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Special Issue:

WELL-BEING

JOY AND WELL-BEING IN THE PRACTICE OF MEDICINE – THE IMPORTANCE OF THE HUMAN CONNECTION

ACG MAGAZINE

BIT.LY/ACG-MAG-WELLBEING

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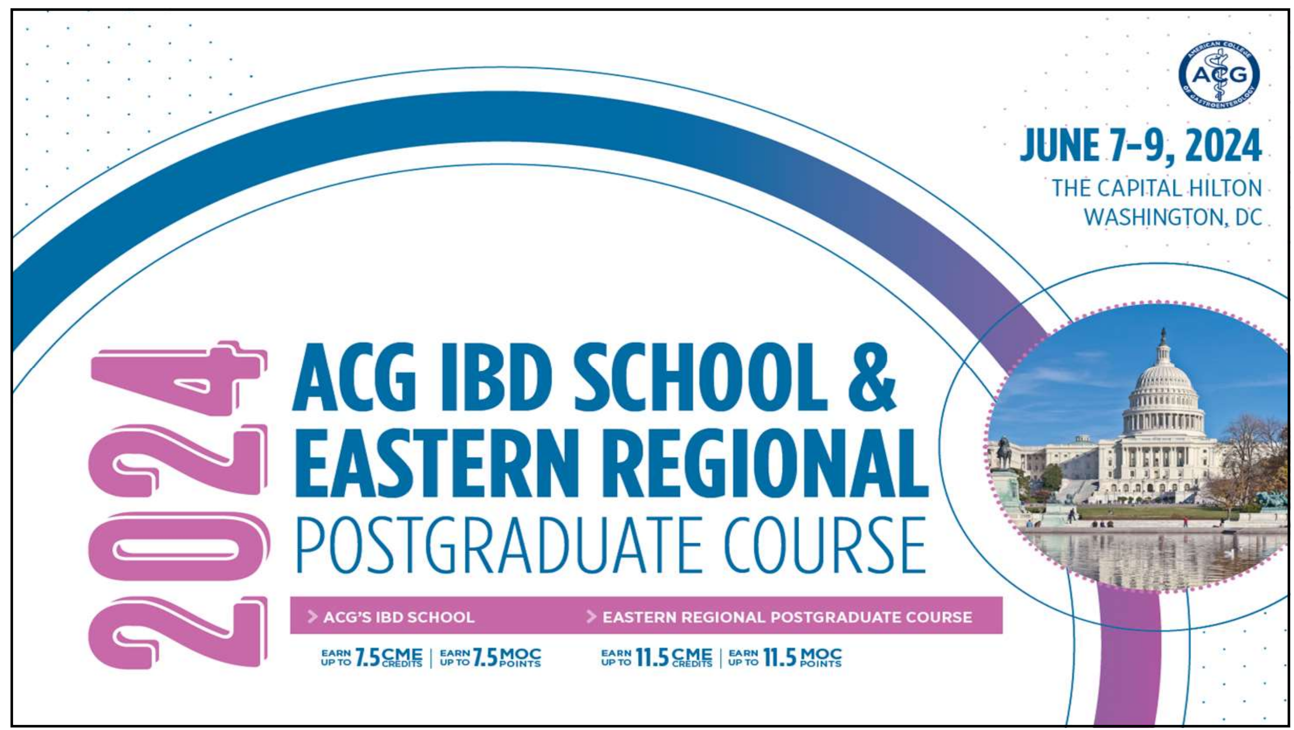

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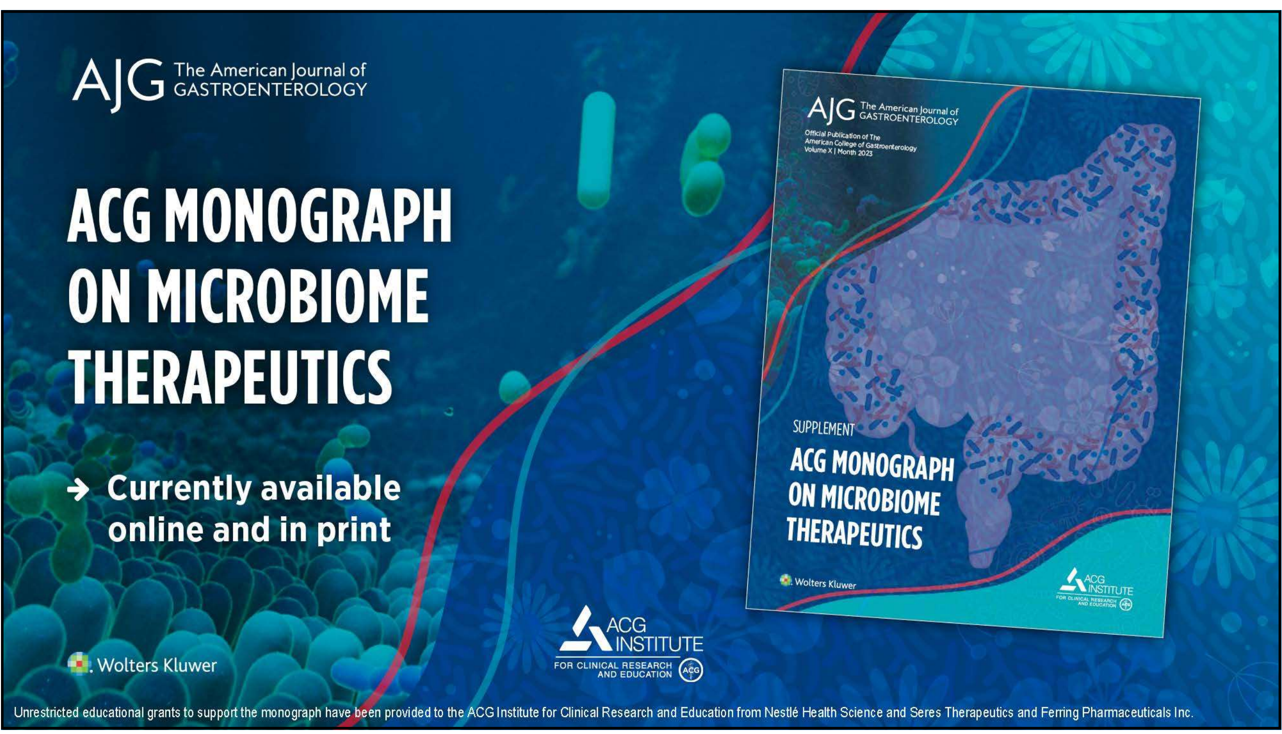

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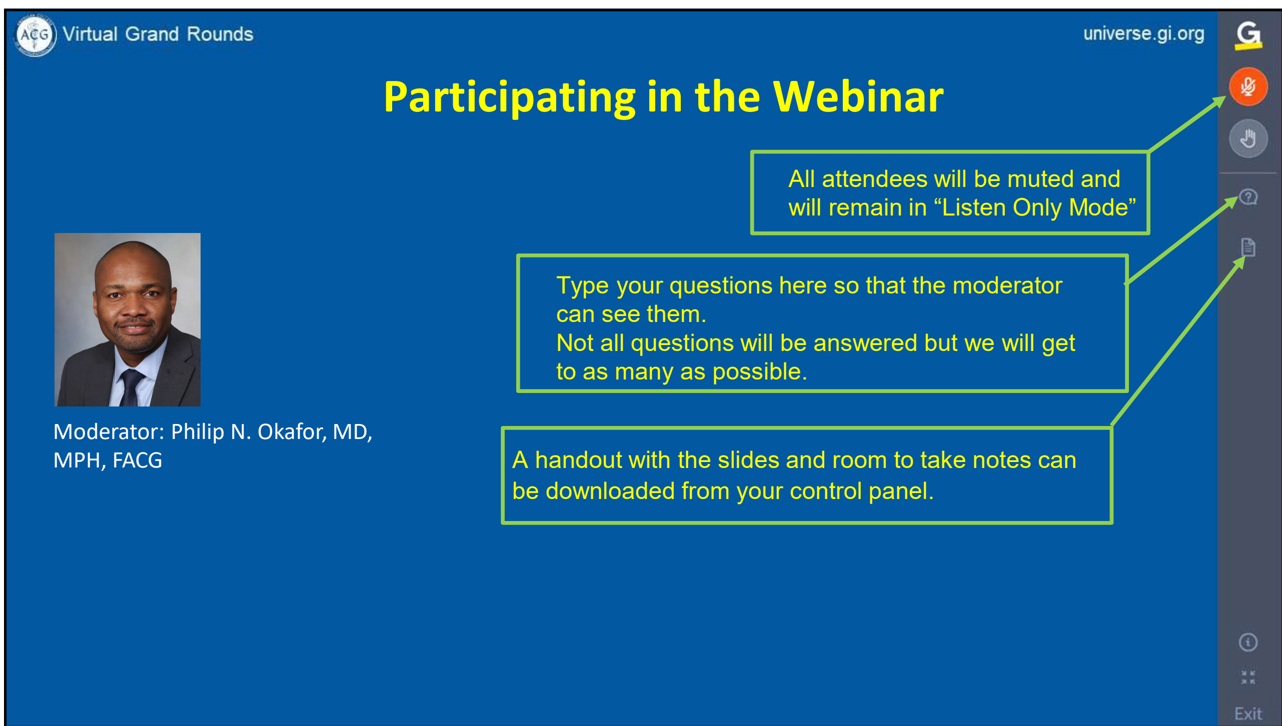

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Disclosures

Philip S. Schoenfeld, MD, MSEd, MScEpi, FACG:
AbbVie: Advisory board, Consultant, Speaker Bureau; Ardelyx: Advisory board, Consultant, Speaker Bureau; Ironwood: Advisory board, Consultant, Speakers Bureau; Phathom: Advisory board, Speakers Bureau; Salix: Advisory board; Sanofi: Advisory board.

