparation products for constipation due to serious safety risks, including severe electrolyte derangement, renal impairment and death.<sup>12,13</sup> Unfortunately, health professionals are not always aware of the numerous conditions contradicting the use of phosphate enemas. These conditions are prevalent among hospitalised adults, including old age, dehydration, renal or cardiac disease, slow transit constipation, use of diuretics and other common anti-hypertensives.<sup>14</sup> It is therefore important to address laxative-prescribing practices to reduce waste, prevent harm and improve patient outcomes.

This study aimed to evaluate the impact of a system-wide constipation programme on promoting safe and effective (preferred) laxatives in place of potentially harmful and less effective (non-preferred) agents in 14 adult wards in two hospitals in New Zealand. This was achieved by comparing the percentage of non-preferred-to-total laxatives dispensed before and after programme implementation. The study provides lessons on addressing the exceedingly common problem of constipation. It is among the very few and most inclusive assessments of laxative prescribing habits among hospitalised adults.

## Methods

### Context

In 2018, the Choosing Wisely Steering Board at Capital & Coast District Health Board (CCDHB) questioned whether to use a natural laxative extracted from kiwifruit to treat constipation at Wellington Regional Hospital and Kenepuru Community Hospital. Both hospitals were described in a previous publication.<sup>15</sup> The board recruited a project team from both hospitals to answer this question. The project team consisted of the nurse manager of the gastrointestinal department, a consultant geriatrician (AA), a pharmacist (BJ), a dietician and the director of midwifery. The team started by evaluating the literature supporting the use of the proposed and all other laxatives available at CCDHB. The team quickly identified common shortcomings that occurred when diagnosing and managing constipation at CCDHB. These included the type, dose and combination of laxatives prescribed and an expired constipation guideline. For instance,

several inpatients at risk of constipation were not offered laxatives. Furthermore, hospital-acquired constipation was sometimes treated with suprathreshold doses of multiple laxatives that resulted in diarrhoea, incontinence and then isolation due to concerns for possible *Clostridioides difficile* colitis. The team expanded the project scope to include developing a system-wide constipation programme that would improve staff and patients' knowledge about constipation and how to prescribe safe and effective laxatives instead of ineffective and potentially harmful ones.

### Developing the programme

The team held fortnightly meetings to define the programme's scope, systematically review the literature for all available laxatives and develop new guidelines and educational material. Representatives of different departments were invited to these meetings to endorse and contribute to the programme's development.

The programme scope included all nursing, medical and midwifery staff caring for adults in the community and hospital settings. The scope excluded specific departments (paediatrics, psychiatry and intensive care units), specific types of constipation (slow-transit constipation, defecation disorders, constipation secondary to clozapine, spinal injury, or bariatric surgery), bowel preparation protocols, and laxatives not available in New Zealand such as intestinal secretagogues and serotonergic laxatives.

The main components of the constipation programme included a guideline, a poster highlighting preferred laxatives and a patient information leaflet. The guideline outlined the programme's objectives and scope, and listed evidence supporting the use of specific laxatives over others. A geriatrician (AA) wrote the guideline with the support of the project team and volunteer resident medical officers. The guideline included a literature review pertinent to all available laxatives in New Zealand. The review included PubMed, Google Scholar and UpToDate. Pharmaceutical companies were contacted where there was a lack of, or contradicting, evidence about a specific laxative.

The second component was the Constipation Ladder, a poster depicting the guideline's main recommendations in a concise and memorable manner. The Constipation Ladder (see Figure 1) divided patients into three groups, each with a list of preferred interventions and laxatives. The first group were ambulatory patients with primary

Figure 1: The Constipation Ladder (version 1).

## CCDHB Constipation Ladder

Try higher doses of the same laxative before adding another agent from a different class. Aim to reinforce non-pharmacological interventions and wean off laxatives as possible. Read the accompanying guideline for more details.

