

Optimizing Bowel Preps

Conar Fitton, M.D.
Ochsner Medical Center

Conflicts of Interest

- Speaker Bureau
 - Salix
 - Abbvie

Learning Objectives

- Review endoscopic quality metrics
- Discuss importance of optimized bowel prep and how this relates to the quality metrics
- Factors involved in choosing a bowel preparation

Colonoscopy Quality Metrics

- Cecal Intubation Rate
 - >95% during screening colonoscopy
 - >90% for all colonoscopy
- Adenoma Detection Rate
 - Only measure associated with interval colon cancer risk
 - >30% for males
 - >20% for females
- Withdrawal time
 - >6 minutes
- Adequate bowel preparation
 - >85% of all colonoscopies



Shamsi N, Malhorta A SA (2018) Quality metrics in colonoscopy | GI and Hepatology News. In: GI Hepatol. News.

Kaminski M et al. N Engl J Med. 2010 May 13;362(19):1795-803.

Adenoma Detection Rate and Risk of Colorectal Cancer and Death

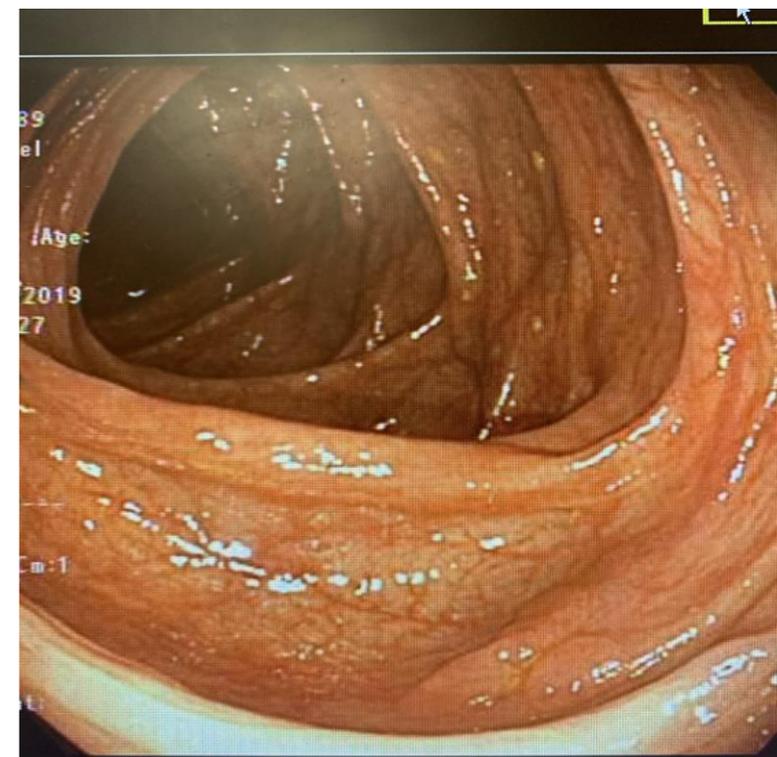
- Goal
 - Define the association between adenoma detection rate (ADR) and risk of subsequent colorectal cancer (interval colon cancer)
- Methods
 - 314,872 colonoscopies performed by endoscopists with ADR ranging from 7.4% to 52.5%
- Results
 - Adjusted hazard ratios calculated
 - Each 1% increase in the ADR was associated with a 3% decrease in risk of colon cancer

Impact of ADR on Detection of Advanced Adenomas and Adverse Events

- ADR has been shown associated with lower risk of interval malignancies
 - Austrian study of over 200,000 screening colonoscopies
 - Is there an impact of ADR on detection of advanced adenomas and adverse events
- Compared ADR and AADR (advanced adenoma) between endoscopist
- Results
 - Endoscopists with improved ADR had a simultaneous improvement in AADR, thus likely to prevent more colorectal cancers
 - Increased ADR was also associated with a higher rate of adverse events, though remained critically low

Ascending Colon/Cecum

- Compromised bowel prep tends to affect this segment of the colon more than the left side
- Polyp pathology can differ depending on location
 - Proximal lesions
 - Greater percentage sessile, serrated
 - More difficult to visualize
 - More difficult to completely resect