Philip N. Okafor, MD, MPH, FACG:

**All of the relevant financial relationships listed for these individuals have been mitigated*

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The Poor Bowel Prep:

Effective Strategies to Optimize the Boston Bowel Prep-Score in High-Risk Patients

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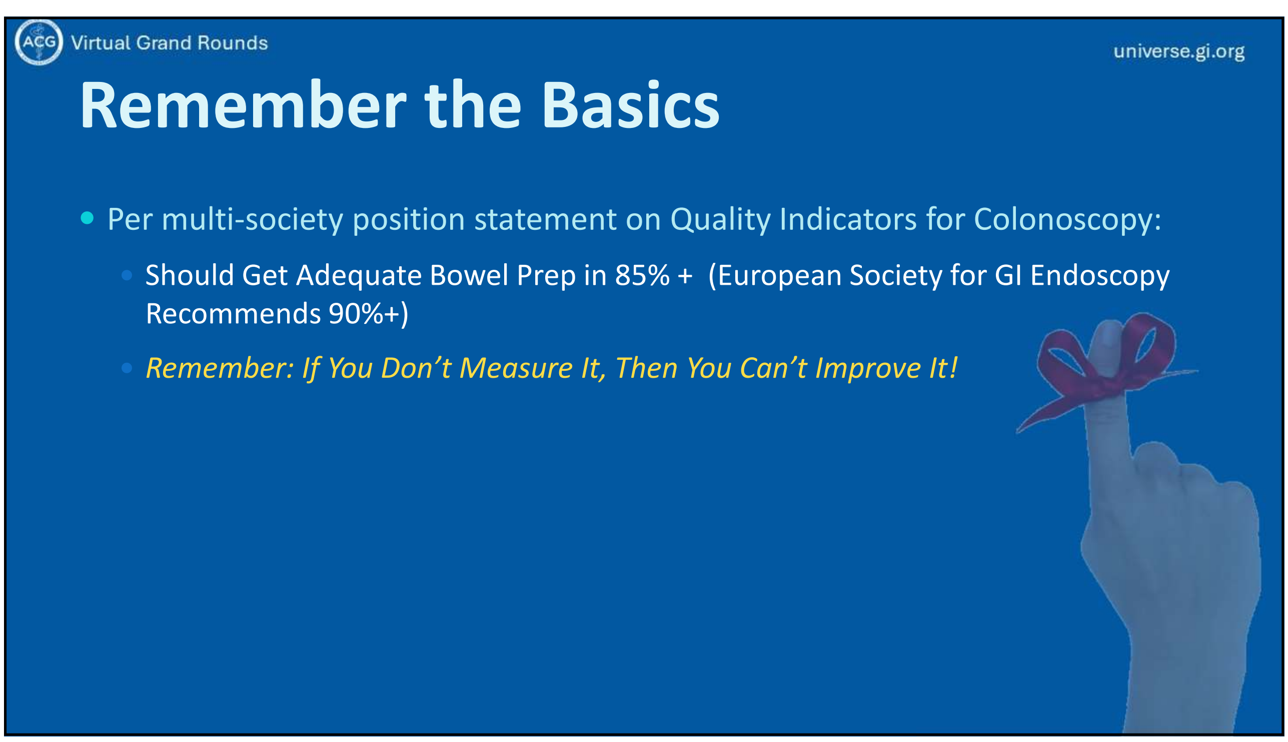

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Remember the Basics

- Per multi-society position statement on Quality Indicators for Colonoscopy:
  - Should Get Adequate Bowel Prep in 85% + (European Society for GI Endoscopy Recommends 90%+)
  - Remember: If You Don't Measure It, Then You Can't Improve It!
- When Splitting the Prep, "Runway Time" Should Not Be Longer than 5 Hours

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Runway Time: Time Between Finishing the Bowel Prep and Actually Starting the Colonoscopy

Ideal Runway Time: 3-4 Hours

Runway Time No More than 5 Hours

Patient Starts Drinking 2nd Half of Bowel Prep 4-6 Hours Before Arrival Time & Finishes Prep 2-4 Hours Before Arrival at Unit

Johnson DA, et al. *Am J Gastroenterol* 2014;109:1528
Oldfield EC, et al. *Am J Gastroenterol* 2023;118:761

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  - Remember: If You Don't Measure It, Then You Can't Improve It!
- When Splitting the Prep, "Runway Time" Should Not Be Longer than 5 Hours
- Preferable to use low-volume bowel prep in average-risk patients

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Consuming Bowel Preparation…

Large-volume PEG-ELS is tough to drink!

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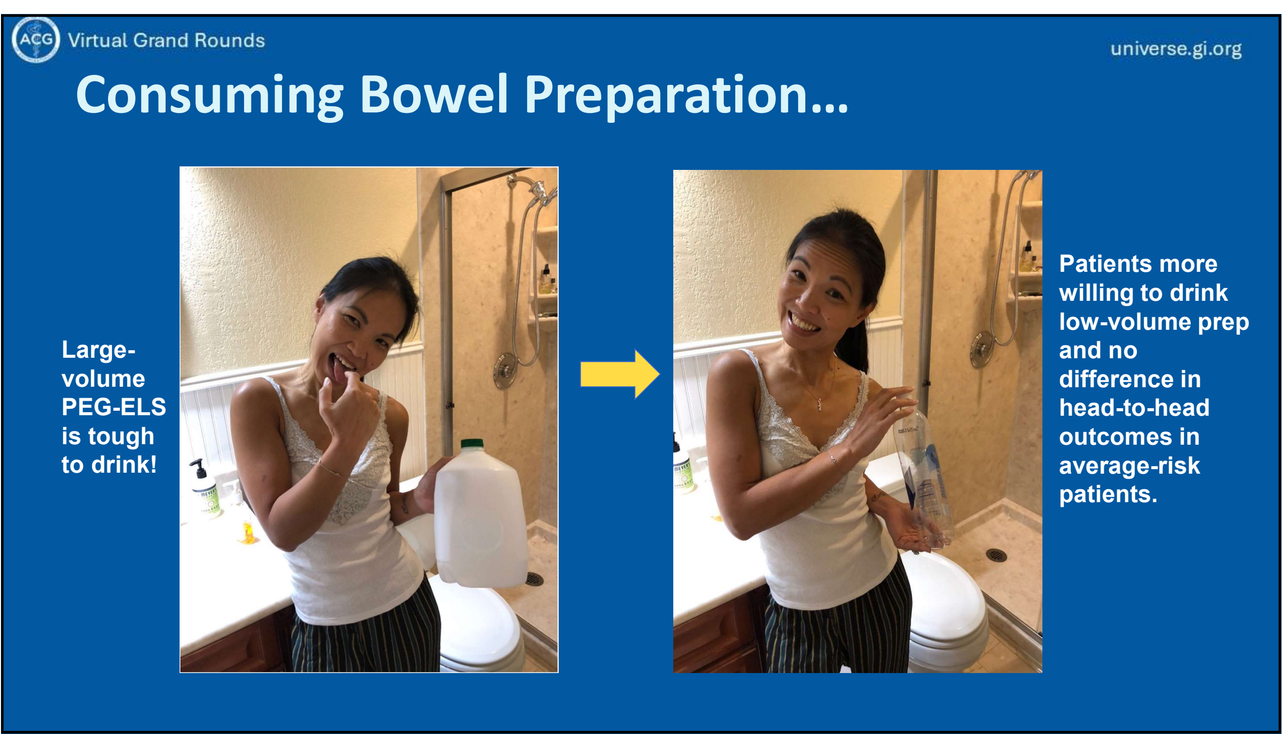

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Table 1. Available FDA-approved PEG-based bowel preparation agents

Generic name	Brand name	Formulation	Volume
PEG-ELS[a,b]	GoLYTELY CoLyte	PEG-3350, sodium sulfate, sodium bicarbonate, sodium chloride, and potassium chloride	4 L
SF-PEG-ELS[c,d]	NuLytely TriLyte	PEG-3350, sodium bicarbonate, sodium chloride, and potassium chloride	4 L
Low-volume PEG-ELS with ascorbic acid[e]	MoviPrep	PEG-3350, sodium sulfate, sodium chloride, potassium chloride, and ascorbic acid	2 L 16 oz of clear liquids with each dose (500 mL)
Low-volume PEG-3350[f]	PLENVU	PEG-3350, sodium sulfate anhydrous, sodium ascorbate, and ascorbic acid	1 L 16 oz of clear liquids with each dose (500 mL)
Oral sodium sulfate[g]	SUPREP	Sodium sulfate, potassium sulfate, and magnesium sulfate	12 oz; 2.5 L of water
Oral sodium sulfate[h]	SUTAB	Sodium sulfate, magnesium sulfate, and potassium chloride	24 tablets; 2 L of water
Sodium picosulfate, magnesium oxide, and anhydrous citric acid[i]	CLENPIQ	Sodium picosulfate, magnesium oxide, and anhydrous citric acid	10 oz; 2 L of water
Sodium phosphate tablets[j]	OsmoPrep	Monobasic and dibasic sodium phosphate	32 tablets; 2 L of water

Oldfield EC, Johnson DA, Rex DK. Am J Gastroenterol 2023; 118: 761-64

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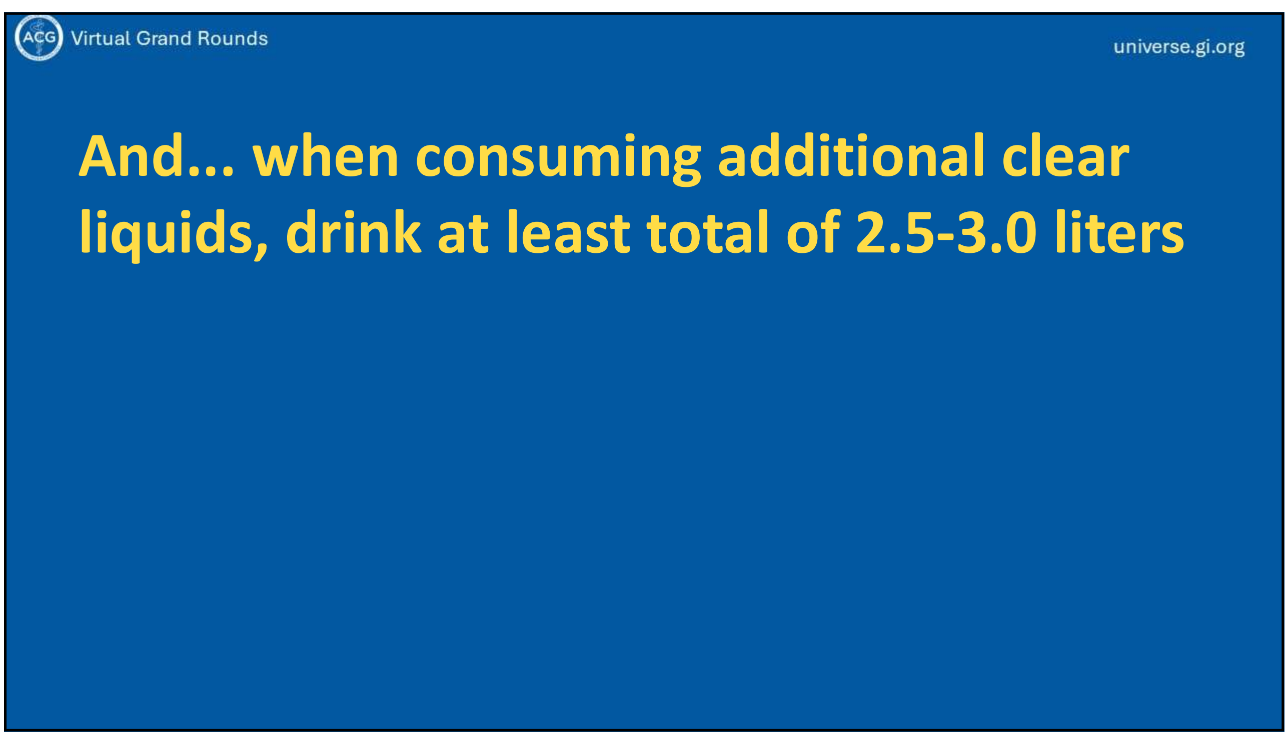

