QUALITY INDICATORS FOR COLONOSCOPY

Bisher Daaboul MD.

- Complying with colonoscopy recommendations reduces CRC by 31%, and reduces CRC mortality by 50%.

Bretthauer M, et al Effect of colonoscopy screening on risks of colorectal cancer and related death. N Engl J Med 2006

PROPOSED INDICATORS

- Quality of bowel prep (pre).
- Compliance with guideline-recommended screening and surveillance intervals (pre).
- Documentation of the informed consent (pre).
- Cecal intubation rate (intra).
- The ability to remove large polyps (intra).
- Withdrawal time (intra).
- Adenoma detection rate (ADR) (intra).
- The procedure findings (post).

PREPROCEDURE

- Frequency with which colonoscopy is performed for an appropriate indication and the indication is documented.
- When colonoscopy is used for appropriate indications, there is a higher yield of clinically relevant diagnoses.

ASGE Standards of Practice Committee; Early DS, et al. Appropriate use of GI endoscopy. Gastrointest Endosc 2012;75(6):1127–31

APPROPRIATE INDICATIONS FOR COLONOSCOPY

1. Evaluation of unexplained GI bleeding a. Hematochezia b. Melena with upper GI cause excluded c. Presence of fecal occult blood
2. Unexplained iron deficiency anemia
3. Screening for colorectal neoplasia at recommended intervals in average risk persons or persons with significant high-risk family histories
4. Surveillance in Lynch syndrome
5. Surveillance in patients with polyposis syndromes

6. Surveillance at recommended intervals for prior colorectal cancer or precancerous lesions.

7. Surveillance at recommended intervals of cancer risk in inflammatory bowel disease.

8. Assessment of disease activity in inflammatory bowel disease for purpose of assessing treatment response.

9. Clinically significant diarrhea of unexplained origin.

10. Evaluation of abnormal imaging of the colorectum that suggests cancer, precancerous lesions, or clinically important bowel-wall

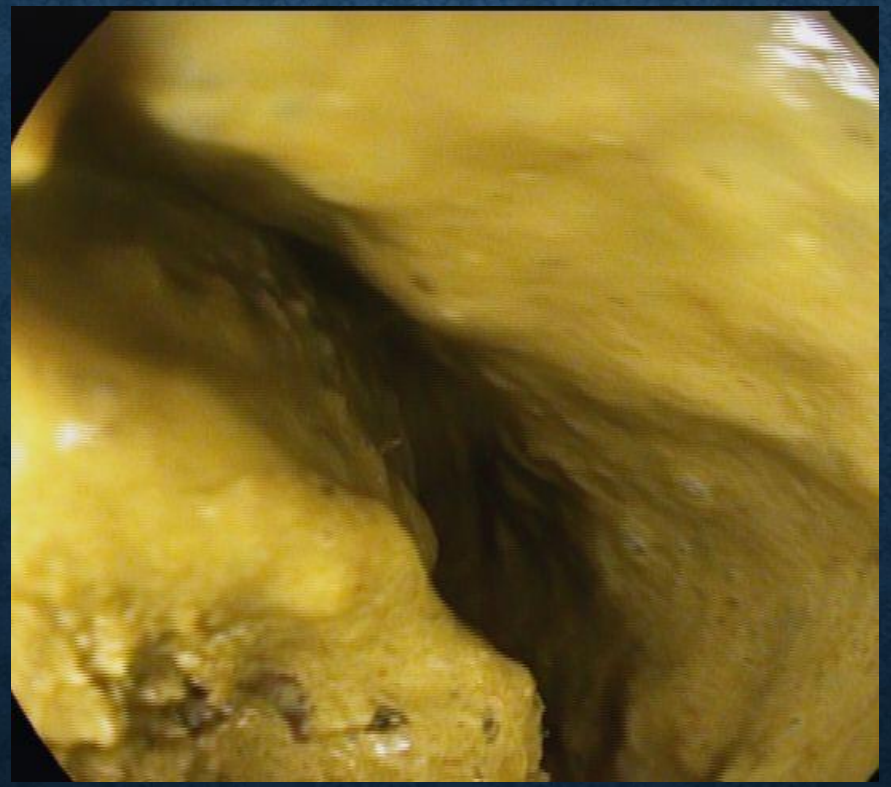
11. Intraoperative identification of a lesion not apparent or found at surgery
12. Treatment of bleeding lesions such as vascular malformations, ulceration, neoplasia, and postpolypectomy ulcers
13. Foreign body removal
14. Excision of polyp or early-stage colorectal cancer
15. Decompression of acute nontoxic megacolon or sigmoid volvulus
16. Treatment of stenosis
17. Palliative treatment of stenosing or bleeding neoplasm
18. Marking a neoplasm for localization
19. Positive fecal or blood-based colorectal cancer screening test