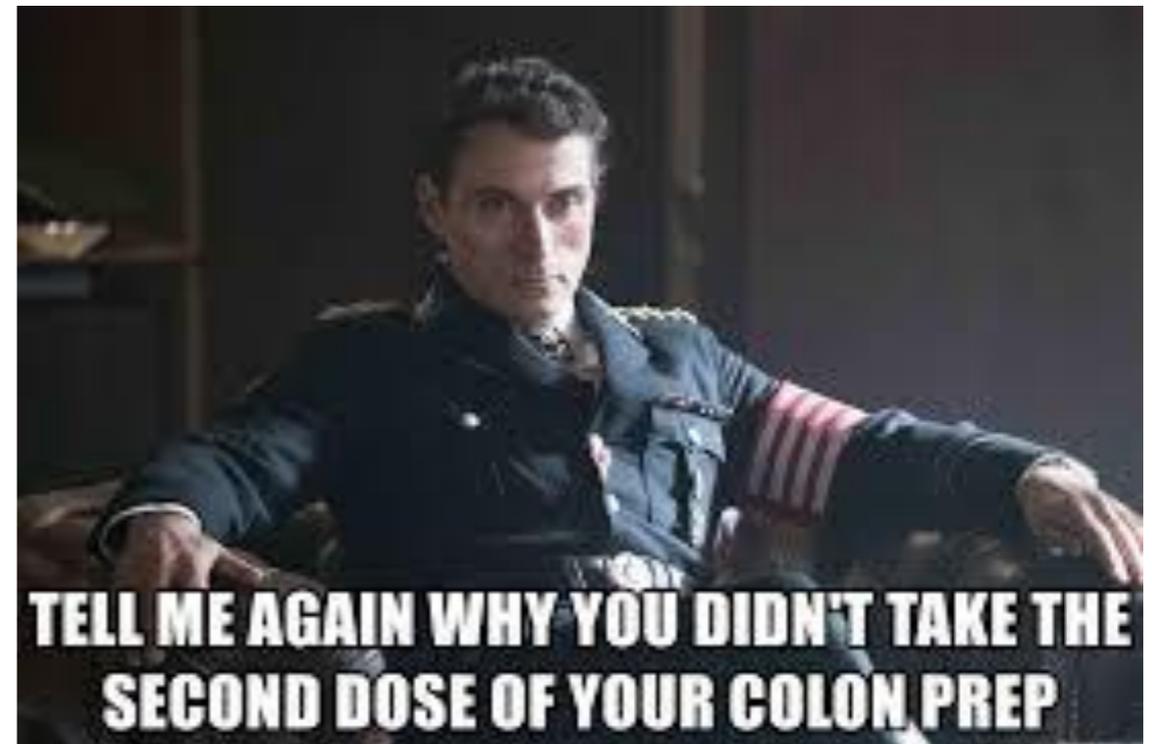
A good bowel prep

- Important to:
 - Visualize polyps
 - Maximize procedural efficiency
 - Minimize complications and side effects
- USPTF Recommendations
 - Endoscopists should achieve > 85% effective bowel preparation



Complications of compromised bowel prep

- Increased procedure time
- Increased cancellations and rates of rescheduling
 - High health care cost
- Increased calls and questions to staff
- Procedure time
- Potential complications