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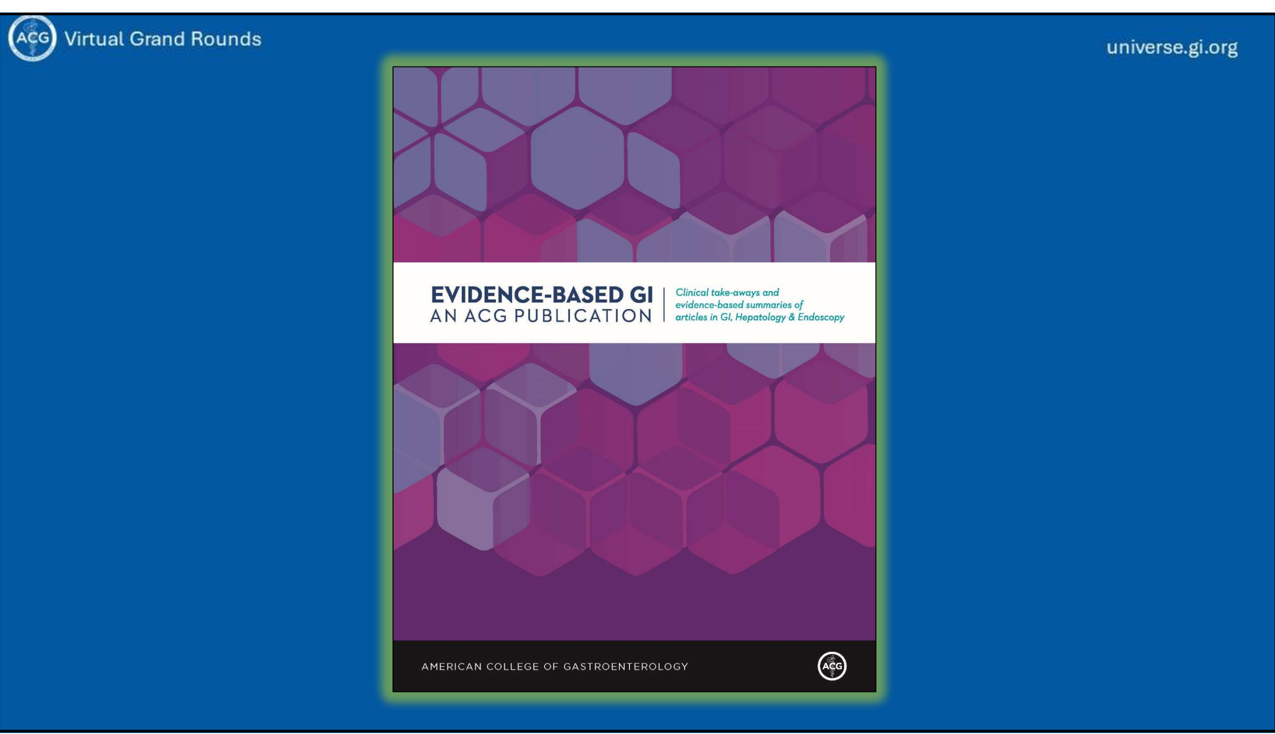

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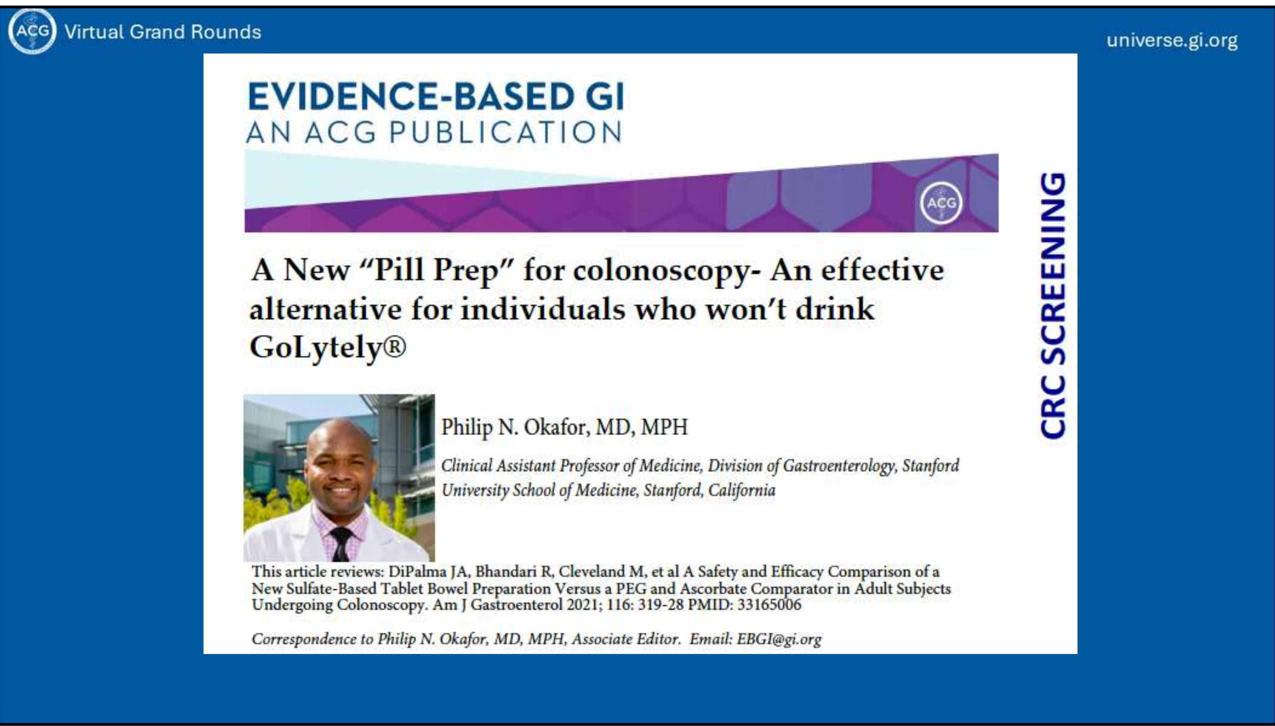

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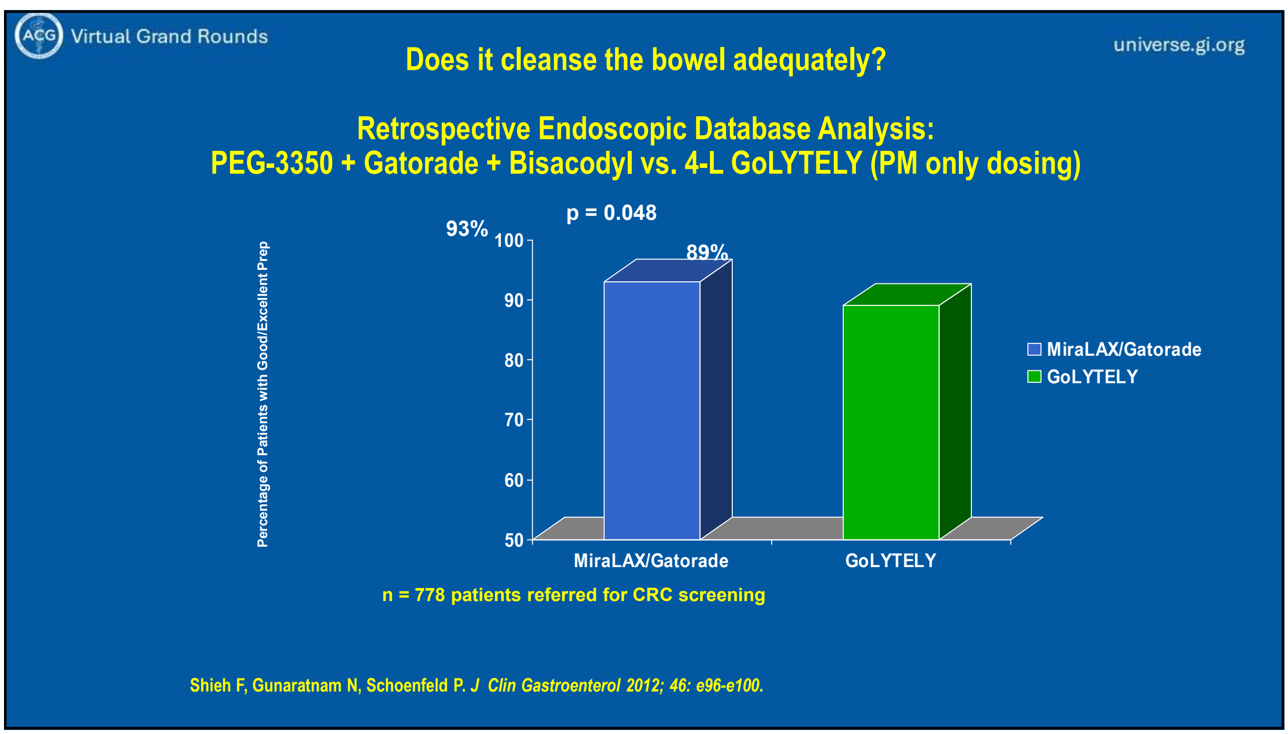