RATE OF BOWEL PREPARATION ADEQUACY

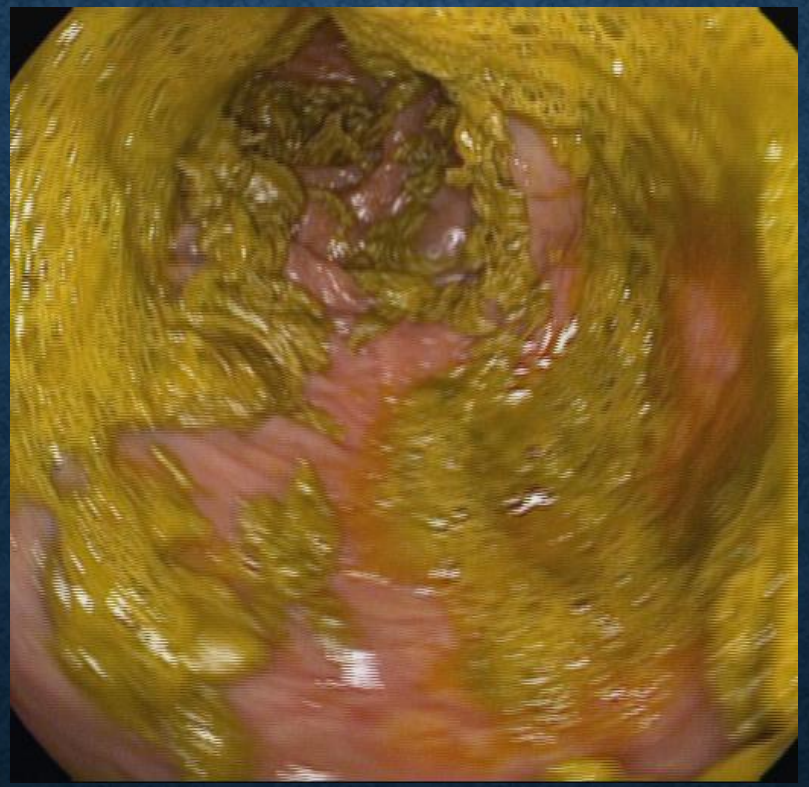
- patients with inadequate bowel preparation should have a repeat study within 1 year.
- At least 90% of outpatient colonoscopies should be accompanied by an adequate bowel preparation.
- The colonoscopy report in the case of adequate preparation should include descriptors of bowel preparation as "adequate," "good" or "excellent," or record a Boston Bowel Preparation Scale score of >2 in all 3 colon segments

Kluge MA, et al. Inadequate Boston Bowel Preparation Scale scores predict the risk of missed neoplasia on the next colonoscopy. Gastrointest Endosc 2018;87(3):744–51

