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Optimizing Bowel Preparation for Colonoscopy: Insights from the USMSTF

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COLON

This summary reviews Jacobson BC, Anderson JC, Burke CA, et al. Optimizing Bowel Preparation Quality for Colonoscopy: Consensus Recommendations by the US Multi-Society Task Force on Colorectal Cancer. Am J Gastroenterol. 2025;120(4):738-64.

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STRUCTURED ABSTRACT

Questions:

Pre-Colonoscopy. What pre-colonoscopy interventions can enhance bowel preparation adequacy? How should bowel purgatives and adjuncts be selected to optimize preparation quality?

During Colonoscopy. What techniques can improve bowel preparation quality during colonoscopy? How should bowel cleanliness be assessed and reported?

Post-Colonoscopy. What is an appropriate bowel preparation adequacy rate? What strategies should be used to manage high-risk patients for inadequate bowel preparation?

Design: A panel of content experts formulated clinical questions using the Patient, Intervention, Comparison, and Outcomes (PICO) framework. Research

librarians conducted a literature review search across EMBASE, PubMed, Cochrane Reviews, and the Cochrane Central Register of Controlled Clinical Trials from January 2013 to September 2023.

The United States Multi-Society Task Force (USMSTF) includes 3 representatives from each of the following societies: The American College of Gastroenterology (ACG), the American Gastroenterology Association (AGA), and the American Society for Gastrointestinal Endoscopy (ASGE). Leadership from all 3 organizations reviewed the recommendations, which were subsequently approved by each society's governing board.

As the statements were developed through expert consensus rather than the traditional guideline development process, they are designated as "Recommendations" rather than "Guidelines." Additionally, key concepts were established based on expert consensus for topics where evidence-based recommendations could not be formulated.

Patients: Outpatients at low risk for inadequate bowel preparation.

Outcome: Improved bowel preparation quality enhances colonic mucosa visualization, facilitates precancerous lesion detection, and optimizes colorectal cancer monitoring.

Data Analysis: Recommendations were created by an expert consensus as described above. A literature review was conducted to develop recommendations. The quality of evidence supporting each recommendation was also assessed. Strong recommendations indicate that most patients should be managed accordingly and are typically associated with high or moderate-quality evidence from well-designed clinical trials and systematic reviews. In contrast, weak recommendations serve as suggestions due to limited evidence or a smaller clinical impact and are generally based on low or very low-quality evidence. When evidence-based recommendations could not be formulated, key concept statements were developed through expert consensus.

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Summary: Authors recommend assessing a patient's medical history, including prior bowel preparation adequacy, to help predict preparation quality. Adherence to instructions is crucial and should be reinforced through written and verbal guidance, along with patient navigation. Dietary restrictions should be limited to the day before the procedure. Preparation regimens should be tailored to medical history, patient preference, and comorbidities, with a preference for low-volume (≤2 L) solutions to improve tolerability.[1] Split-dose preparation is preferred, except for afternoon colonoscopies.

Oral simethicone is recommended to enhance visibility by reducing bubble formation, thereby improving procedural quality. The lowest effective dilution (e.g. 0.5 mL simethicone in 99.5 mL water) at a minimum dose of 320 mg should be used and administered only through an instrument channel that undergoes routinely brushing during endoscope reprocessing. The routine use of other adjuncts is not advised.

When inadequate bowel preparation is suspected, confirmation should be made by assessing preparation quality to the sigmoid colon. Bowel cleanliness should be evaluated and clearly described following endoscopist cleansing maneuvers. Endoscopists should employ strategies to enhance visualization, such as irrigation pumps, same-day rescue therapy, and the lowest effective dilution of simethicone. The term "adequate" preparation should be reserved for cases when standard surveillance intervals can be assigned based on examination findings.

Following colonoscopy, bowel preparation adequacy rates should be tracked at the level of the individual endoscopist and the endoscopy unit, with a target of at least 90%. This includes procedures cancelled for presumed inadequate preparation. Significant differences in adequacy rates may indicate deficiencies in cleansing methods during colonoscopy or inconsistencies in assessing preparation quality. When bowel preparation is insufficient for standard screening or surveillance, repeat colonoscopy should be performed within 12 months, or sooner for patients with alarm symptoms or positive non-endoscopic colorectal cancer screening tests.