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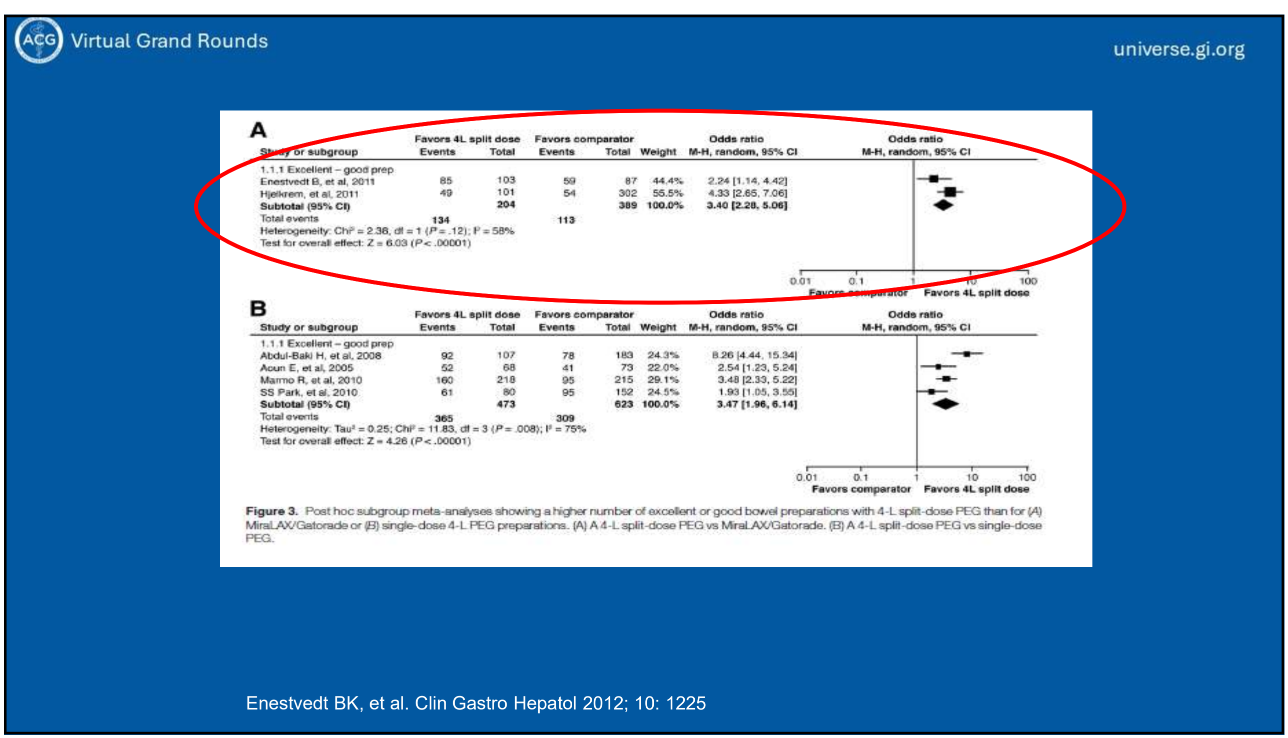

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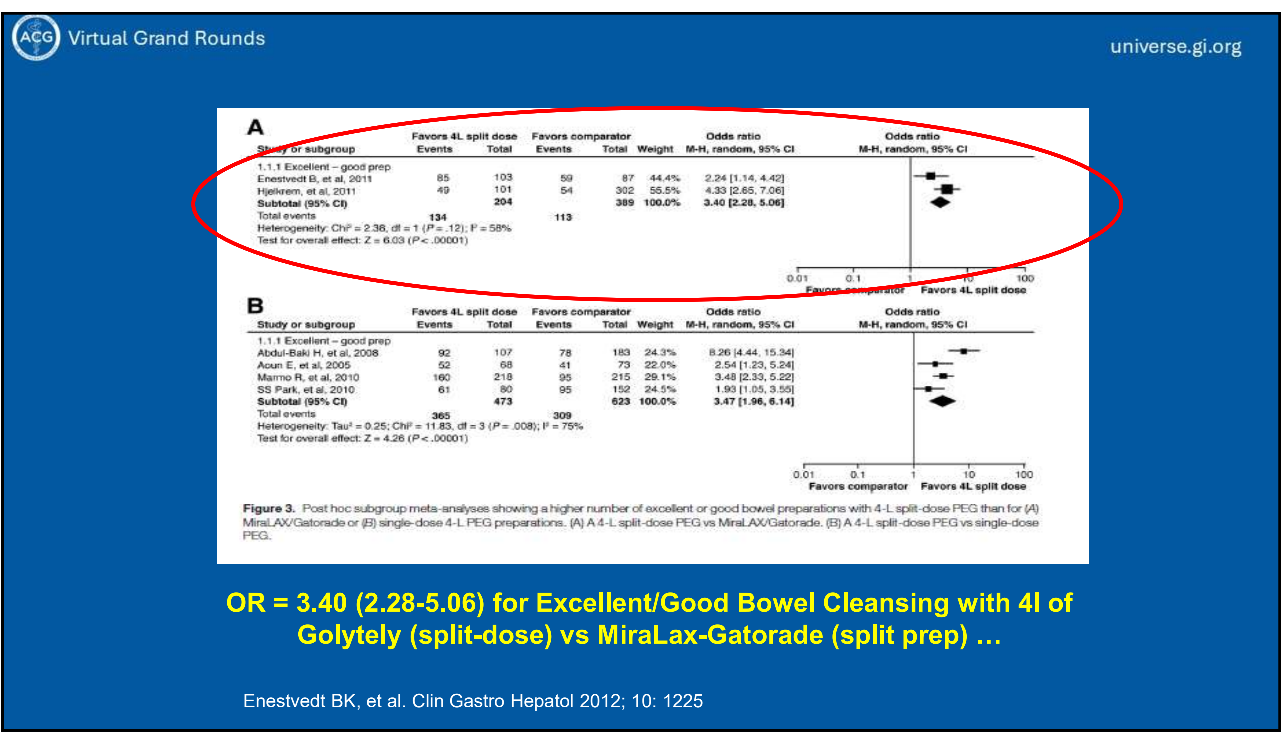

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Electrolytes in Sports Drinks May Be Insufficient

Although sports drinks can aid in rehydrating and replacing electrolytes lost during sweating as a result of physical exertion, the electrolyte load may be insufficient for patients undergoing a purgative regimen for colonoscopy

	Sports drink, g/2 L*	PEG + ELS, g/2 L	Ratio (PEG + ELS:Sports drink)
Sodium	0.88	8.35	9:1
Potassium	0.24	1.06	4:1
Chloride	0.72	4.23	6:1

PEG + ELS = polyethylene glycol electrolyte lavage solution.
*Traditional Gatorade®.
Cohen et al. *Gastroenterol Hepatol*. 2009;5(11; suppl 20):1-11.

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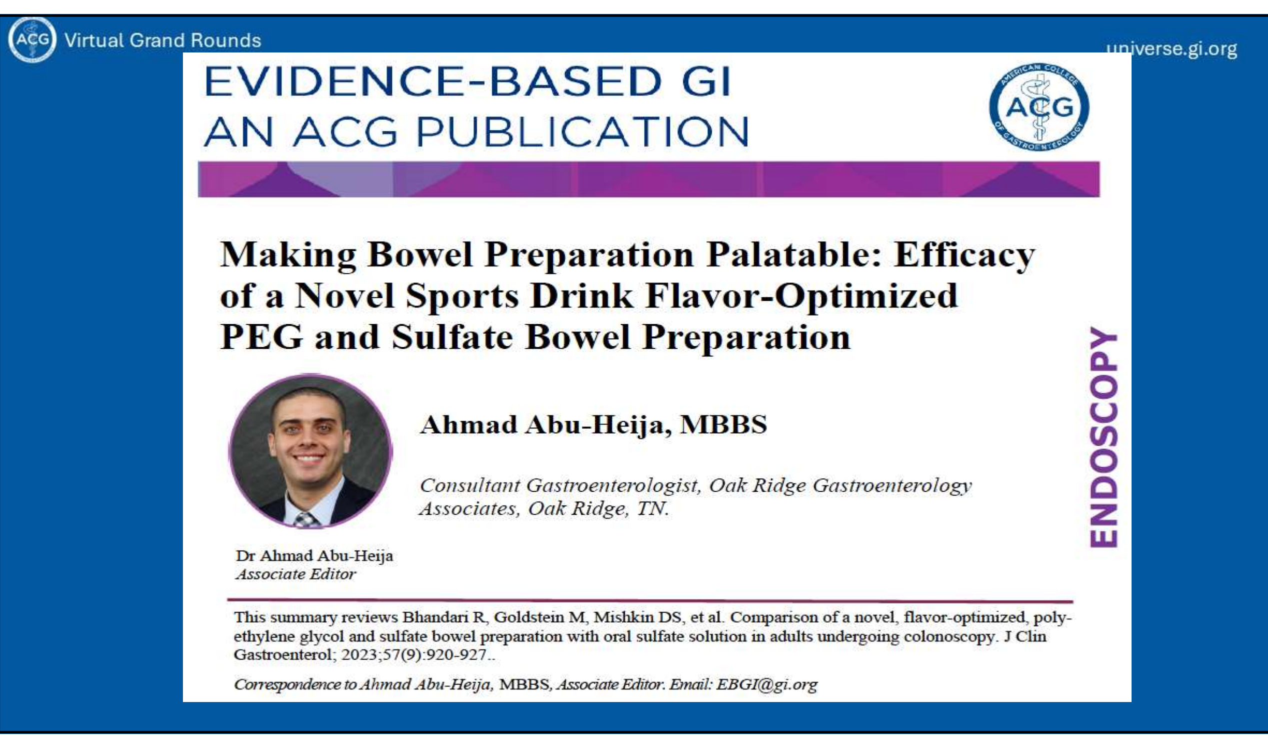

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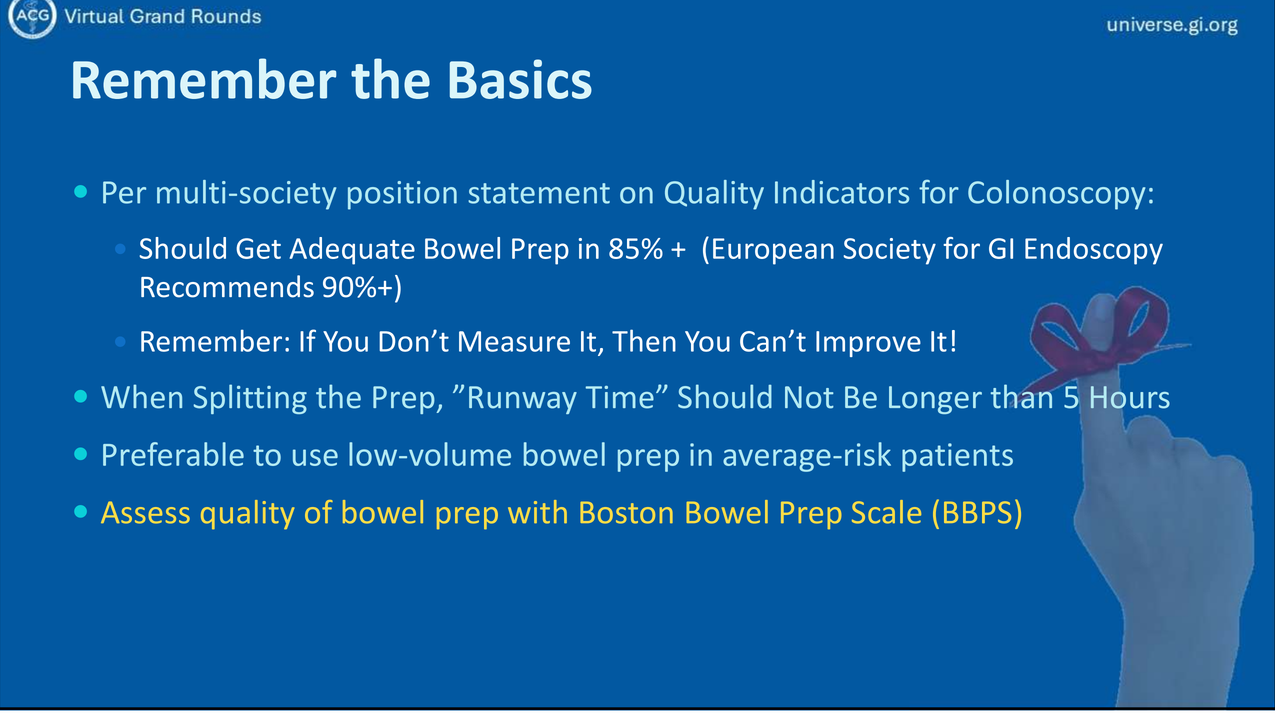