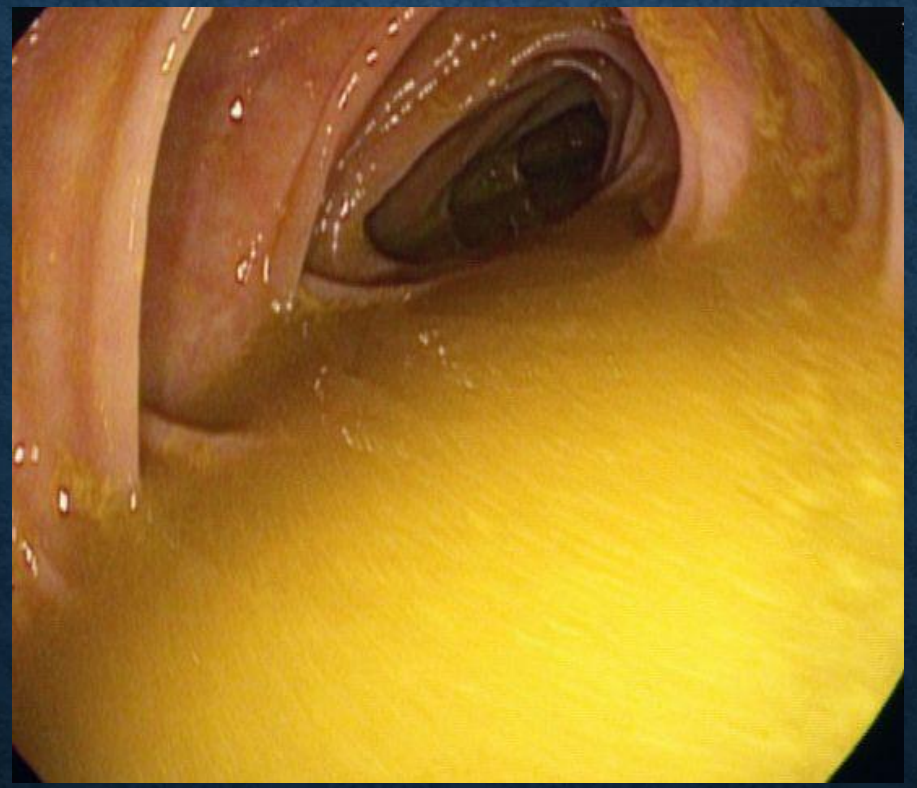
FINDINGS CORRESPONDING TO BBPS 0



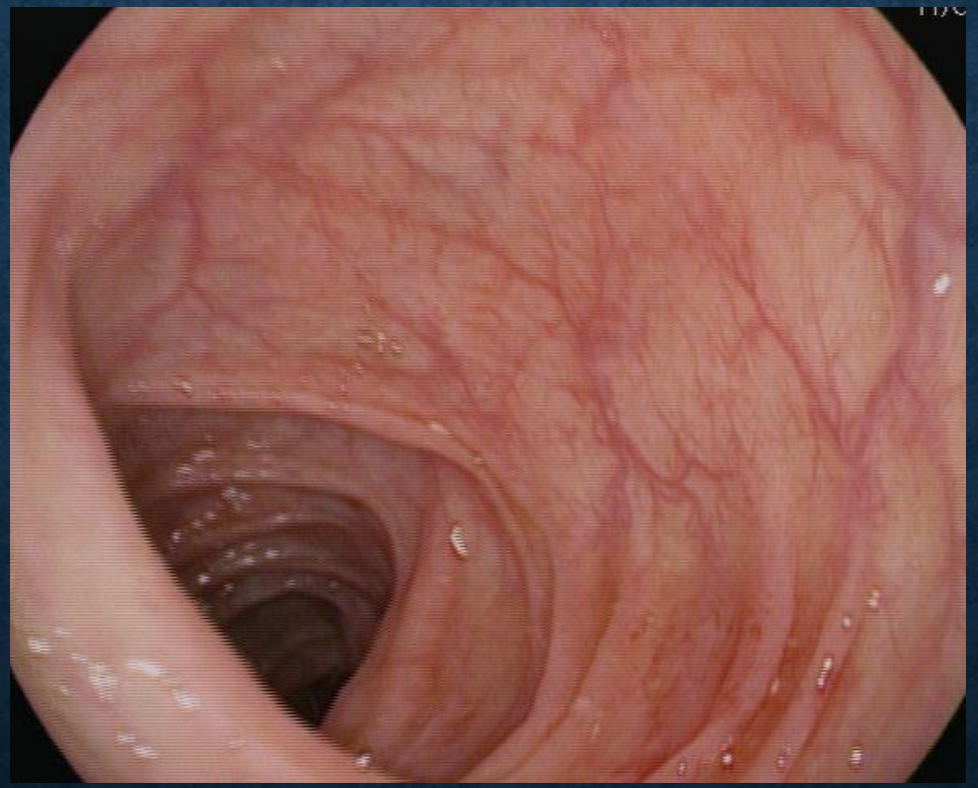
FINDINGS CORRESPONDING TO BBPS 1



FINDINGS CORRESPONDING TO BBPS 2



FINDINGS CORRESPONDING TO BBPS 3



CECAL INTUBATION RATE

- CIRs above 95% for all indications are readily achievable by high percentages of independently practicing colonoscopists.
- All independently practicing colonoscopists should have CIRs measured until they are consistently above the recommended target. After this, continued CIR measurement is optional and can be performed intermittently or not at all.

Vemulapalli KCJ, et al. Long-term assessment of the cecal intubation rates in high-performing colonoscopists: Time for review. Clin Transl Gastroenterol 2020;11(3):e00153.

ADR

- The adenoma detection rate (ADR) is the most clinically relevant and best validated quality indicator in colonoscopy.
- The benchmark for ADRs is 35% overall, 40% in men and 30% in women [1].
- It is considered the gold standard for quality measures.
- For each 1% increase in ADR there is a 3% decrease in the risk of CRC.
- Avoid the "one and done" phenomenon, and continue to seek more.

1: Rex et al , quality indicators for colonoscopy. Gastroentest Endosc 2015

- Adenoma under the curve (AUC) is a new benchmark under evaluation.
- The “bad day” phenomenon can not be detected by the ADR.
- The withdrawal time helps here.
- It dose not measure the quality of adenoma removal.
- It is also dependent on the pathologist’s performance.
- Using the cap increased the ADR from 56% to 69%[2].

2: Rastogi et al, Higher adenoma detection rates with cap assissted colonoscopy, Gut 2012

- Percentage of patients aged >45 years undergoing colonoscopy for screening, surveillance, or diagnostic indications other than positive noncolonoscopy screening tests (e.g., fecal tests or CT colonography) who have 1 or more conventional adenomas detected and verified by pathology. Patients with positive noncolonoscopy screening tests, genetic cancer syndromes (e.g., polyposis), IBD, or undergoing colonoscopy for therapy of known neoplasms are excluded from the calculation.