Measuring bowel prep efficacy

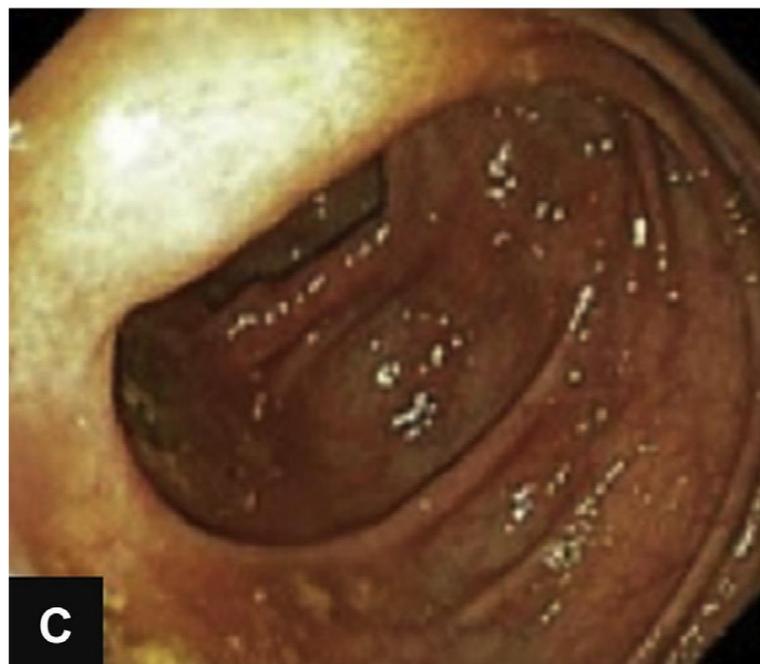
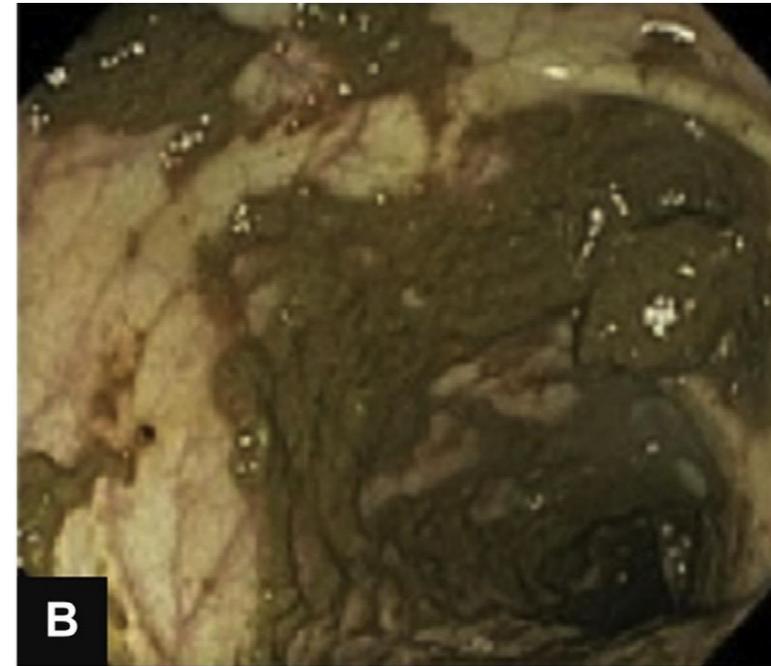
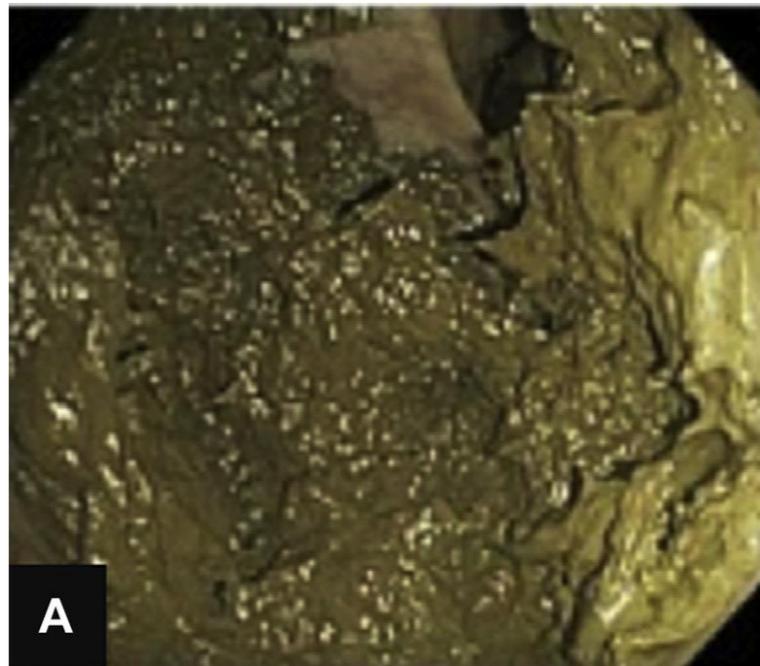
- Importance
 - Allow less difficulty when comparing results across studies
- Difficulty
 - Many scales are not validated
- Examples
 - Boston Bowel Prep Scale
 - Aronchick Scale
 - Ottawa Bowel Prep Scale