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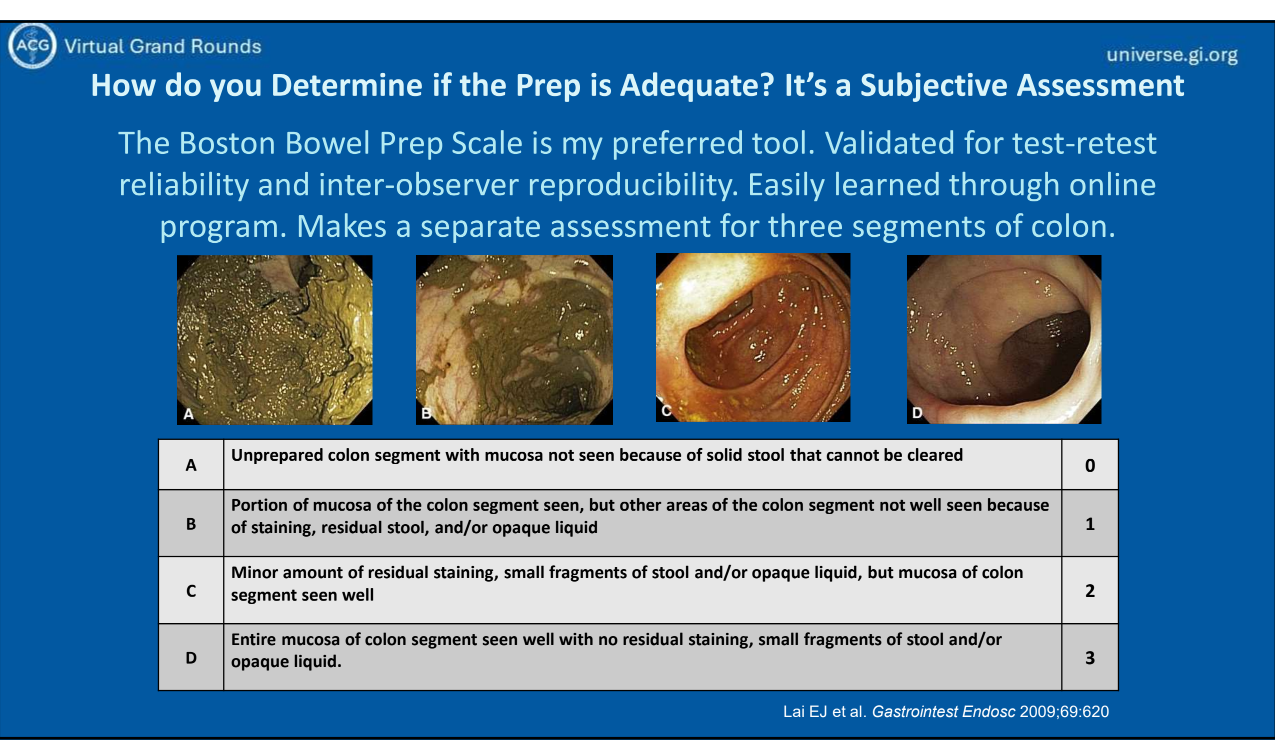

A	Unprepared colon segment with mucosa not seen because of solid stool that cannot be cleared	0
B	Portion of mucosa of the colon segment seen, but other areas of the colon segment not well seen because of staining, residual stool, and/or opaque liquid	1
C	Minor amount of residual staining, small fragments of stool and/or opaque liquid, but mucosa of colon segment seen well	2
D	Entire mucosa of colon segment seen well with no residual staining, small fragments of stool and/or opaque liquid.	3

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Prep Is Inadequate If The BBPS Is Less than 2-2-2

If BBPS is 3 or 2, then miss rate for adenomas > 5mm is 5%. When BBPS in a segment worsens to 1, then miss rate for adenomas > 5mm increases to 16%!

Clark B, Protiva P, Nagar A, et al. Gastroenterology 2016; 150: 396-405
Oldfield EC, et al. *Am J Gastroenterol* 2023;118:761

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When Should Repeat Colonoscopy Be Performed If The BBPS Is 1-2-2… or a “Fair” Prep?

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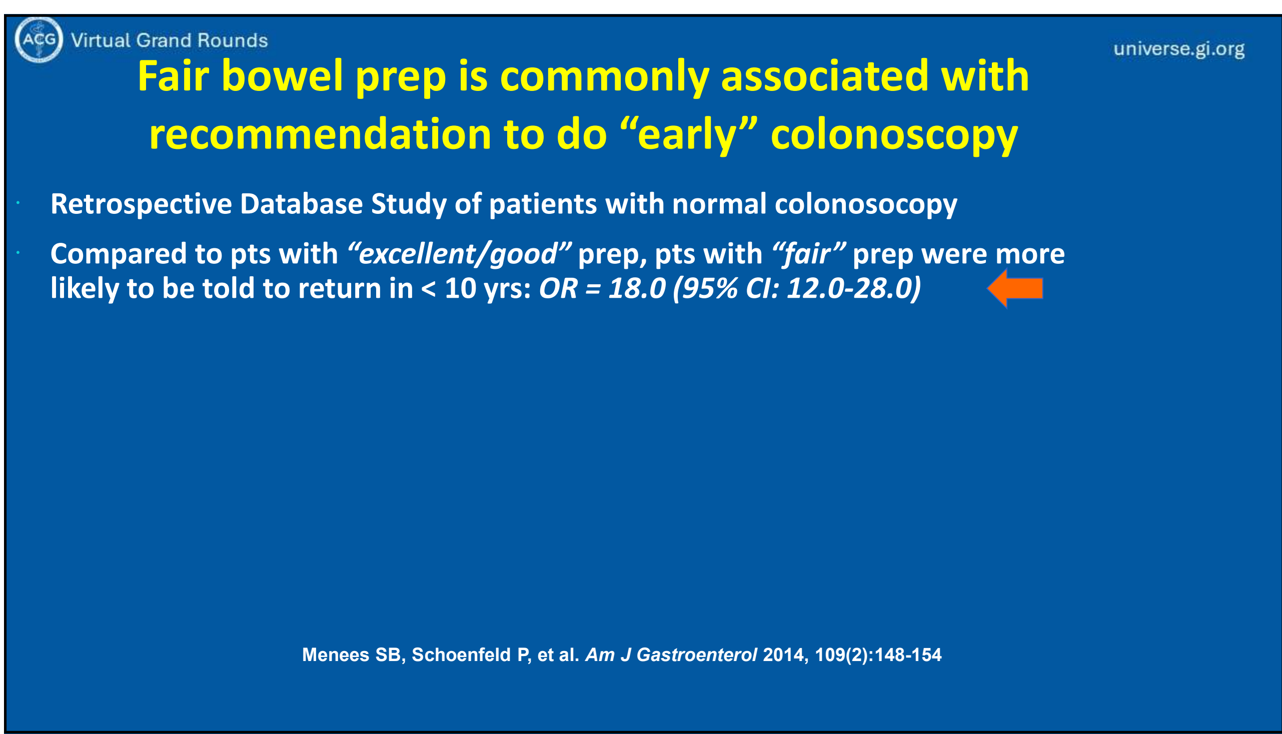

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Fair bowel prep is commonly associated with recommendation to do "early" colonoscopy

- **Retrospective Database Study of patients with normal colonosocopy**
- **Compared to pts with *"excellent/good"* prep, pts with *"fair"* prep were more likely to be told to return in < 10 yrs: *OR = 18.0 (95% CI: 12.0-28.0)***

Repeat Colonoscopy in < 10 Years

80%
70%
60%
50%
40%
30%
20%
10%
0%

Fair Prep
Excellent

Prep Quality

24% of ALL patients told to return in < 10 yrs.

This is prior to institution of split-prep at UM.

Menees SB, Schoenfeld P, et al. *Am J Gastroenterol* 2014, 109(2):148-154

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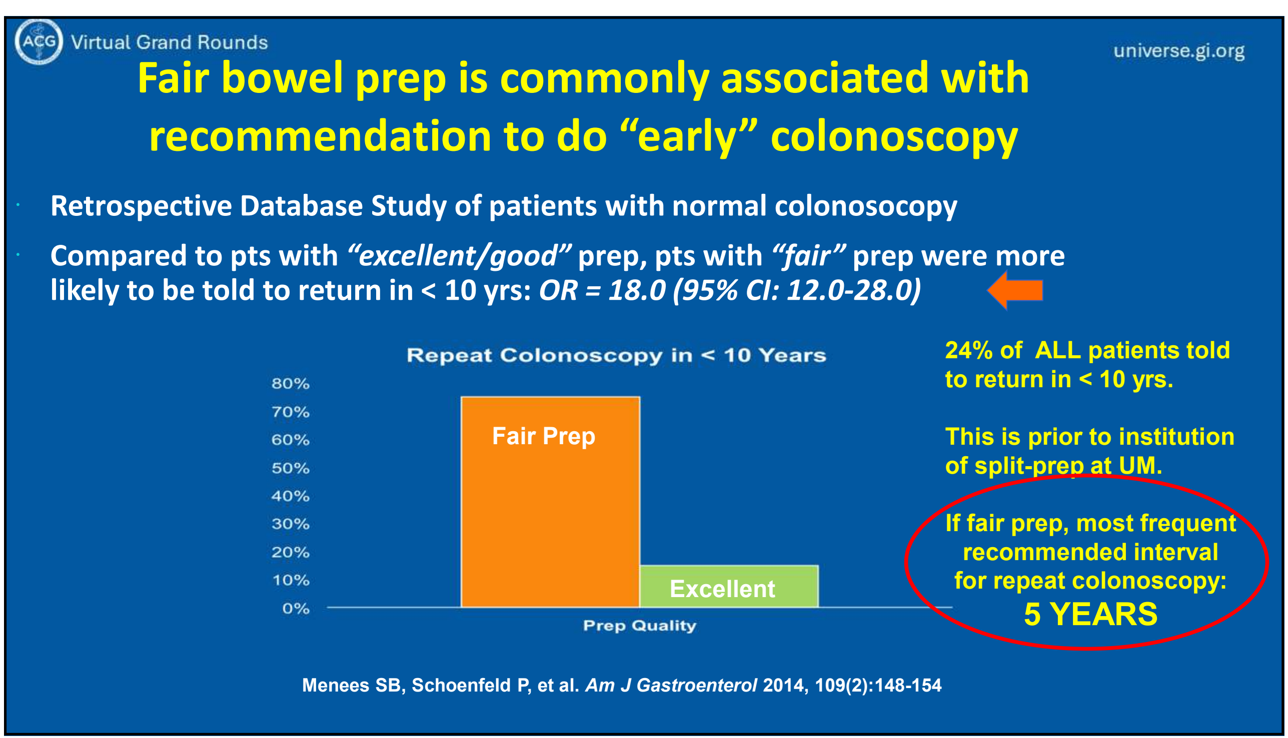

