

## Best Evidence Statement (BEST)

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**Title:** Preadmission clear liquid diet in pediatric inpatient bowel preparations

### Clinical Question

P (population/problem) Among pediatric patients admitted for bowel preparation,  
I (intervention) will a clear liquid diet initiated 24 hours prior to admission,  
C (comparison) versus no preadmission dietary restriction,  
O (outcome) result in decreased length of time for bowel preparation, decreased number of invasive interventions, and increased patient/parent satisfaction?

**Target Population:** Patients aged 0-21 years admitted for bowel preparations for elective procedures.

### Recommendation:

There is insufficient evidence (especially when considering length of preparation, number of invasive interventions, and satisfaction) and lack of consensus to make a recommendation on the use of a clear liquid diet over a regular diet 24 hours prior to admission for pediatric inpatient bowel preparation.

### Research Agenda:

Therefore, it is recommended that research be done to investigate the ideal preadmission diet for pediatric patients admitted for bowel preparations.

*Relevant CCHMC policies / procedures.*

[V-352 Bowel Prep for Colorectal Patients](#)

### Discussion/summary of evidence

No studies directly tested a clear liquid diet against a regular diet in a head-to-head trial. No studies examined inpatient bowel preparations, and only one study (Trautwein, Vinitzki, & Peck, 1996 [2b]) involved a pediatric population.

Although evidence specifically related to the use of a clear liquid diet prior to bowel prep is difficult to interpret, evidence indicates that dietary restriction as an adjunct to bowel preparation results in superior quality of cleansing compared with a lack of dietary restriction (Kendrick, MacKenzie, & Beckly, 1981 [4a]; Lee & Ferrando, 1984 [2a]; Modi, et al., 2009 [3a]).

Outcomes sought in the PICO question were generally not addressed. Length of preparation was measured in one study (DiPalma, et al., 1984 [2a]), and invasive interventions were measured in another (Kruss, DeBartolo, Livak, & Serlovsky, 1985 [2b]), but comparisons could not be made between groups in either study because of study design issues. Satisfaction was not included as an outcome variable in any of the studies. The literature review did not reveal one specific diet or combination of diets as clearly better than any other in terms of quality of cleansing, compliance, tolerability, or adverse experiences.

Dietary restrictions varied in duration and type of diet allowed. Duration of restriction ranged from no restriction (Kendrick, et al., 1981 [4a]; Lee & Ferrando, 1984 [2a]) to a three-day restriction (DiPalma, et al., 1984 [2a]; Kember, McBride, Tweed, & Collins, 1995 [2a]), with the remaining studies falling between the two extremes. Several types of diet were studied, either alone or in combination. These include a regular diet (Kember, et al., 1995 [2a]; Kendrick, et al., 1981 [4a]; Lee & Ferrando, 1984 [2a]; Modi, et al., 2009 [3a]; Sandford, Sincock, & Bampton, 2005 [2b]; Scott, Raymond, Thompson, & Galt, 2005 [2a]), a low-residue diet (DiPalma, et al., 1984 [2a]; Kember, et al., 1995 [2a]; Kendrick, et al., 1981 [4a]; Lee & Ferrando, 1984 [2a]; Park, et al., 2009 [2a]; Rapier & Houston, 2006 [2a]; Sandford, et al., 2005 [2b]; Scott, et al., 2005 [2a]), a full liquid diet (Kendrick, et al., 1981 [4a]; Lee & Ferrando, 1984 [2a]; Trautwein, Vinitzki, & Peck, 1996 [2b]), and a clear liquid diet (DiPalma, et al., 1984 [2a]; Kember, et al., 1995 [2a]; Modi, et al., 2009 [3a]; Park, et al., 2009 [2a]; Rapier & Houston, 2006 [2a]; Sandford, et al., 2005 [2b]; Scott, et al., 2005 [2a]; Trautwein, et al., 1996 [2b]).

The grade for this body of evidence is **not assignable** due to inconsistency between outcomes sought in the PICO question and outcomes measured in the literature. Inconsistency in the type and duration of diets tested further precludes assignment of a grade to the body of evidence.

### Health Benefits, Side Effects and Risks

Health benefits, side effects, and risks are unclear based on the available evidence.

### References/citations

- Breckler, F. D., Fuchs, J. R., & Rescorla, F. J. (2007). Survey of pediatric surgeons on current practices of bowel preparation for elective colorectal surgery in children. *American journal of surgery*, 193(3), 315-318. [4a]
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- Sandford, J., Sincock, J., & Bampton, P. (2005). Effect of low residue diet on bowel preparation. *Journal of the Gastroenterological Nurses College of Australia*, 15(1), 15-17. [2b]

Scott, S. R., Raymond, P. L., Thompson, W. O., & Galt, D. J. B. (2005). Efficacy and tolerance of sodium phosphates oral solution after diet liberalization. *Gastroenterology Nursing : the official journal of the Society of Gastroenterology Nurses and Associates*, 28(2), 133-139. [2a]

Trautwein, A. L., Vinitiski, L. A., & Peck, S. N. (1996). Bowel Preparation Before Colonoscopy in the Pediatric Patient: A Randomized Study. *Gastroenterology Nursing*, 19(4), 137-139. [2b]

Note: Full tables of evidence grading system available in separate document:

- [Table of Evidence Levels of Individual Studies by Domain, Study Design, & Quality](#) (abbreviated table below)
- [Grading a Body of Evidence to Answer a Clinical Question](#)
- [Judging the Strength of a Recommendation](#) (abbreviated table below)

**Table of Evidence Levels** (see note above)

<i>Quality level</i>	<i>Definition</i>
1a† or 1b†	Systematic review, meta-analysis, or meta-synthesis of multiple studies
2a or 2b	Best study design for domain
3a or 3b	Fair study design for domain
4a or 4b	Weak study design for domain
5	Other: General review, expert opinion, case report, consensus report, or guideline

†a = good quality study; b = lesser quality study

**Table of Recommendation Strength** (see note above)

<i>Strength</i>	<i>Definition</i>
“Strongly recommended”	There is consensus that benefits clearly outweigh risks and burdens (or visa-versa for negative recommendations).
“Recommended”	There is consensus that benefits are closely balanced with risks and burdens.
No recommendation made	There is lack of consensus to direct development of a recommendation.

**Dimensions:** In determining the strength of a recommendation, the development group makes a considered judgment in a consensus process that incorporates critically appraised evidence, clinical experience, and other dimensions as listed below.

1. Grade of the Body of Evidence (see note above)
2. Safety / Harm
3. Health benefit to patient (*direct benefit*)
4. Burden to patient of adherence to recommendation (*cost, hassle, discomfort, pain, motivation, ability to adhere, time*)
5. Cost-effectiveness to healthcare system (*balance of cost / savings of resources, staff time, and supplies based on published studies or onsite analysis*)
6. Directness (*the extent to which the body of evidence directly answers the clinical question [population/problem, intervention, comparison, outcome]*)
7. Impact on morbidity/mortality or quality of life

## Supporting information

### Introductory/background information

Current clinical practice and guidelines for pediatric bowel preparation are largely taken from research done in adult populations. However, the pediatric population has several unique characteristics making it desirable to study children separately from adults on this subject. Children requiring bowel preparation are often admitted for the procedure. A recent survey of pediatric colorectal surgeons (Breckler, Fuchs, & Rescorla, 2007) showed that over 90% use polyethylene glycol-electrolyte (PEG-E) solution (also known as Golytely, or its sulfate-free cousin, Nulytely) to prepare their patients for surgery. Because of the large

volume required in this type of cleanout, PEG-E is most often administered via a nasogastric tube in children. With continuous infusion of the cleansing agent and the ability to monitor stool output, these bowel preparations are administered until the patient passes “clear” stool (i.e., light yellow or clear fluid that is free from solid pieces or sediment). If the patient does not pass “clear” stool by the time they are required to take nothing by mouth (NPO), nurses must employ more invasive means of removing stool. At CCHMC, this takes the form of a rectal irrigation. A long, flexible tube is passed into the rectum, and 0.9% Sodium Chloride solution (Normal Saline) is instilled and then removed from the distal colon along with whatever fecal material is present. In a typical irrigation, the nurse instills approximately 30 milliliters of normal saline at a time to a maximum of 20 milliliters per kilogram. Irrigations are repeated hourly until clear stool is obtained at the beginning of an irrigation.

### **Group/team members**

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### **Search strategy**

The following search terms were used in multiple combinations: bowel preparation, bowel prep, bowel cleansing, colon preparation, colon prep, colon cleansing, clear liquid diet, clear liquids, clears, and diet.

Databases searched: Ovid Medline, Ovid CINAHL, Ovid EBM reviews, National Guidelines Clearinghouse, Up to Date, NACHRI electronic mailing list.

Initially, the search was limited to pediatric studies within the past 15 years, but was later expanded to include adult studies and literature as early as 1960. Additional filters used were “humans” and “English language.”

Copies of this Best Evidence Statement (BEST) are available online and may be distributed by any organization for the global purpose of improving child health outcomes. Website address: <http://www.cincinnatichildrens.org/svc/alpha/h/health-policy/ev-based/default.htm>

Examples of approved uses of the BEST include the following:

- copies may be provided to anyone involved in the organization’s process for developing and implementing evidence based care;
- hyperlinks to the CCHMC website may be placed on the organization’s website;
- the BEST may be adopted or adapted for use within the organization, provided that CCHMC receives appropriate attribution on all written or electronic documents; and
- copies may be provided to patients and the clinicians who manage their care.

Notification of CCHMC at [HPCEInfo@cchmc.org](mailto:HPCEInfo@cchmc.org) for any BEST adopted, adapted, implemented or hyperlinked by the organization is appreciated.

*Additionally for more information about this Best Evidence Statement and the development process, contact the Center for Professional Excellence/Research and Evidence-based Practice office at [CPE-EBP-Group@cchmc.org](mailto:CPE-EBP-Group@cchmc.org)*

### **Note**

**This Best Evidence Statement addresses only key points of care for the target population; it is not intended to be a comprehensive practice guideline. These recommendations result from review of literature and practices current at the time of their formulation. This Best Evidence Statement does not preclude using care modalities proven efficacious in studies published subsequent to the current revision of this document. This document is not intended to impose standards of care preventing selective variances from the recommendations to meet the specific and unique requirements of individual patients. Adherence to this Statement is voluntary. The clinician in light of the individual circumstances presented by the patient must make the ultimate judgment regarding the priority of any specific procedure.**

**Reviewed against quality criteria by two independent reviewers**