Table 1. The Boston Bowel Preparation Scale: Scoring Scheme

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

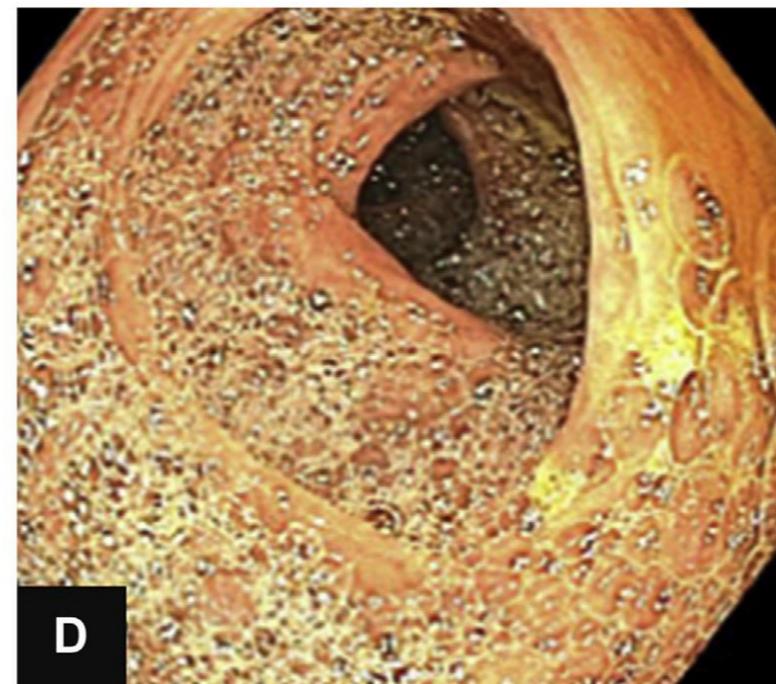