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Prep Is Inadequate If The BBPS Is Less than 2-2-2

This is an "Inadequate" Bowel Prep and Should Recommend Repeat Colonoscopy ≤ 12 months.

Calderwood A, et al. Gastrointest Endosc 2022; 95: 360-67
Oldfield EC, et al. *Am J Gastroenterol* 2023;118:761

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Prep Is Inadequate If The BBPS Is Less than 2-2-2

This is an "Inadequate" Bowel Prep and Should Recommend Repeat Colonoscopy ≤ 12 months.

GIQuic Database of 672 sites from 2011-18. Among 260,000+ colonoscopies by 4000+ endoscopists, only 32% of inadequate preps told to return < 12 months.

Calderwood A, et al. Gastrointest Endosc 2022; 95: 360-67
Oldfield EC, et al. *Am J Gastroenterol* 2023;118:761

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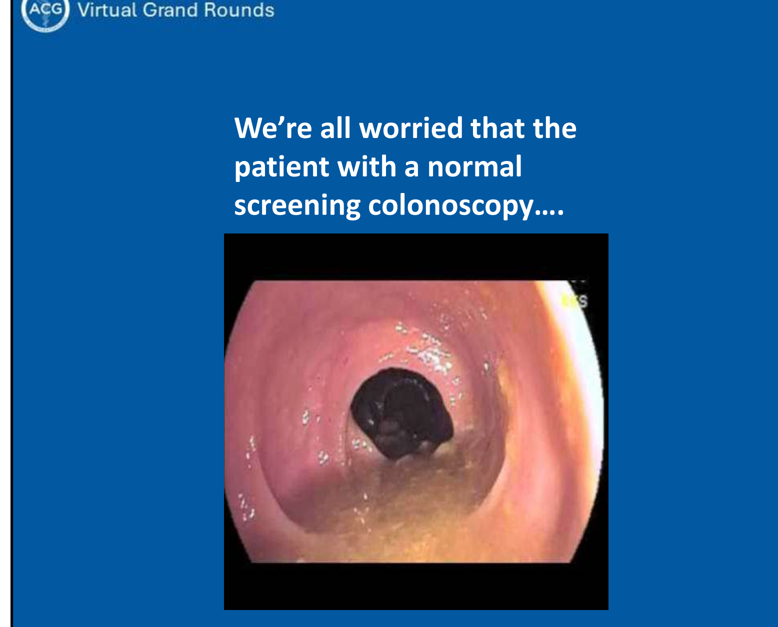

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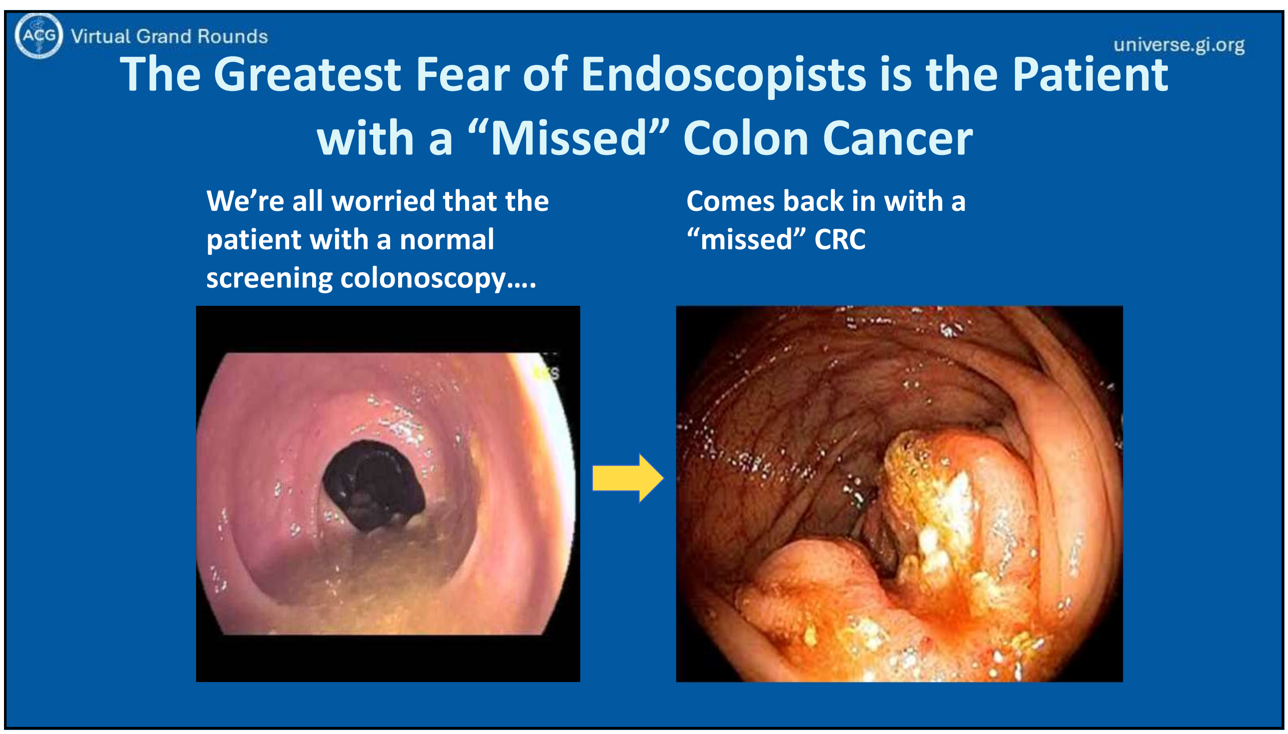

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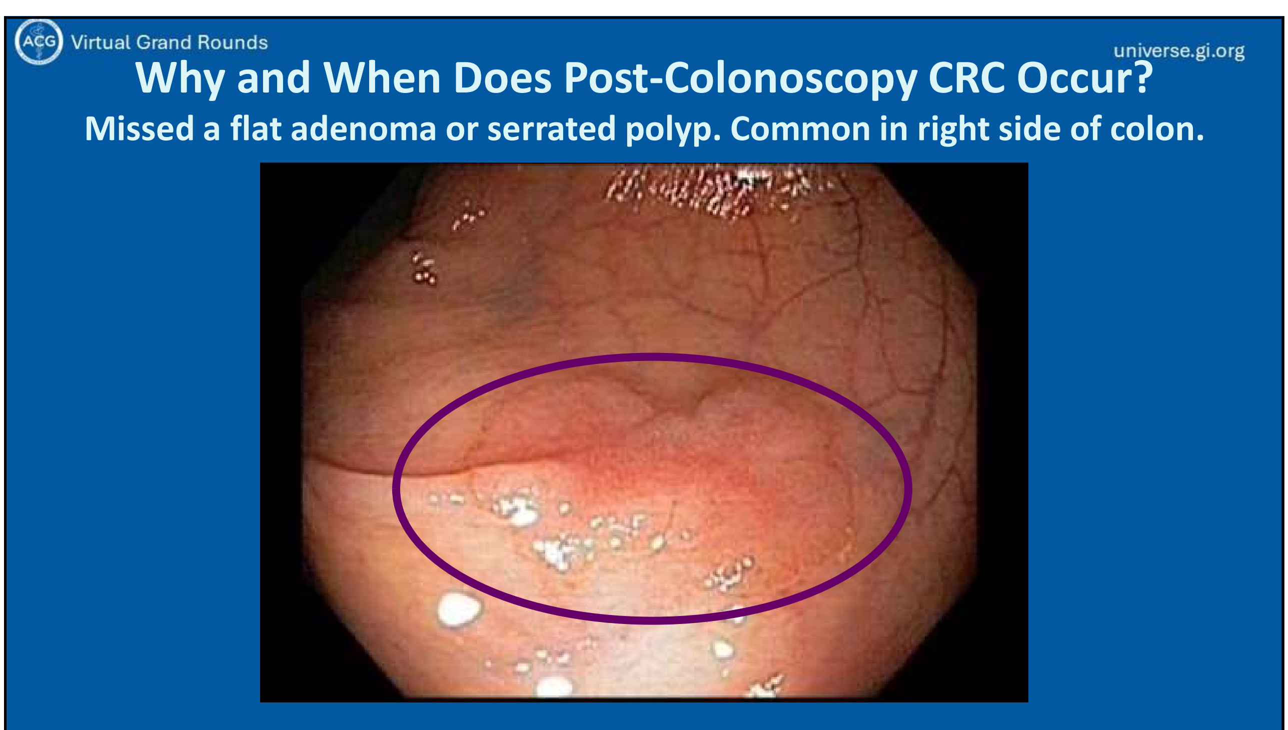

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Risk of Colorectal Cancer in 10-Year Period After Normal Screening Colonoscopy: The VA 380 Study Data

Average Cancer Rate [0,t] by Baseline Category

Cancers per Person-Year

0.20
0.15
0.10
0.05
0.00

0 2 4 6 8 10

Years Past Baseline

Baseline Result Category
NoNeoplasia
1 or 2 adenomas
3 to 10 adenomas
>10 adenomas
Advanced adenoma
Cancer

Lieberman D, et al. VA CSP 380. *Gastro* 2016; A858. Slide courtesy of David Lieberman .