ADR IN PATIENTS WITH POSITIVE FECAL SCREENING TESTS

- An ADR of 50% (55% in men and 45% in women) in FIT-positive population is recommended.

SSP-DR

- Another factor is the epidemiology of the patient's population.
- The western world has the highest rate of the colon cancer[3], and the risk increases with the lower socioeconomic status.
- Sessile serrated poly detection rate (SSP-DR) were evaluated also but found to be an inadequate indexes by themselves.
- A current minimum threshold for the SSLDR of 6%

3:jemal A et al, Global cancer statistics, CA Cancer J Clin 2011

THE WITHDRAWAL TIME

- The increased time will lead to identifying more polyps.
- The recommendation is that the average minimum withdrawal time should be at least 8–9 minutes in normal colonoscopies
- This should not be translated to mean that best practice or the standard of medical care requires that every withdrawal time should last >8 minutes.

RESECTION INDICATORS

- Colonoscopists should report for all polyps: their size, shape, location in the colon by segment (or distance in centimeters from the anus for left-sided colon polyps), and the method of removal (i.e., cold snare, cold forceps, hot snare, hot forceps, cold EMR, hot EMR, etc).
- Hot forceps play no role in colorectal neoplasia resection except for avulsion during hot EMR or the removal of a flat polyp overlying fibrosis in the case of a recurrence or a previously partly resected polyp.

- Polyps should be described: size by mm (not small and large), flat, sessile or pedunculated.
- Efficacy of complete resection varied by 3-fold among operators in 1 study[1]

Pohl H, Srivastava A, Bensen SP, et al. Incomplete polyp resection during colonoscopy-results of the complete adenoma resection (CARE) study. Gastroenterology 2013;144(1):74–80.e1.