For ambulatory patients with Primary Constipation (no obvious pathology or red flags)	
Step 1: Lifestyle changes	Remain active, hydrated and increase dietary fibre intake.
Step 2: Dietary supplements	Best option: <b>Psyllium Husk</b> [Konsyl-D] <sup>S</sup> (1 Tbsp in 250ml H <sub>2</sub> O, OD then BD if tolerated) Other options: <b>Prunes</b> (6 pieces BD) <b>Kiwifruit</b> <sup>Ax</sup> (1 whole peeled BD) <b>Kiwi Crush</b> <sup>Ax</sup> (70mL in 130mL H <sub>2</sub> O BD) <b>Zyactinase</b> [Phloe] <sup>Ax</sup> (1-2 tablets OD or BD as per response)
If hospitalized, bed-bound, initiating opioids or constipated despite above:	
Step 3: Add an osmotic agent	<b>Macrogol</b> <sup>S</sup> (1 Sachet OD, BD or TDS as per response) or <b>Lactulose</b> <sup>S</sup> (15mL OD or BD as per response)
Step 4: Add a stimulant:	<b>Bisacodyl</b> <sup>S</sup> (10mg oral tablet or rectal suppository OD)
For severe constipation or faecal impaction	
Step 5: try one or more of the following:	<b>Macrogol</b> <sup>S</sup> (8 sachets with 1L H <sub>2</sub> O over 8 hours, repeat daily for 3 days if needed) <b>Mineral Oil Enema</b> (1 enema OD) Manual Removal of Faeces

<sup>S</sup>: Subsidised agents.  
<sup>Ax</sup>: Avoid if allergic to Kiwifruit or Latex.

For opioid induced constipation: Avoid Psyllium Husk.  
For pregnant and breastfeeding women: safest options are Psyllium Husk, Macrogol and Lactulose.  
For moderate Chronic Kidney Disease (GFR <45): may develop fluid overload or hyperkalaemia from hydration, Psyllium Husk, Prunes, Kiwifruit, Kiwi Crush or high dose Macrogol.

Figure 2: The Constipation Ladder (version 2).

## CCDHB Constipation Ladder <sup>V2</sup>

Refer to the [Constipation guideline for community and hospitalised adults](#) for further details.

Try higher doses of the same laxative before adding another agent from a different class.  
Aim to reinforce non-pharmacological interventions and wean off laxatives where possible.

For mobile community patients with primary constipation (no obvious pathology or red flags)	
Step 1: Lifestyle changes	Remain active, keep hydrated and gradually increase dietary fibre intake.
Step 2: Fibre supplement	<b>Psyllium Husk</b> (1 tablespoon in 250 mL of cold liquid: once or twice a day)
If hospitalised, bed-bound, initiating opioids or constipated despite above:	
Step 3: Osmotic agents	Either <b>Molaxole</b> ® (1 Sachet: once, twice or three times a day) Or <b>Lactulose</b> (15 mL: once or twice a day)
Step 4: Rescue stimulant	<b>Bisacodyl</b> (10 mg oral tablet or rectal suppository: once a day)
For severe constipation or faecal impaction	
Step 5: Consider one or more of the following	<b>Molaxole</b> ® (8 sachets in 1 L water over 8 hours: repeat daily for 3 days if needed) <b>Paraffin (Mineral Oil) Enema</b> * (1 enema: once a day) Manual Removal of Faeces

\* Paraffin Enemas are funded in the hospital, but not in the community.

**For opioid induced constipation:** avoid Psyllium Husk.  
**For pregnant and breastfeeding women:** recommended options are Psyllium Husk, Molaxole® and Lactulose.  
**For moderate Chronic Kidney Disease (GFR <45):** avoid excess hydration, Psyllium Husk and high dose Molaxole®

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**Table 1:** The Defined Daily Dose (DDD) utilised for each laxative.