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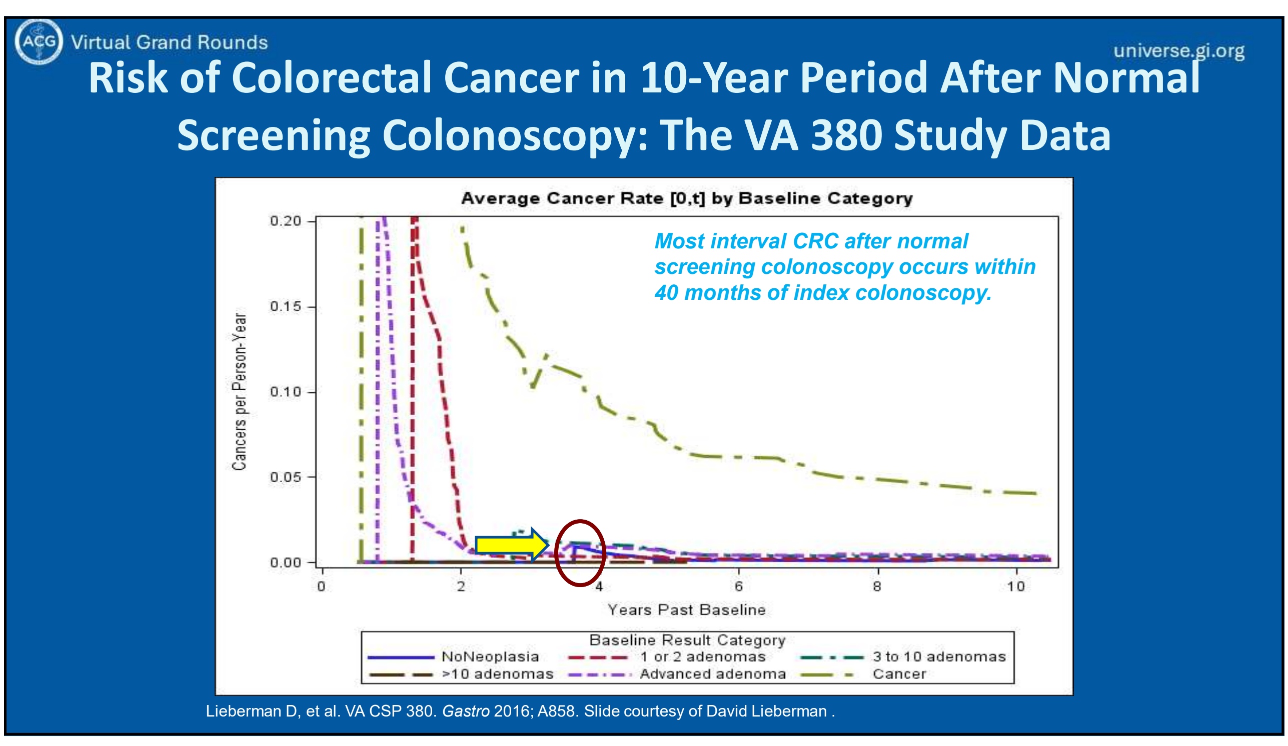

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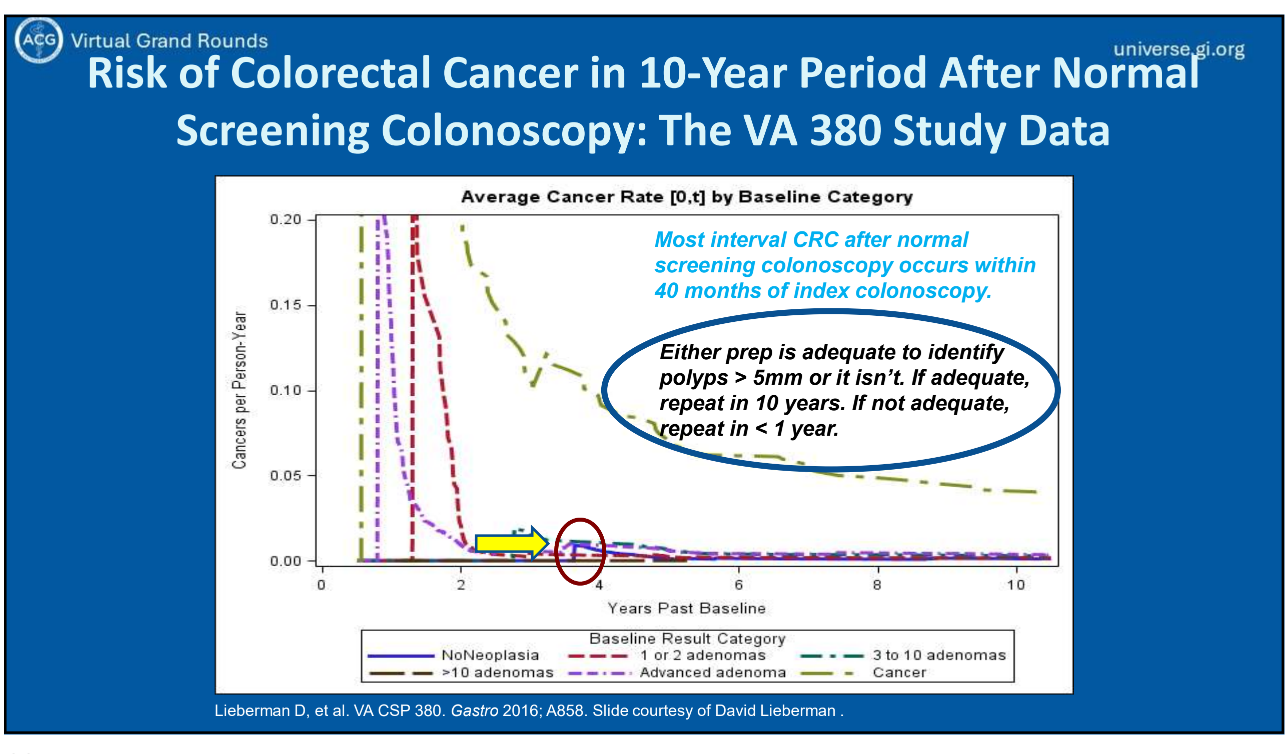

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Why Do Patients Have Poor Bowel Prep?

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Why Do Patients Have Poor Bowel Prep?

- **Risk Factors for colonic dysmotility and inadequate bowel preparation despite compliance**
- Obesity
- Current opioid use
- Diabetes mellitus
- History of using constipation treatments
- Current use of anticholinergics (including TCA)
- Prior colonic resection
- Neurologic disease
- GLP-1 Receptor Agonist Use (e.g., semaglutide)
- ***Prior history of inadequate prep!***

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Note: In non-compliant patient, additional patient education is probably more beneficial than prescribing supra-therapeutic bowel prep regimen.

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Prior RCTs of Compliant Patients with Inadequate Bowel Preparations

Gimeno-Garcia et al. *Am J Gastroenterol* 2017;112:951-58.

- RCT of 256 patients. Virtually all failed with low-volume (2 liter) bowel prep.
- All patients took 10 mg bisacodyl on the day before the procedure + a low-residue diet for 3 days pre-procedure.
- 4L PEG-3350 as split-prep vs 2L PEG + ascorbic acid as split-prep

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4L PEG-3350-superior for adequate bowel cleansing (81.1% vs 67.4%, P< 0.01, ITT analysis)

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→ ***Doesn't address need for supratherapeutic purgative regimens***

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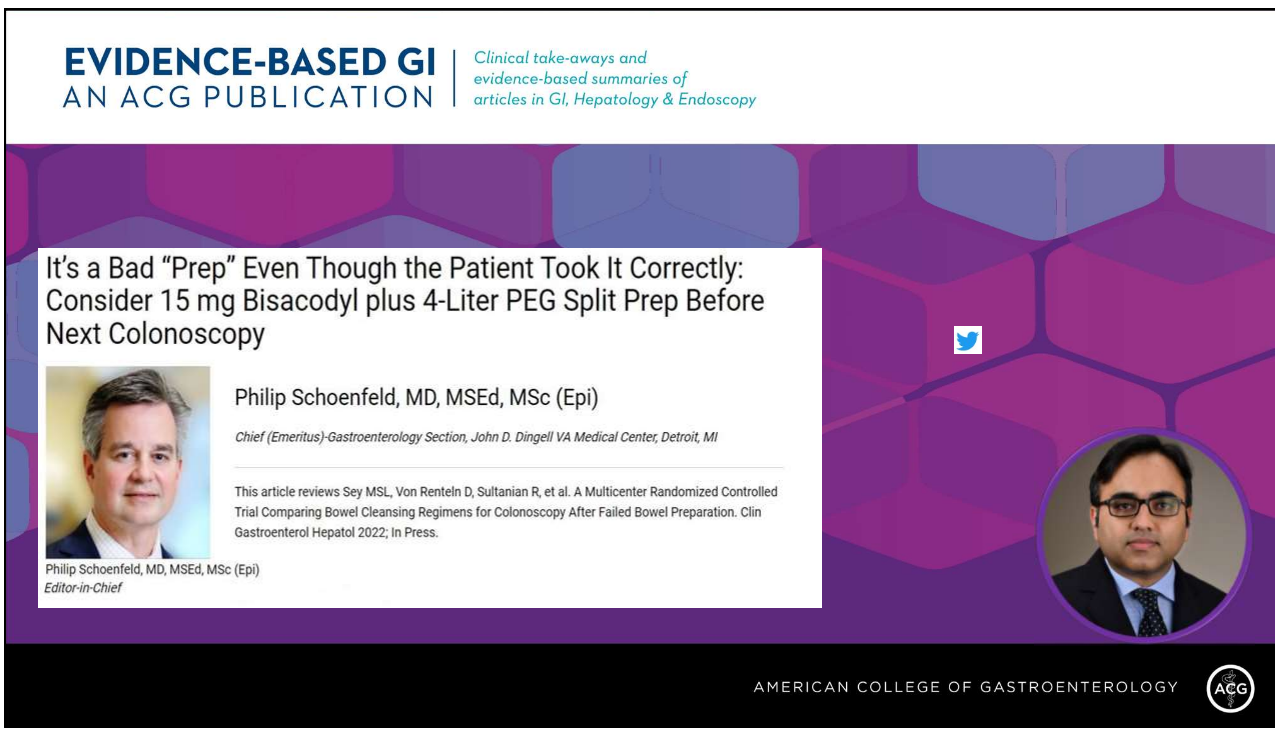