POSTPROCEDURE INDICATORS

USE OF APPROPRIATE SCREENING AND SURVEILLANCE INTERVALS

- Optimal performance of colonoscopy means it is both effective in preventing CRC and cost-effective.
- A recent meta-analysis found that 17%–25.7% of screening colonoscopies are performed more frequently than indicated or without an adequate indication for early repeat[2].

Fraiman J, et al. An estimate of the US rate of overuse of screening colonoscopy: A systematic review. J Gen Intern Med 2022;37(7):1754–62

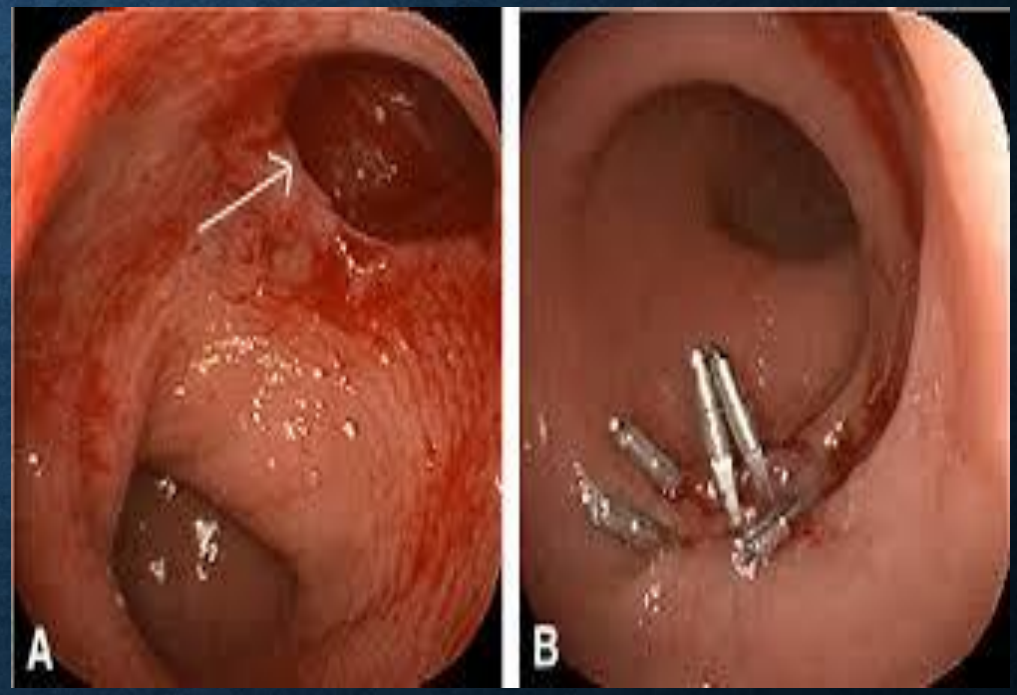
ADVERSE EVENTS

- Adverse events in colonoscopy span a range of outcomes. For colonoscopy, SAEs include perforation, post-polypectomy bleeding, cardiovascular events related to sedation, unplanned hospitalization, and mortality.
- Adverse events should be less than 1%.[3]
- They should be documented and reported for personal and center evaluation.

Stock C, et al. Adverse events requiring hospitalization within 30 days after outpatient screening and nonscreening colonoscopies. Gastrointest Endosc 2013;77(3):419–29

PERFORATION

- Perforation can occur during or soon after colonoscopy, with over half diagnosed by the endoscopist.
- About 5% of perforations associated with colonoscopy are fatal.
- Perforation is most common in the cecum and sigmoid colon.