Laxative	Defined Daily Dose (DDD)
Docusate tablet	150mg
Laxsol®	2 tablets
Sodium-phosphate enema	1 enema
Glycerol 3.6g suppository	1 suppository
Sodium-citrate enema	1 enema
Psyllium husk	1 dispensation event
Macrogol (Molaxole®)	2 sachets
Lactulose	10mL
Bisacodyl tablet	10mg
Bisacodyl suppository	10mg
Paraffin mineral oil enema	1 enema
Methylnaltrexone ampoule	6mg

**Table 2:** Comparison of laxatives dispensed before and after the intervention.

Laxative dispensed	Pre-implementation period		Post-implementation period	
	Defined Daily Doses dispensed		Defined Daily Doses dispensed	
	n	(%)*	n	(%)*
Docusate tablet	1,170	(1.0%)	396	(0.4%)
Laxsol®	63,693	(57.0%)	14,554	(16.0%)
Sodium-phosphate enema	1,222	(1.1%)	343	(0.4%)
Glycerol suppository	1,596	(1.4%)	1,025	(1.1%)
Sodium-citrate enema	1,340	(1.2%)	140	(0.2%)
<b>Non-Preferred Laxatives</b>	<b>69,021</b>	<b>(61.8%)</b>	<b>16,458</b>	<b>(18.1%)</b>
Psyllium husk	2,186	(2.0%)	2,791	(3.1%)
Macrogol (Molaxole®)	11,471	(10.3%)	24,874	(27.3%)
Lactulose	28,641	(25.6%)	26,897	(29.6%)
Bisacodyl tablet	208	(0.2%)	17,773	(19.5%)
Bisacodyl suppository	236	(0.2%)	678	(0.7%)
Paraffin mineral oil enema	6	(0.0%)	1,344	(1.5%)
Methylnaltrexone	2	(0.0%)	190	(0.2%)
<b>Preferred Laxatives</b>	<b>42,750</b>	<b>(38.2%)</b>	<b>74,547</b>	<b>(81.9%)</b>
<b>Total Laxative</b>	<b>111,771</b>	<b>(100.0%)</b>	<b>91,005</b>	<b>(100.0%)</b>

**Table 3:** Comparison of lactulose doses dispensed before and after the intervention.

Lactulose dosage dispensed	Pre-implementation period*	Post-implementation period*
<10mL	1.4 %	0.7 %
10mL	12.3 %	10.6 %
15mL	11.9 %	28.2 %
20mL	71.5 %	49.7 %
25mL	0.5 %	0.5 %
30mL	1.7 %	7.0 %
>30mL	0.6 %	3.4 %

\*Due to rounding, totals of percentages may not correspond with the sum of the separate values.

constipation. This group was recommended lifestyle interventions with consideration to adding a fibre supplement like psyllium husk or another natural laxative. The second group consisted of patients who were either hospitalised, bed-bound, taking opioids, or not responding to the previously mentioned interventions. This group was recommended macrogol (polyethylene glycol) or lactulose, with consideration to adding bisacodyl as a rescue agent. The third group consisted of patients with severe constipation or faecal impaction who were recommended high dose macrogol, mineral oil enema, or manual disimpaction. The recommended doses for each laxative were provided to reduce the commonly witnessed variance in prescribing. The ladder was not based on the number of days spent without a bowel motion, given how widely variable bowel habits are among people.

The third component was an updated patient information leaflet that included a more inclusive definition of constipation and information about the newly recommended laxatives: macrogol, lactulose and bisacodyl, instead of docusate and Laxsol® (docusate 50 mg + sennoside B 8 mg).

### Disseminating the programme

The consultation process started in September 2019. The guideline and ladder were presented to the local Choosing Wisely Steering Board, the Medicines Review Committee, the Departmental Heads of Surgery, Obstetrics & Gynaecology and Gastroenterology, and various healthcare professionals representing hospital and community-

based services. Their input was considered before sending an all-staff email seeking feedback on the guideline and ladder.

The implementation process started in January 2020. The guideline and ladder were made available on the hospitals' intranet. More supplies of macrogol, oral and rectal bisacodyl, and mineral oil enemas were secured. Despite being classified as non-preferred laxatives, docusate and Laxsol® were kept in stock to avoid sudden changes to patients' regular medications upon admission. Phosphate and sodium citrate-based enemas were removed from all adult wards not performing lower gastrointestinal endoscopic and surgical procedures.