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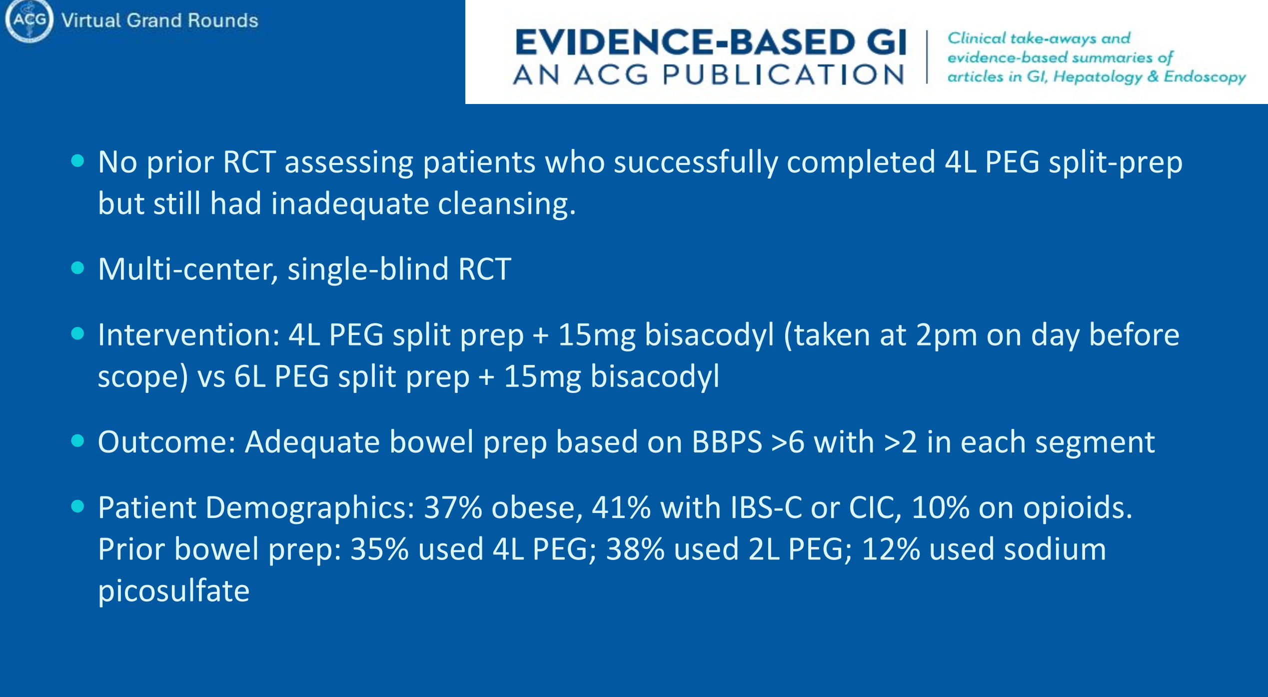

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It's a Bad "Prep" Even Though the Patient Took it Correctly: Consider a 15 mg Bisacodyl plus 4-Liter PEG Split Prep Before Next Colonoscopy

Outcome		Split-dose 4L + bisacodyl (n = 97)	Split-dose 6L + bisacodyl (n = 99)	*P*-value
Adequate cleansing	Defined as BBPS ≥ 6	83 (91.2%)	78 (87.6%)	0.44
	Defined as adequate to identify polyps > 5mm	82 (91.1%)	76 (85.4%)	0.24
Secondary endpoints	Cecal intubation rate, n (%)	87 (96.7%)	82 (92.1%)	0.19
	Adenoma detection rate, n (%)	34 (37.4%)	28 (31.5%)	0.41
Adherence	Diet + consumed 100% of prep	67 (81.7%)	53 (68.0%)	0.05
	Diet + consumed 80% of prep	71 (86.6%)	57 (73.1%)	0.03

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My Practice

- For patients with history of poor bowel preparation or 2 risk factors for poor prep >>>>
- Prescribe 4 liters PEG split-prep + 15 mg bisacodyl at 2pm on day before procedure

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Why Do Patients Have Poor Bowel Prep?

- **Risk Factors for colonic dysmotility and inadequate bowel preparation despite compliance**
- Obesity
- Current opioid use
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- History of using constipation treatments
- Current use of anticholinergics (including TCA)
- Prior colonic resection
- Neurologic disease
- ***Prior history of inadequate prep!***

- **Risk Factors for Non-Compliance**
- Non-English Speaker
- Poor Health Literacy
- Lower Education/ Reading Level

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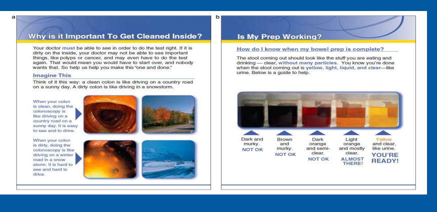
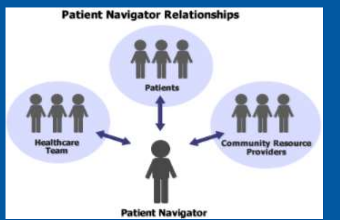
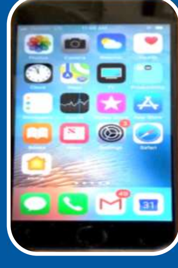
Patient Navigation Improves Quality of Bowel Preparation: Cannot Rely on Paper Instructions Alone

- Provide written instructions in multiple languages if your patient population includes non-English speakers. Instructions written at 8th grade level. Use cartoons, video aids, etc.
- Provide oral instructions in patients native language. Phone call follow-up 3-5 days before colonoscopy. Supplement with phone apps.







Spiegel BM, et al. *Am J Gastroenterol*. 2011;106:875-883.

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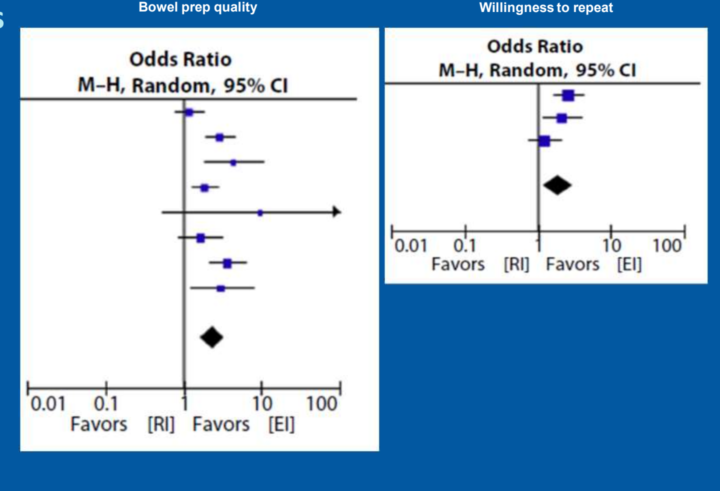
Enhanced Instruction Improves Likelihood of Adequate Bowel Preparation

Usual instruction + additional tools
- Visual aids (booklet, cartoon, etc)
- Telephone, text message
- Smartphone, social media apps

Significantly better prep quality
- OR, 2.35; P < .001

Greater willingness to repeat prep
- OR, 1.91; P = .006



Meta-analysis 8 RCTs (N = 3795)

Guo X, et al. *Gastrointest Endosc.* 2017;58:90-97.

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Bowel Prep “Bottom Lines”

- Always record quality of bowel preparation. Target is 100%
- Get an adequate bowel prep in at least 85% of screening/surveillance colonoscopies.
- Most interval or “missed” CRC after “normal” screening colonoscopy occurs by 3.5 years or sooner.
- If bowel prep is inadequate, repeat < 12 months. If bowel prep is adequate, repeat in 10 years.

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- Most interval or "missed" CRC after "normal" screening colonoscopy occurs by 3.5 years or sooner.
- If bowel prep is inadequate, repeat < 12 months. If bowel prep is adequate, repeat in 10 years. ***Target for this is 90%***

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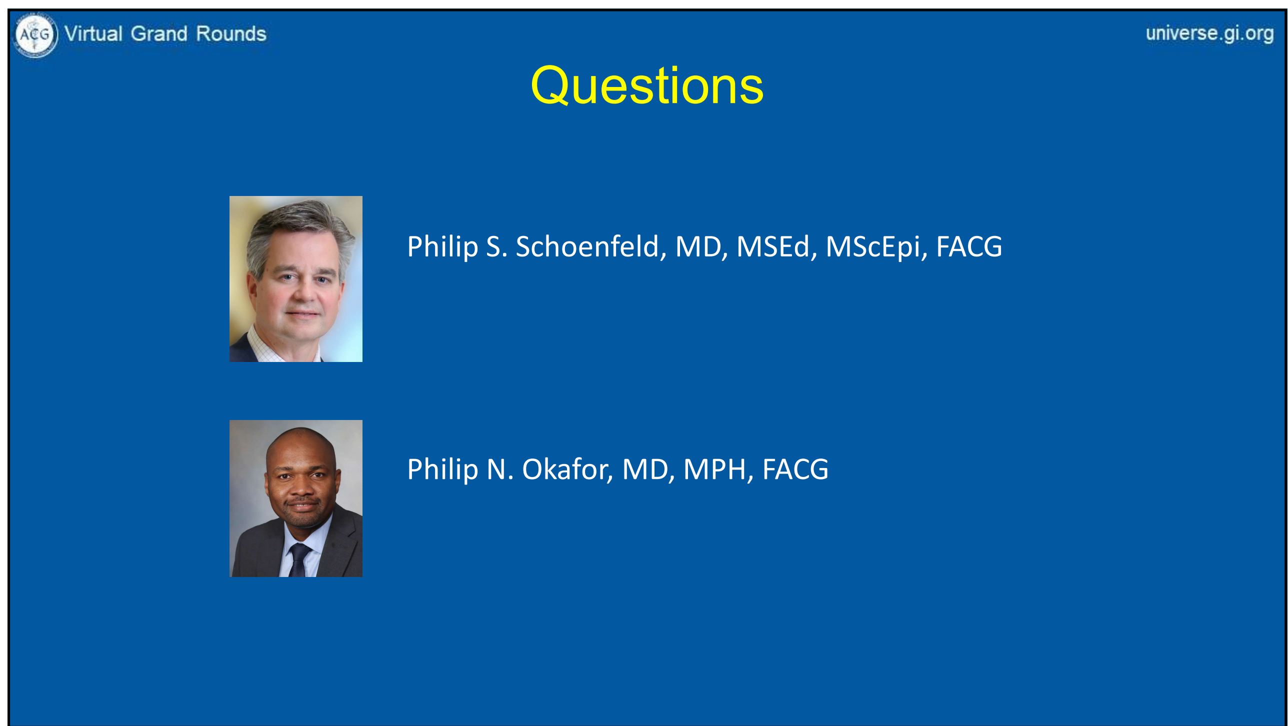

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