Lohsiriwat V. Colonoscopic perforation: Incidence, risk factors, management and outcome. World J Gastroenterol 2010;16(4):425–30.,

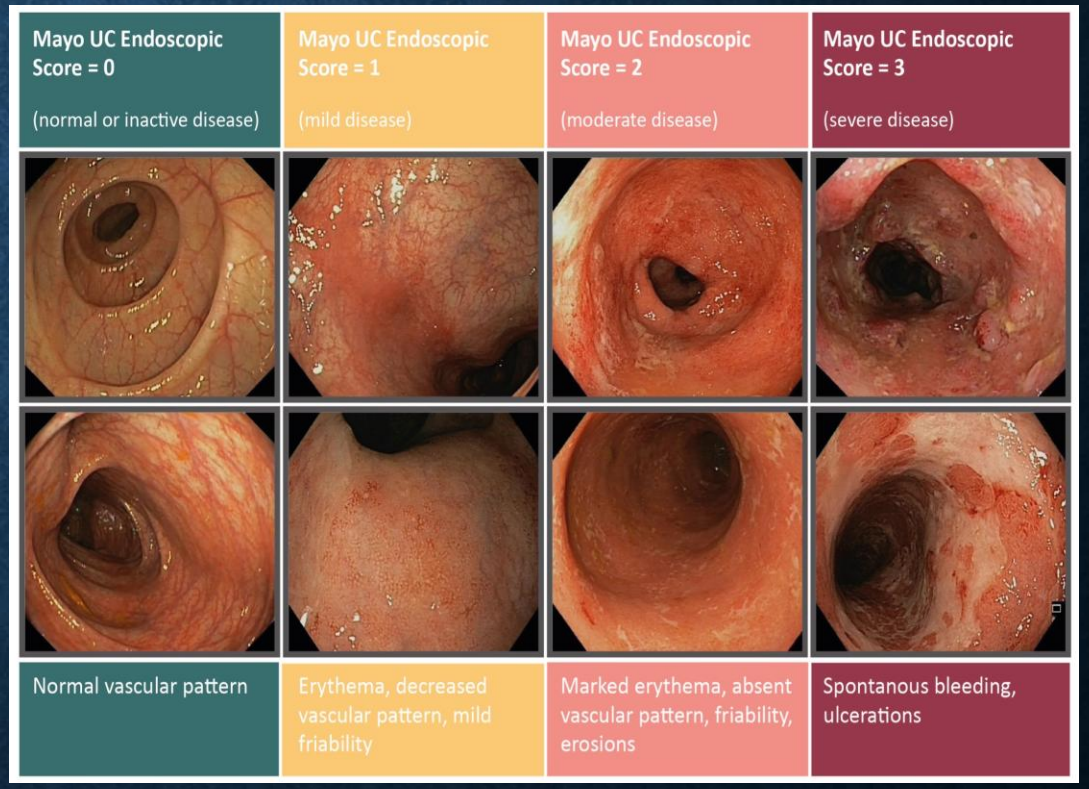
- Perforation in screening examinations is lower, with a reported incidence of 0.04%; perforations increase to 0.016%–0.8% for diagnostic colonoscopies and to 0.02%–8% for therapeutic colonoscopies. Patients with diverticulosis and irritable bowel syndrome as well as those taking corticosteroids are at an increased risk of perforation.

BLEEDING

- Risk factors include: polyps >1 cm in size , high number of polyps removed, proximal colon location, certain comorbidities, and use of antiplatelet and/or anticoagulant medications.
- Prophylaxis measures include: Cold snare polypectomy for small polyps (<9 mm), Prophylactic clipping of resection sites should be performed when feasible for lesions >2 cm located proximal to the splenic flexure that were removed using electrocautery.

