JPPT | Research Letter

Evaluation of Patient-Driven Constipation Action Plans for Patients Discharged From a Pediatric Hospitalist Service

Zachary Kiss, PharmD; Andrew Allison, PharmD, BCPPS; and Melissa Knopp, PharmD, BCPPS

ABBREVIATION GI, gastrointestinal

KEYWORDS constipation; laxative; pediatrics; pharmacy; polyethylene glycol

J Pediatr Pharmacol Ther 2025;30(3):384–386

DOI: 10.5863/JPPT-24-00115

Constipation is a common gastrointestinal (GI) disorder among pediatric patients, and is associated with an increase in health care utilization.[1,2] Management of constipation poses challenges due to diverse physiologic and psychologic factors associated with childhood development.[3,4] The European Society for Paediatric Gastroenterology, Hepatology and Nutrition and the North American Society for Pediatric Gastroenterology, Hepatology and Nutrition recommend polyethylene glycol as the preferred first-line pharmacologic therapy for the maintenance treatment of constipation.[2]

This study serves as an extension of a prospective clinical study from the same institution, Allison et al,[5] that evaluated the implementation of patient-specific, pharmacist-driven constipation action plan and found the implementation to be associated with decreased health care utilization. For this study, emphasis on patient-driven care was the focus, with the intention for patients and caregivers to actively participate in health care decisions. With a standardized action plan, caregivers and patients followed an outlined treatment approach to prevent constipation recurrence.

The purpose of this prospective, single-center study is to investigate and analyze the application of a standardized, patient-driven constipation action plan for patients discharged from the pediatric hospital service at a large academic medical center. Patients included in the study were 2 to 18 years of age who weighed ≥ 10 kg, admitted to a pediatric hospitalist service for a primary concern of constipation, and prescribed polyethylene glycol at hospital discharge.

Three standardized action plans were developed based on weight cohorts (10 kg to < 25 kg, 25 kg to < 40 kg, and ≥ 40 kg) for all enrolled patients by a study pharmacist (Figure 1). These action plans differed in polyethylene glycol starting dose, frequency, titration suggestions, and second-line pharmacologic therapy. Passing one bowel movement daily was considered the baseline goal for all enrolled patients and could be adjusted based on patient-specific factors and caregiver input, or by the study pharmacist. Patients or caregivers titrated polyethylene glycol based on the patient's reported number of daily bowel movements, or lack thereof, and consistency of stool.

After hospital discharge, caregivers were contacted every other week by telephone for a total of 4 encounters by a study pharmacist to discuss the patient's polyethylene glycol dose, adherence to action plan, and reported bowel habits. Pharmacist-specific recommendations were provided only in emergency situations or per caregiver-specific request.

The primary outcome was to determine the effect of a standardized patient-driven constipation action plan on the rate of health care utilization for concerns of constipation. Health care utilization was defined as a hospital admission, emergency department visit, GI specialist visit, caregiver-requested or scheduled acute care office visit, or urgent care visit. The secondary outcome for this study was to identify the average number of daily bowel movements in relation to compliance with the action plan.

Nine patients (5 female) were enrolled between October 2023 and April 2024. Patient age and body weight were a median of 6 years (range, 3–14) and 23.7 kg (range, 17.4–69.4), respectively. Follow-up duration after study enrollment ranged from 50 to 67 days. For enrolled patients, 27 health care utilization encounters occurred in total, including admission at time of enrollment, in the year before study enrollment (approximately 2.25 encounters monthly). Patients had 5 total health care utilization encounters after implementation of the action plans (approximately 2.5 encounters monthly). The median number of daily bowel movements before and after implementation of the action plans increased from 0.43 (range, 0.14–2) to 1 (range, 1–2). Stool consistency reported throughout the study follow-up period is illustrated in Figure 2. The final reported median daily weight-based polyethylene glycol dose was 0.5 g/kg/day (range, 0.16–1.08).

Figure 1. Standardized patient-driven constipation action plan example (25 kg to < 40 kg).