News about the guideline and ladder was spread through the hospitals' intranet, all-staff emails and posters around the hospitals. Links to the guideline and ladder were added to the Preferred Medicines List, an electronic resource commonly accessed by hospital staff. The team provided face-to-face and online presentations to hospital and community staff, including nurses, nurse practitioners, pharmacists, medical students, junior doctors and the gynaecology, geriatric and general medical teams. Presentations began with a clinical vignette demonstrating patient harm caused by delayed and inappropriate over-prescribing of laxatives. These presentations aimed to clarify how to identify patients at risk of, and those suffering from, constipation, its impact, the evidence supporting specific laxatives, how to prescribe these and evidence against using other agents for constipation.

By February 2020, the programme was

implemented across 14 adult wards in both hospitals. These wards represented general medicine, geriatric medicine, cardiology, nephrology, respiratory, gastroenterology, neurology, haematology, medical oncology, radiation oncology, ophthalmology, orthopaedics, general surgery, neurosurgery, cardiothoracic surgery, otorhinolaryngology, vascular surgery, urology, gynaecology and rehabilitation.

### Programme adjustments

During the first two months post-implementation, the clinical members of the project team identified a few implementation problems. They sensed that inpatients were increasingly prescribed laxatives intended for community patients, such as Kiwi Crush™. There were also reported difficulties retrieving macrogol-based laxatives from the BD Pyxis™ MedStation™ ES automated medication dispensing machines. Finally, some departments questioned why they no longer had access to particular agents.

To address these issues, the team developed version 2 of the Constipation Ladder (Figure 2) in April 2020. The title “ambulatory patients” was simplified to “mobile community patients” to distinguish this group from hospitalised ones. Step 2 of the ladder was shortened only to include fibre supplements because they are the safest, cheapest and most extensively studied of the natural supplements. Step 3 was coloured red to grab doctors’ attention that inpatients are to be given different laxatives than the ones for community-dwelling adults. We used the tradename “Molaxole®” instead of the ingredient name “macrogol” for easier identification on the Pyxis™ machine and to avoid confusion with non-laxative products containing macrogol. The ladder was provided to charge nurses to display in all nursing stations. Finally, sodium citrate-based enemas were returned to the radiation oncology department, as evidence supported its use prior to prostate radiation. Contrary to initial intentions, the programme was not disseminated to the community as the preparations for the COVID-19 pandemic took priority.

### Study of the intervention

A retrospective audit was designed to evaluate the impact of the constipation programme on promoting safe and effective laxatives in the 14 adult wards where the programme was implemented. The impact was assessed by comparing the ratio of preferred laxatives to all laxatives dispensed (adherence) pre- and post-programme

implementation. Preferred laxatives were psyllium, macrogol, lactulose, bisacodyl, mineral oil enemas, and methylnaltrexone. Non-preferred laxatives were defined as docusate, Laxsol®, glycerol suppositories, sodium citrate enemas, and sodium phosphate enemas. The rationale for choosing these medications can be found in the guideline.<sup>16</sup> Adherence was measured during a pre-implementation period from 1 September 2018 to 31 August 2019 and a post-implementation period from 1 September 2020 to 31 August 2021. A one-year gap was left between both periods to account for programme design, implementation, and maturation.

The hospitals’ informatics pharmacist extracted dispensing data relevant to drugs of interest from Pyxis MedStation™ ES, the ward-based automated medication dispensing system, and from ePharmacy® and WinDose®, the dispensary-based inventory management software systems. For each dispensation, data included the dispensation date, dispenser’s name, patient’s National Health Index number (NHI), dispensing station and ward names, and the drug’s name, strength (e.g., 5 mg), form (e.g., tablet), and amount dispensed (e.g., two tablets).

### Analysis

We used Microsoft Excel to analyse the data. We removed dispensers’ and patients’ identifying details and counted the amount dispensed for each drug formulation during both periods. To display laxative dispensation figures in meaningful and comparable units, we converted the total amount dispensed into the total number of Defined Daily Doses (DDD) as specified by the World Health Organization Collaborating Centre for Drug Statistics Methodology (WHO CCDSM).<sup>17</sup> DDD is the average maintenance dosing per day for a medication that allows for a stable drug utilisation metric, enabling comparison between different medication preparations, countries, regions and other healthcare settings.