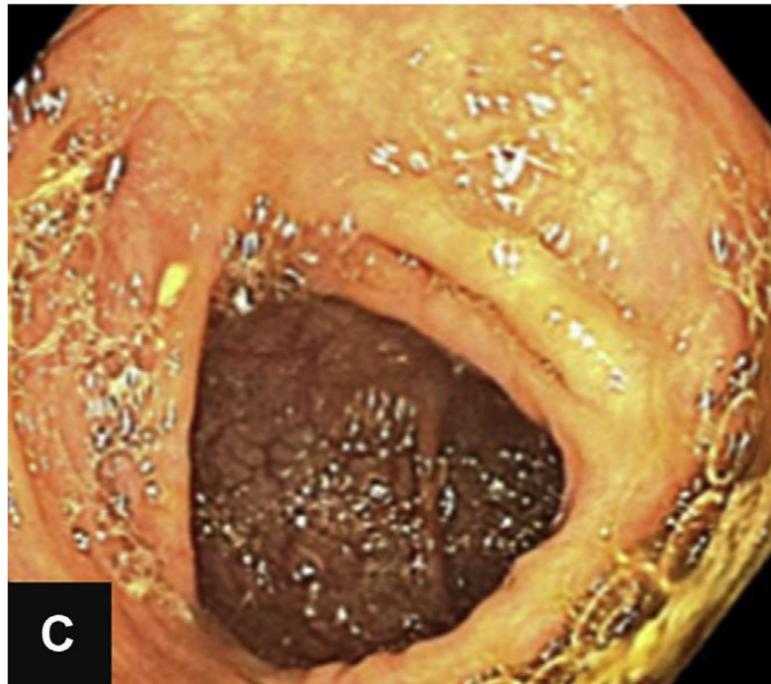
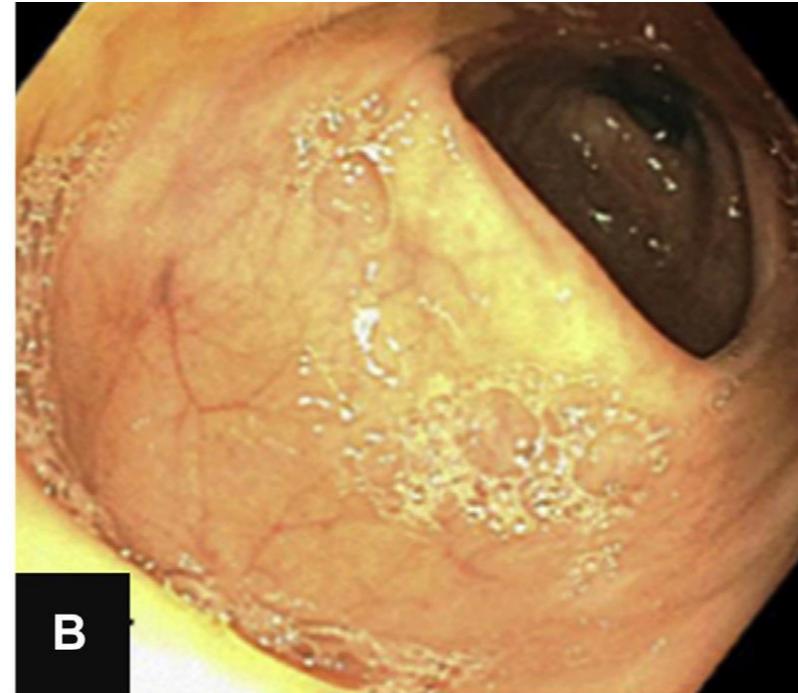
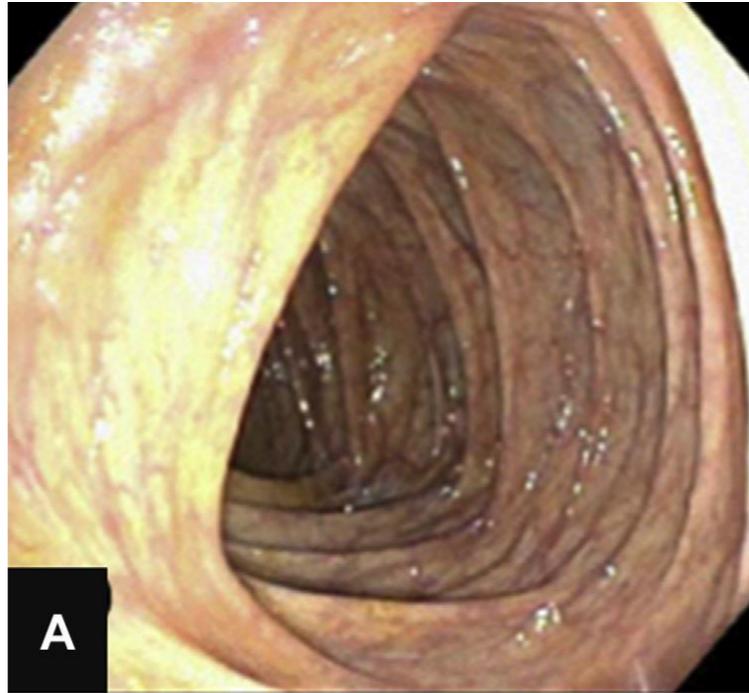
Based on reference 9.