For patients with a history of inadequate preparation or those at high risk, proactive interventions should be implemented to augment bowel cleansing. These may include improved patient communication, stricter dietary limitations, use of promotility agents, and methods to prevent constipation. High-risk patients should begin dietary modifications 2-3 days prior and consume 4L PEG-ELS with 15 mg

of bisacodyl the afternoon before. If visualization of the ascending or transverse colon is poor but the remainder of the colonic mucosa is well visualized, the procedure should be considered equivalent to flexible sigmoidoscopy, with repeat screening recommended in 5 years or via non-endoscopic methods.

USMSTF recommendations are listed in Table 1 along with the strength of recommendation and quality of evidence.

Table 1. USMSTF Recommendations

Recommendation	Strength of Recommendation	Quality of Evidence
RECOMMENDATIONS PRE-COLONOSCOPY		
Patient Education and Navigation		
1. Provide both verbal and written instructions of colonoscopy preparation.	Strong	High
2. Use patient navigation (e.g. telephone calls, electronic messaging) to improve bowel preparation quality.	Weak	Moderate
Dietary Modifications		
3. Limit dietary modifications to the day before colonoscopy.	Strong	High
4. Use low-residue and low-fiber foods or full liquids for early/ midday meals on the day before colonoscopy with split-dose bowel preparation.	Strong	High
Bowel Preparation Purgatives		
5. No single bowel preparation purgative is considered superior.	Strong	High
6. Low volume, 2 L bowel regimens are preferred to higher volume, 4 L preparations.	Weak	Moderate
7. Consider medical history, medications, and prior preparation adequacy when selecting a regimen.	Strong	Moderate
8. Avoid hyperosmotic regimens in individuals at risk for volume overload or electrolyte imbalances.	Strong	High
Dosing and Timing of Bowel Preparation Regimens		
9. Split-dose preparations are recommended for all patients.	Strong	High
10. Same-day preparation rather than split-dose is acceptable for afternoon colonoscopies.	Strong	High
11. Same-day regimen is inferior to split dosing for morning colonoscopies.	Weak	Low
12. The second dose in split preparations should start 4–6 h before the procedure and finish at least 2 h prior.	Strong	Moderate
Adjuncts for Bowel Preparation		
13. Oral simethicone is suggested as an adjunct to bowel preparation regimens.	Weak	Moderate
14. The routine use of non-simethicone adjuncts is not recommended.	Weak	Low

Table 1 (Continued). USMSTF Recommendations

Recommendation	Strength of Recommendation	Quality of Evidence
RECOMMENDATIONS DURING COLONOSCOPY		
Assessing Bowel Preparation		
15. When there is suspicion for incomplete adherence to the bowel preparation regimen, advance the colonoscope to the sigmoid colon to confirm inadequacy before aborting the procedure.	Weak	Low
16. Assess bowel preparation quality only after all washing and suctioning, using clear descriptors.	Very Low	Conditional
17. “Adequate bowel preparation” should indicate that standard screening or surveillance intervals are appropriate.	Strong	Moderate
Improving Bowel Preparation Quality After Colonoscope Insertion		
18. Use irrigation pumps routinely to assist with bowel preparation.	Weak	Very low
19. Implement same-day salvage maneuvers when possible.	Weak	Moderate
RECOMMENDATIONS POST-COLONOSCOPY		
Bowel Preparation Adequacy Rate as a Quality Measure		
20. Track the rate of adequate bowel preparations at both the level of the endoscopist and the endoscopy unit.	Strong	Moderate
21. Target ≥90% adequacy rate for both individual endoscopists and endoscopy units.	Strong	Moderate
Management of Patients with Inadequate and Non-Salvageable Bowel Preparation		
22. Reschedule colonoscopy within 12 m for screening or surveillance, and as soon as possible for abnormal non-colonoscopic colorectal cancer screening tests.	Strong	Moderate
23. Modify the regimen by communicating instructions; using patient navigators; implementing dietary restrictions days prior and clear liquids the day before; promotility agents; treating constipation; holding constipating medications; and using high-volume regimens.	Strong	Moderate
Bowel Preparation for Patients at High Risk for Inadequate Bowel Preparation		
24. Manage individuals at high risk for inadequate bowel preparation quality similarly to those with prior inadequate bowel preparation.	Strong	Moderate
25. For high-risk patients, prescribe split-dose 4 L PEG-ELS + 15 mg bisacodyl the afternoon before, a low-residue diet 2-3 d prior, and clear liquids the day before.	Weak	Low