Psyllium husk, docusate and Laxsol® were analysed differently. At CCDHB, psyllium husk requires nursing staff to enter the dose in grams into the Pyxis MedStation™. During analysis, we found that the values entered did not correlate to meaningful doses. Psyllium was therefore measured by the count of dispensation events regardless of amount, i.e., each dispensation was counted as one DDD, as psyllium is most often dosed once daily. For docusate, the WHO CCDSM DDD is 150mg, but it was available in 50mg and

120mg strength tablets in New Zealand. We therefore calculated the DDD for docusate by dividing the total number of milligrams dispensed by 150. Finally, the combination product Laxsol® is not included in the WHO CCDSM database, so we used The New Zealand Formulary's recommended daily dose of two tablets.<sup>18</sup> The DDDs we utilised are displayed in Table 1.

A statistician assisted with data analysis; tests of significance were not required because dispensation data were complete.

### Ethical considerations

CCDHB's local Research Office approved this study. The authors did not receive any funding and report no financial conflicts of interest.

### Results

Data were obtained for 14 adult wards across both hospitals. During the pre-implementation period, 111,771 DDDs were dispensed, 42,750 (38%) of which were preferred laxatives (Table 2). The most commonly dispensed laxatives were docusate-based products: docusate and Laxsol®, which accounted for 58% of all laxatives.

During the post-implementation period, 91,005 DDDs were dispensed, 74,547 (82%) of which were preferred laxatives. The most commonly dispensed laxative was lactulose, which accounted for 30% of all laxatives.

### Comparison of laxatives dispensed before and after the intervention

Following the intervention, the ratio of non-preferred-to-total laxatives dispensed decreased from 61.8% to 18.1%. There was a reduction in the DDD of all non-preferred laxatives: docusate-based products from 64,863 to 14,950, sodium-phosphate enemas from 1,222 to 343, glycerol suppositories from 1,596 to 1,025 and sodium-citrate enemas from 1,340 to 140. Comparably, the ratio of preferred-to-total laxatives dispensed increased from 38.2% to 81.9%. There was an increase in the DDD of all preferred laxatives except lactulose: macrogol from 11,471 to 24,874, lactulose from 28,641 to 26,897, bisacodyl-based products from 444 to 18,451, paraffin mineral oil enemas from 6 to 1,344, and methylnaltrexone from 2 to 190. See Table 2 for details of the type and number of laxatives dispensed during both periods, noting that DDDs were rounded to the nearest whole number.

### Comparison of lactulose doses dispensed before and after the intervention

Following the intervention, dispensations of the preferred dose of lactulose of 15mL increased from 12% to 28%. There was a reduction in suprathreshold doses  $\geq 20\text{mL}$ /dispensation. See Table 3 for details of lactulose doses dispensed.

### Discussion

This study evaluated laxative prescribing habits and the impact of a system-wide intervention in reducing the use of ineffective and potentially harmful agents for constipation in two hospitals in New Zealand. The evaluation identified that most dispensations (61.8%) were accounted for by non-preferred laxatives, which was a problem. However, this percentage dropped to 18.1% following the intervention, which is promising. We now discuss the challenges and facilitators of changing laxative prescribing habits.

There were multiple barriers to the development and implementation of the constipation programme. There was limited research on inpatient laxative use and the treatment of acute constipation. In addition, many guidelines contained inaccurate information. For example, some guidelines defined acute inpatient constipation according to the ROME criteria for chronic constipation, which requires 3 to 6 months of symptoms.<sup>19</sup> Other guidelines defined constipation according to the number of days without a bowel movement, despite the well-known variability among individuals. As a result, an extensive literature review was required, with continuing consultation with various stakeholders and experts, followed by the development of new guidelines and educational material.