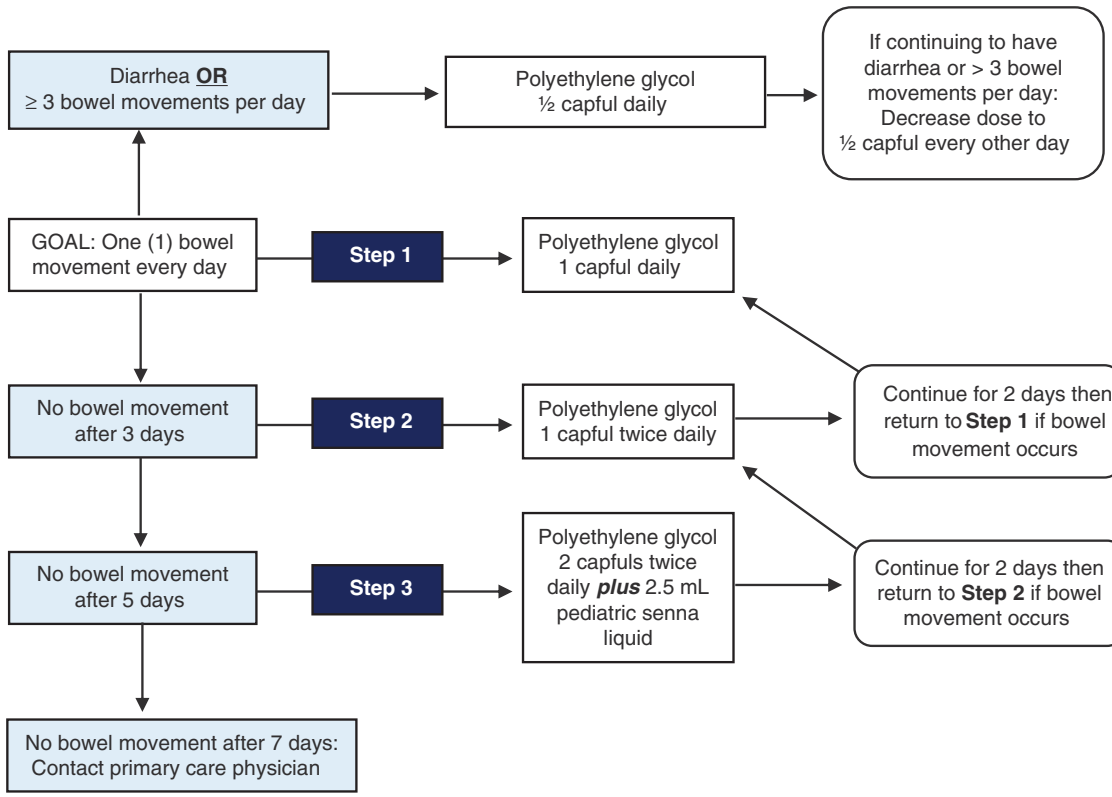
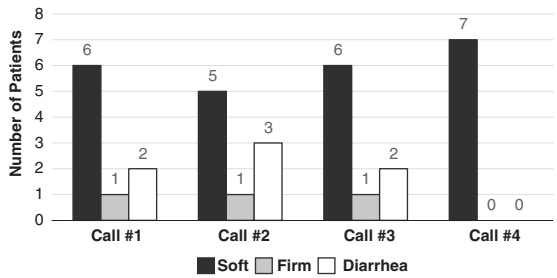


Figure 2. Reported stool consistency from pharmacist telephone encounters.



All patients required an intervention during the follow–up period, with a median of 3 dose adjustments per patient (range, 1–10). Thirty-six dose adjustments were required throughout the entire follow-up period, of which, thirteen were driven solely by the action plan and seventeen were implemented by the caregivers without pharmacist consultation based on action plan recommendations.

Our study found that health care utilization was not lower after the implementation of a standardized, patient-driven constipation action during the post-implementation follow-up period, despite improvement in the median number of daily bowel movements and stool consistency. The health care utilization post-implementation data are suggested to be skewed due to the short duration of follow-up, with approximately 2 available months of post-implementation data to compare to 1 year of baseline data. In addition, the study enrollment timeline was also significantly impacted due to hospital admission trends of the 2023–2024 respiratory syncytial virus season.

Future research should evaluate adjusted designations for the standardized constipation action plans and their need for health care utilization and post-discharge stool frequency and consistency achievement.

Article Information

Affiliations. Department of Pharmacy (ZK, AA, MK), WVU Medicine Children's Hospital, Morgantown, WV.

Correspondence. Zachary A Kiss, PharmD; zacharykiss101@gmail.com

Disclosures. The authors declare no conflicts or financial interest in any product or service mentioned in the manuscript, including grants, equipment, medications, employment, gids, and honoraria. The authors had full access to all the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis. All authors attest to meeting the 4 criteria recommended by the ICMJE for authorship of this manuscript. Dr Kiss is now the Pediatric Neurology/Surgery

Specialist, Department of Pharmacy Services, Children's National, Washington, DC.

Ethical Approval and Informed Consent. The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national guidelines on human experimentation and have been approved by the appropriate committees at our institution. All patients and/or caregiver(s) provided written informed consent at enrollment.

Acknowledgments. The authors thank the Pediatric Hospitalist physicians, residents, and nurses at WVU Medicine Children's Hospital for their assistance and collaboration in the discharge process associated with the research conducted. Preliminary results were presented at the PPA Annual Meeting, Resident Project Presentations in Minneapolis, MN, on May 2, 2024.

Submitted. October 23, 2024

Accepted. November 25, 2024

References

1. Mugie SM, Benninga MA, Di Lorenzo C. Epidemiology of constipation in children and adults: a systematic review. *Best Pract Res Clin Gastroenterol*. 2011;25:3–18.
2. Tabbers MM, DiLorenzo C, Berger MY, et al. Evaluation and treatment of functional constipation in infants and children: evidence-based recommendations from ESPGHAN and NASPGHAN. *J Pediatr Gastroenterol Nutr.* 2014;58(2):258–274.
3. Koppen IJN, Lammers LA, Benninga MA, Tabbers MM. Management of functional constipation in children: therapy in practice. *Paediatr Drugs*. 2015;17:349–360.
4. Sandweiss DR, Allen L, Deneau M, et al. Implementing a standardized constipation-management pathway to reduce resource utilization. *Acad Pediatr*. 2018;18(8):957–964.
5. Allison A, Sweet C, Knopp M. Implementation of a constipation action plan for patients discharged from a pediatric hospitalist service. *J Pediatr Pharmacol Ther*. 2021;26(7):718–722.