Boston Bowel Prep Scale



Moraveji S, Casner N, Bashashati M, et al. The role of oral simethicone on the adenoma detection rate and other quality indicators of screening colonoscopy: a randomized, controlled, observer-blinded clinical trial. *Gastrointest Endosc* 2019; 90: 141.

Bubble scale



Moraveji S, Casner N, Bashashati M, et al. The role of oral simethicone on the adenoma detection rate and other quality indicators of screening colonoscopy: a randomized, controlled, observer-blinded clinical trial. *Gastrointest Endosc* 2019; 90: 141.

Available Bowel Preps

- Polyethylene glycol
 - 4L (electrolyte or sulfate free)
 - 2L with bisacodyl
 - 2L/3L with ascorbate
- Hyperosmolar/Combination Agents
 - Sodium picosulfate, picosulfate/magn oxide/citric acid
 - Sodium phosphate
 - Sodium sulfate
- Hypo-osmotic
 - Miralax/Gatorade (not FDA approved)

Factors in choosing a bowel prep

- Tolerability/Palatability
 - Volume
- Efficacy
- Osmotic balance
 - Minimizing fluid shifts
- Safety in all age groups
- Medical history



Predictors of poor preparation

- Medical Factors
 - Inpatient vs outpatient
 - Chronic constipation and associated medications
 - Obesity
 - Diabetes
 - Cirrhosis
 - Prior failed preparations
- Patient Factors
 - Low health literacy/educational level
 - Insurance status
 - Length of time between scheduling date and procedure date
 - English non-first language
- Procedural factors
 - Later procedure time
 - Not using split prep

Bowel Prep Data

- Low volume PEG-ELS + bisacodyl vs 4L PEG
 - 6 RCT meta-analysis with no difference in efficacy but decrease in side effects
- PEG 3350/Gatorade vs PEG ELS 4L
 - Less efficacy for lower volume
 - Risk of hyponatremia
- Adjunctive agents
 - Bisacodyl
 - Reports of ischemic colitis in doses > 10mg
 - Abdominal cramping
 - Magnesium citrate
 - Avoid in renal failure
 - Pro-motility agents
 - No data supporting efficacy in conjunction with bowel prep

Clark RE, Godfrey JD, Choudhary A, Ashraf I, Matteson ML, Bechtold ML. Low-volume polyethylene glycol and bisacodyl for bowel preparation prior to colonoscopy. *Am J Gastroenterol*. 2010;105(12):2153-2158.

Siddique S, Lopez KT, Hinds AM, Ahmad DS, Nguyen DL, Matteson-Kome ML, Puli SR, Bechtold ML. Miralax with gatorade for bowel preparation: a meta-analysis. *Am J Gastroenterol*. 2011;106(12):2153-2158.

Bowel Prep Data

- Duration of the interval between the completion of bowel preparation and the start of colonoscopy predicts bowel-preparation quality
- Methods
 - Prospective study of 378 patients who received a variety of different preparations measuring prep quality and time interval from last dose of prep
- Results/Conclusions
 - Patients who prep quality was grade excellent or good had a statistically significantly shorter interval between time of last dose of prep and start of colonoscopy

Bowel Prep Data

- The role of oral simethicone on the ADR and other quality indicators of screening colonoscopy: a randomized, controlled, observer-blinded clinical trial
- Methods
 - Patients assigned to PEG plus simethicone vs PEG
 - SIM added by dropper (40mg/0.6ml x 12 while taking prep)
 - Two endoscopic scored colon prep using BBPS and bubble scale
 - ADR, Intraprocedural SIM usage, withdrawal time and cecal intubation rate measured
- Results/Conclusions
 - No difference in ADR, procedure time, BBPS score
 - Intraprocedural use of SIM and bubble scale sore were significantly lower in the PEG plus SIM arm (1.6% vs 48.9%, $p < 0.05$)