Another challenge was to change health professionals' misconceptions about certain laxatives. Our experience is in keeping with the findings of other studies where prescribers commonly regarded docusate as a safe and effective laxative.<sup>20,21</sup> Indeed, docusate-based products were the most frequently dispensed laxatives in this study and in other hospitals.<sup>9,10,21</sup> This is not surprising, given the number of guidelines endorsing docusate-based products despite increasing evidence of ineffectiveness. To counteract this, a group of practitioners removed docusate from their hospital formulary, resulting in a 74% decrease in the number of patients discharged on it.<sup>20</sup> We did not restrict the use of docusate, to avoid sudden changes to patients' regular medications. Instead,

we advocated for effective alternatives, leading to a nearly 77% drop (from 64,863 to 14,950) in dispensing of docusate-based products. Similarly, a large health organisation used a communication tool with live webinars to reduce docusate use by 54.9% while saving approximately 940 hours of nursing time over 18 months.<sup>22</sup> Education and communication thus appear effective at changing laxative prescribing habits.

Another misconception we encountered was that phosphate-based products were the ultimate solution to severe constipation and faecal impaction. Again, we addressed this through education on their potential adverse effects, the numerous contraindications to their use and the lack of evidence supporting their use for constipation.<sup>12-14</sup> We also removed these agents from non-surgical wards, given the potential for serious harm, resulting in a 72% reduction in their use. A similar approach was taken in another hospital that utilised education and removed phosphate-based products from the emergency department following several significant adverse effects, thus reducing their use by 96%.<sup>23</sup>

Another challenge worth mentioning is the difficulties securing supplies and storing mineral oil enemas. Supplies had to be brought in from overseas, their relatively large size prevented storage within dispensing machines and they were relatively expensive. Given these difficulties, we recommend looking for an alternative lubricant for faecal impaction, because the evidence supporting their use is merely based on expert opinion.

Facilitators of implementation included leadership support and involvement of stakeholders from various disciplines and levels in the development and implementation of the programme. Another facilitator was the written guideline with referenced articles supporting arguments for change. These arguments for change were communicated during our educational sessions as follows: osmotic laxatives were favoured for inpatients given their low cost, excellent safety profile and proven effectiveness among various patient groups for extended periods.<sup>13</sup> Macrogol-based products were favoured over lactulose, given superior effectiveness and tolerability in head-to-head trials.<sup>24,25</sup> Prescribers were advised that lactulose is effective and well-tolerated when prescribed at lower doses than commonly seen in our hospitals.<sup>26</sup> Bisacodyl was favoured over sennoside as it can be

administered either orally or rectally, has superior evidence in acute and chronic constipation, and because sennoside is only subsidised in combination with docusate in New Zealand.<sup>27,28</sup> Methylal-trexone was introduced as a new agent that has been approved for palliative patients with opioid-induced constipation resistant to traditional laxatives.

This study has strengths. Data on dispensed drugs were gathered from all available sources in collaboration with two pharmacists. The study adds to limited research on laxative prescribing habits within hospital settings. It also demonstrates that low-cost interventions can successfully shift prescribing habits.

This study has limitations. It is an observational study that does not establish causation between the intervention and the change achieved. It did not assess the aetiology of inpatient constipation. It assessed the dispensation of laxatives rather than consumption. In addition, data on prunes, kiwifruit and Kiwi Crush™ were unavailable as these were dispensed from the hospital kitchen.

## Conclusion

This study provided information on laxative-prescribing habits within the hospital setting and how to improve these habits. By introducing a constipation programme and education, we successfully increased the use of recommended laxatives and reduced the use of ineffective and potentially harmful agents. To raise awareness, celebrate achievements and sustain the intervention, a series of all-staff emails were sent out. Each email relayed brief messages on a specific laxative and how this intervention affected its use.

Of note is the widespread use of ineffective and potentially harmful agents for constipation in our hospital and other studies. While we have taken steps to improve the situation, recent data shows that Laxsol® made the top 20 list of community medicines in New Zealand, with 570,000 funded prescriptions dispensed in 2022 alone.<sup>29</sup> This inspires the need to disseminate the intervention beyond the hospital setting and help unify prescribing across primary and tertiary care. Ultimately, we recommend incorporating teaching about constipation and laxatives at medical and nursing schools and studying the effects of similar programmes on patient-related outcomes.

**COMPETING INTERESTS**

Nil.

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