IBD INTRAPROCEDURE COLONOSCOPY INDICATORS

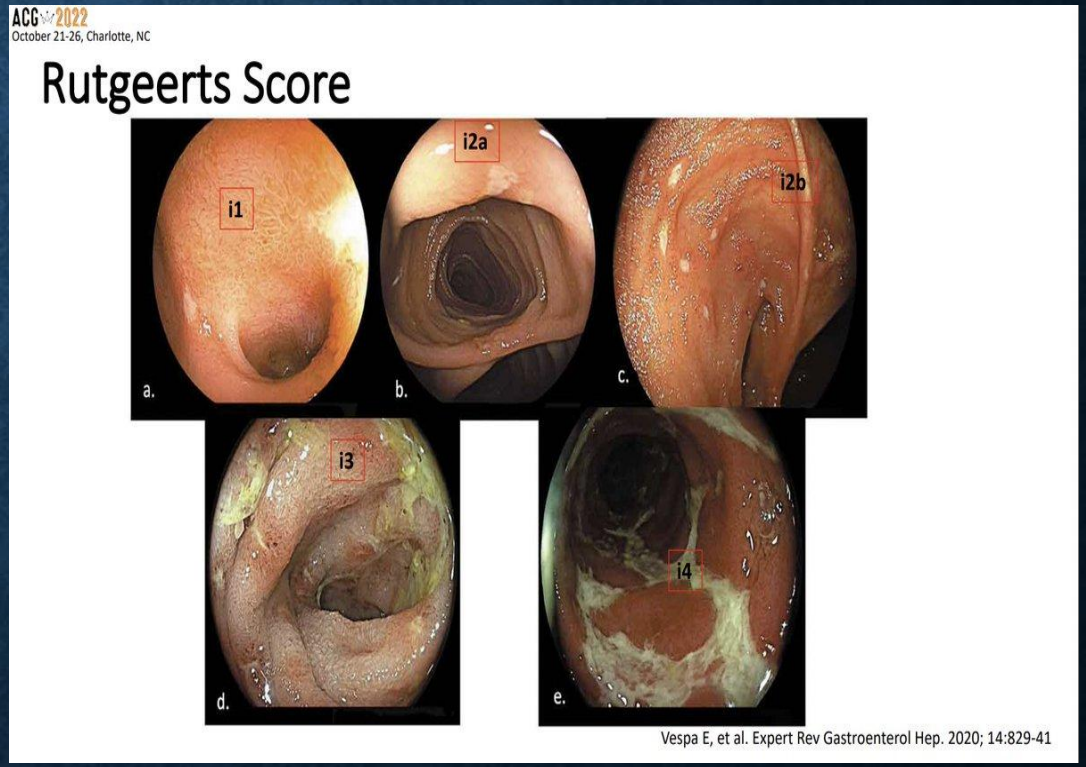
- Percentage of colonoscopies performed for the indication of UC in which a formal assessment of disease extent and activity (Mayo Endoscopic Score [MES], Modified Mayo Endoscopic Score [MMES], Ulcerative Colitis Endoscopic Index of Severity [UCEIS], or Ulcerative Colitis Colonoscopic Index of Severity) is recorded.



Limdi JK, et al. A review of endoscopic scoring systems and their importance in a treat-to-target approach in inflammatory bowel disease (with videos). Gastrointest Endosc 2020;91(4):733–45.

CROHN'S DISEASE ACTIVITY SCORE

- Percentage of colonoscopies performed for the indication Crohn's disease (CD) in which a formal disease activity score (Crohn's Disease Endoscopic Index of Severity [CDEIS], Simple Endoscopic Activity Score in Crohn's Disease [SES-CD], or Rutgeerts score) is reported



Mary JY, et al. Development and validation of an endoscopic index of the severity for Crohn's disease: a prospective multicentre study. Groupe d'Etudes Therapeutiques des Affections Inflammatoires du Tube Digestif (GETAID). Gut 1989;30(7):983–9

IMPROVING PERFORMANCE

- Split-dose or same-day (preparation entirely the morning of the procedure) bowel preparation.
- Cleaning pools of retained stool, fluid, and mucus.
- Exposing hidden mucosa by systematically probing the proximal sides of folds; and achieving adequate distention of the entire colon.
- A second examination of the right-sided colon, with or without retroflexion.
- Distal attachment devices help expose mucosa and improve ADRs, as shown in many randomized trials.

Jacob A,, et al. Endocuff Vision-assisted colonoscopy: A randomized controlled trial. Aust N Z J Surg 2019;89(5):E174–8.

- Dynamic change in patient position.
- High-definition endoscopes.
- Computer-aided detection technologies.
- Nurse assigned to observe colonoscopy monitor.
- As a last resort, removal of privileges to perform colonoscopy may be appropriate if satisfactory performance cannot be achieved, because colonoscopy quality is strongly associated with important patient outcomes.