Safety

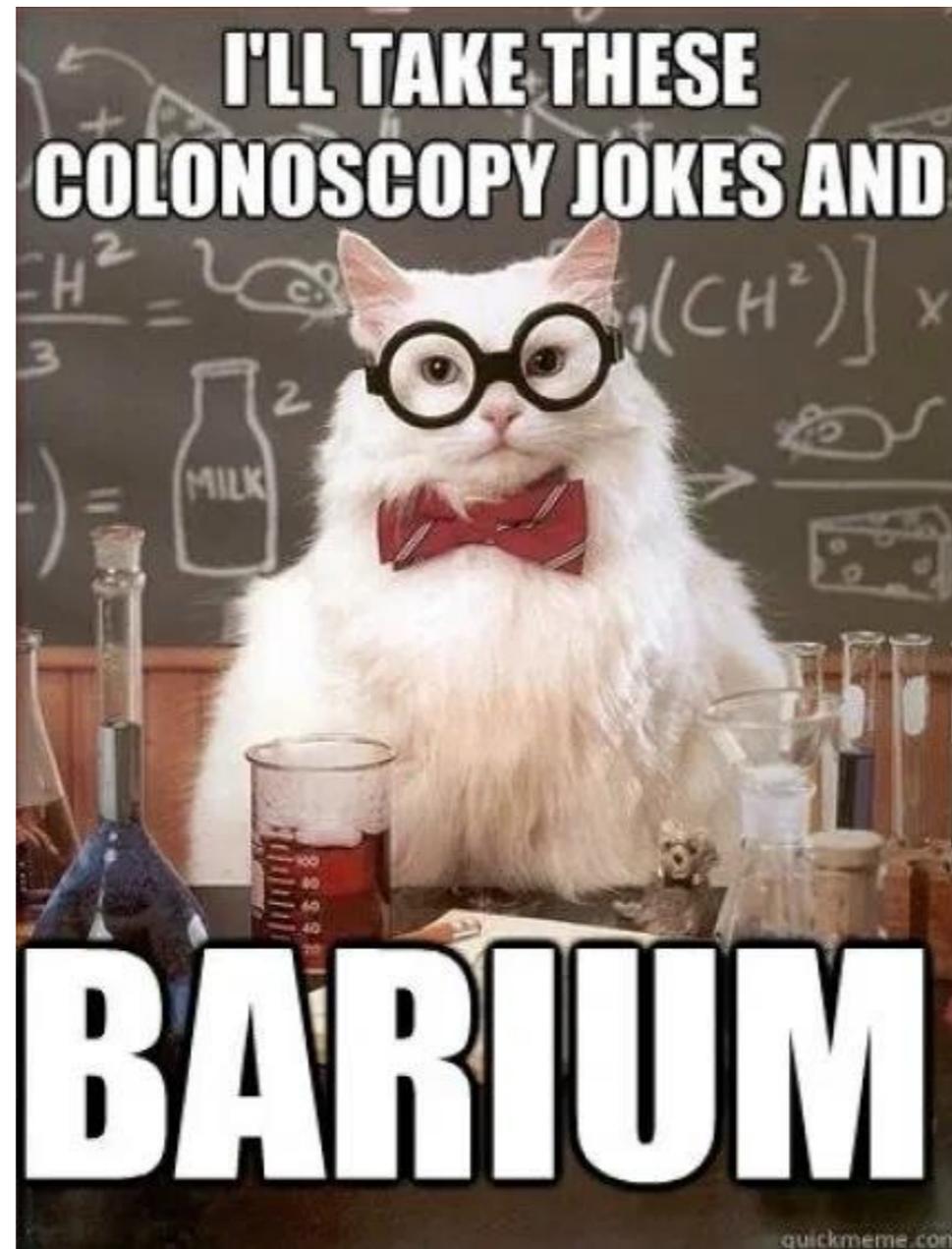
- Contraindication to bowel preps
 - Suspected mechanical obstruction
 - Medical condition precluding safe swallowing
 - Ileus/Gastric retention
- Special considerations
 - CHF/Renal Insufficiency/Hepatic impairment
 - Prefer osmotically balanced prep
 - IBD
 - PEG/ELS preferred, avoid sodium phosphate preps
 - G6PD
 - Avoid preparations with ascorbic acid
 - Pregnancy
 - Avoiding hyperosmolar prep generally preferred though no data

Individualize and optimize

- Identify patients at elevated risk of poor preparation
 - Consider higher volume when appropriate, but tailor to patient's medical history
 - Consider a pre-procedural office visit for education if significant risk factors
- Split dose or same day preparation
- Decrease 'runway time'
 - Time from prep completion to procedure within institutional anesthesia guidelines

Individualize and optimize

- Recommend prep for the prep
 - Decrease fiber intake several days
 - Charge up your phone, Ipad; ensure Netflix is paid for
- Chill out
 - Drink it cold
 - Do NOT choose your favorite flavor of beverage. It will not be your favorite for long



Thank you