PEG-ELS: polyethylene glycol-electrolyte lavage solution.

COMMENTARY

Why Is This Important?

High-quality colonoscopy is essential for evaluation of the colon, such as detecting and monitoring precancerous lesions. Suboptimal bowel preparation decreases colonoscopy efficacy and is associated with significant adenoma and advanced adenoma miss rates.[2] These recommendations update the 2014 USMSTF recommendations on optimizing bowel preparation for colonoscopy. Over the last decade, significant advancements have been made to improve bowel cleansing adequacy, patient tolerability, and procedural outcomes. In addition, many new bowel purgative options continue to emerge. Updated recommendations emphasize split-dose low-volume (≤2 L) regimens, which provide bowel preparation quality comparable to higher volume solutions while offering better tolerability. These regimens have been shown to increase adenoma and potentially sessile serrated lesion detection rates, ultimately improving the effectiveness of colorectal cancer screening and surveillance.[3,4,5,6]

Key Study Findings

Updated USMSTF recommendations emphasize a patient-centered approach that promoting split-dose regimens (except for patients undergoing afternoon colonoscopies) and greater flexibility in dietary modifications.

Bowel preparation purgative options have expanded, favoring low-volume (≤2 L) solutions for improved tolerability. The use of oral simethicone is now supported by evidence to improve visualization, while other adjuncts should be avoided.

The term "adequate bowel preparation" should refer to a colonoscopy of sufficient quality to allow for the application of standard screening or surveillance intervals. A benchmark of ≥90% adequate bowel preparation rates is suggested for both individual endoscopists and endoscopy units to improve colonoscopy quality and detection rates. Additionally, innovations such as patient navigators, enhanced instructional methods, and artificial intelligence-driven tools have been introduced to further optimize bowel preparation quality.

Caution

The key concepts are expert panel suggestions and some recommendations are not supported by substantial evidence. They should be applied to patients on an individual basis when managing bowel preparation for colonoscopy.

My Practice

My approach for optimizing bowel preparation for colonoscopy includes prescribing low-volume, split-dose regimens to enhance patient compliance and preparation quality, reserving full-dose regimens for afternoon colonoscopies, which still demonstrate effective cleansing. To minimize ambiguity in bowel preparation assessment, I prefer

standardized scoring systems with clear descriptors, such as the one used in the New Hampshire Colonoscopy Registry scale.[7] Scales with clear descriptions allow for endoscopists as well as other physicians reading the note to determine whether the bowel preparation was adequate.

When inadequate bowel preparation is suspected, I confirm that the quality is inadequate by endoscopically examining the distal colon before cancelling the procedure. I also document inadequate preparation with photographs of poorly cleansed segments for improvement efforts. While salvage therapies, such as enemas, may provide additional cleansing, logistical constraints often limit reassessment.

During the colonoscopy, I perform thorough cleaning maneuvers, utilizing a vigorous water exchange approach. The use of copious water infusion in exams with residual stool can help improve the quality. I also find that removing the suction button helps to increase the rate of aspiration, making sure that I point the handle down to avoid splattering. Finally, if I snare a polyp, I will leave the snare in the biopsy channel to avoid clogging.

Bowel preparation adequacy rates are routinely tracked at our endoscopy unit to drive quality improvement. When patients present with inadequate bowel preparation despite additional cleansing efforts, we will reschedule, ideally for next-day colonoscopy. However, scheduling conflicts often preclude same-day colonoscopy completion with additional purgatives. To mitigate these issues, I proactively identify high-risk patients before their procedures, ensuring early interventions through patient navigation, enhanced communication, and reinforcement of preparation instructions. Although not preferred, for average risk patients with repeated inadequate preparation, I discuss alternative colorectal cancer screening options.

For Future Research

Future research should explore strategies to enhance bowel preparation adequacy while maintaining the improved patient tolerability of low-volume, split-dose regimens.[1,8,9,10] This includes the use of novel adjuncts to optimize cleansing with smaller solution volumes. Further research is needed to evaluate the clinical impact of simethicone and its efficacy when combined with other bowel regimens. As our understanding of GLP-1 receptor agonists evolves, the approach to pre-procedure management of patient's using these medications should be refined.

In addition, data on same-day dosing of morning colonoscopies remain limited and warrants investigation. Identifying patients at high risk for inadequate bowel preparation is essential, and artificial intelligence-based tools may play a key role in this effort. Some have already been developed to evaluate bowel

preparation quality by analyzing photographs of stool before the procedure.[11]

Conflict of Interest

The authors have no reported conflicts of interest.

Abbreviations

ACG, American College of Gastroenterology; AGA, American Gastroenterology Association; ASGE, American Society for Gastrointestinal Endoscopy; PEG-ELS, polyethylene glycol-electrolyte lavage solution; PICO, Patient, Intervention, Comparison, and Outcomes; USMSTF, United States Multi-Society Task Force.

REFERENCES

1. Oldfield EC, Johnson DA, Rex DK. Prescribing colonoscopy bowel preparations: Tips for maximizing outcomes. *Am J Gastroenterol*. 2023;118 (5):761-764.
2. Lebwohl B, Kastrinos F, Glick M, Rosenbaum AJ, Wang T, Neugut AI. The impact of suboptimal bowel preparation on adenoma miss rates and the factors associated with early repeat colonoscopy. *Gastrointest Endosc*. 2011;73(6):1207-1214.
3. Hassan C, East J, Radaelli F, et al. Bowel preparation for colonoscopy: European Society of Gastrointestinal Endoscopy (ESGE) Guideline—Update 2019. *Endoscopy*. 2019;51 (8):775-794.
4. Jover R, Zapater P, Polanía E, et al. Modifiable endoscopic factors that influence the adenoma detection rate in colorectal cancer screening colonoscopies. *Gastrointest Endosc*. 2013;77(3):381-389.e1.
5. Gurudu SR, Ramirez FC, Harrison ME, Leighton JA, Crowell MD. Increased adenoma detection rate with system-wide implementation of a split-dose preparation for colonoscopy. *Gastrointest Endosc*. 2012;76 (3):603-608.e1.
6. Horton N, Garber A, Hasson H, Lopez R, Burke CA. Impact of Single- vs Split-Dose Low-Volume Bowel Preparations on Bowel Movement Kinetics, Patient Inconvenience, and Polyp Detection: A Prospective Trial. *Am J Gastroenterol*. 2016;111(9):1330-1337.
7. Anderson JC, Butterly L, Robinson CM, Goodrich M, Weiss JE. Impact of fair bowel prep on adenoma and serrated polyp detection: Data from the New Hampshire Colonoscopy Registry using a standardized preparation quality rating. *Gastrointest Endosc*. 2014;80(3):463-470.
8. Martel M, Barkun AN, Menard C, Restellini S, Kherad O, Vanasse A. Split-dose preparations are superior to day-before bowel cleansing regimens: A meta-analysis. *Gastroenterology*. 2015;149(1):79-88.
9. Shafer LA, Walker JR, Waldman C, et al. Predictors of patient reluctance to wake early in the morning for bowel preparation for colonoscopy:

A precolonoscopy survey in citywide practice. *Endoscopy International Open*. 2018;6(6):E706.

10. Menees SB, Kim HM, Wren P, et al. Patient compliance and suboptimal bowel preparation with split-dose bowel regimen in average-risk screening colonoscopy. *Gastrointest Endosc*. 2014;79(5):811-820.e3.

11. Zhu Y, Zhang DF, Wu HL, et al. Improving bowel preparation for colonoscopy with a smartphone application driven by artificial intelligence. *npj Digit Med*. 2023;6(1):1-9.