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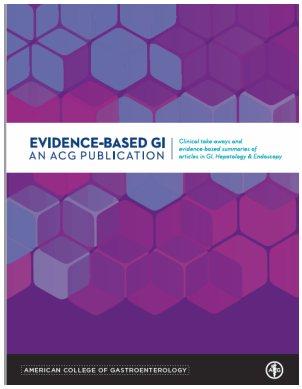

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CRC SCREENING

Time to Simplify ADR Calculation for Colonoscopy Quality Reporting

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Jeffrey Lee, MD, MPH
Associate Editor

This summary reviews Corley DA, Jensen CD, Chubak J, et al. Evaluating different approaches for calculating adenoma detection rate: is screening colonoscopy the gold standard? Gastroenterolgy 2023;165(3):784-787.e4.

Correspondence to Jeffrey Lee, MD, MPH. Associate Editor. Email: EBGI@gi.org

STRUCTURED ABSTRACT

Question: Do adenoma detection rates (ADRs) calculated by different indications (especially overall ADR using all colonoscopies vs screening ADR using only screening colonoscopies) have comparable associations with post-colonoscopy colorectal cancer (PCCRC)?

Design: Retrospective cohort study.

Setting: Four community-based health care systems in the United States (Kaiser Permanente Northern California, Kaiser Permanente Southern California, Kaiser Permanente Washington, and Parkland Hospital/University of Texas Southwestern).

Patients: In total, 1,046,916 patients had a negative colonoscopy (i.e., negative for colorectal cancer [CRC]) performed by 487 physicians from 2011-2019.

Exposure: The ADR of each patient's physician based on screening, colon polyp surveillance, and diagnostic examinations (including positive fecal immunochemical tests) in the calendar year prior to the patient's negative colonoscopy. In

addition, overall ADR of each patient's physician was based on all colonoscopy indications.

Outcome: The primary outcome was PCCRC, diagnosed at least 6 months after any negative colonoscopy (all indications).

Data Analysis: ADRs calculated as medians with interquartile ranges. Risk of PCCRC based on median ADR was calculated with Cox proportional hazards regression.

Results: The median ADRs and interquartile ranges for overall ADR was 36.3% (29.2%–44.4%); screening ADR: 29.7% (22.4%–38.1%); diagnostic ADR: 37.1% (30.6%–44.5%); and, surveillance ADR: 48.6% (38.8%–58.5%). The median overall ADR was an absolute 6.6% higher than the median screening ADR ($P < .01$) in a comparison of paired ADR values for each physician. ADRs across colonoscopy indications (i.e., screening, surveillance, diagnostic, and overall) were similarly inversely associated with PCCRCs (**Figure 1**). For patients of physicians with overall ADRs of 45% versus <25%, the hazard ratio (HR) for PCCRC risk was 0.44 (95% confidence interval [CI]: 0.35–0.55). Similarly, for patients of physicians with screening ADRs of 45% versus <25%, the HR for PCCRC risk was 0.43 (0.32–0.59). Although ADR ranges within quartiles varied by indication, comparable fourth vs first quartile associations with PCCRC risk were found across all indications (e.g., overall ADR versus screening ADR, 0.45 [0.36–0.55] versus 0.47 [0.38–0.57], respectively).

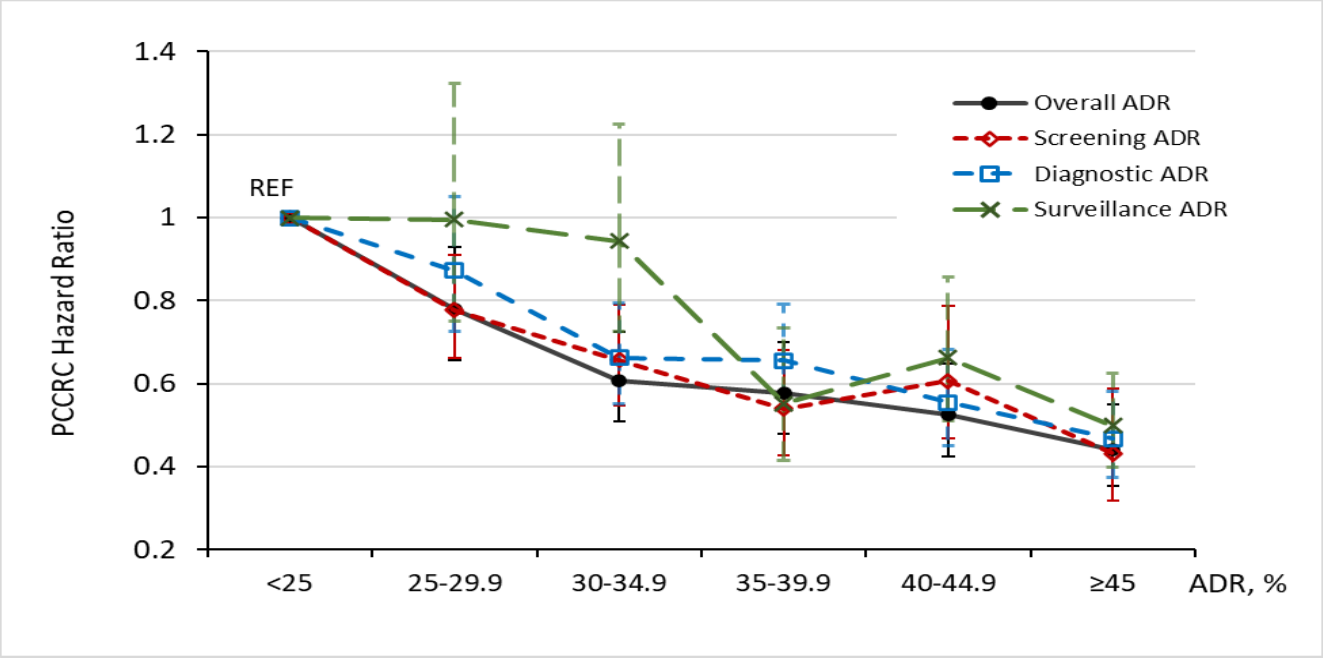

Figure 1. Associations between adenoma detection rates (ADR) quartiles and risk of post-colonoscopy colorectal cancer (PCCRC). Reprinted from *Gastroenterolgy*, 165(3), Corley et al. Evaluating different approaches for calculating ade-noma detection rate: is screening colonoscopy the gold standard? PP 784-787.e4. Copyright 2023 with permission from Elsevier.

COMMENTARY

Why Is This Important?

The beneficial effect of colonoscopy on reducing CRC incidence and mortality is largely derived from early detection and removal of adenomas.[1] Studies have shown the magnitude of this benefit varies based on the quality of the colonoscopy examination, particularly the ability to detect adenomas.[2,3] Physician ADR has been widely recommended as a key colonoscopy quality metric because of its inverse association with PCCRC.[4] However, this association has mainly been limited to ADR from screening colonoscopies.[2,3] Although calculating ADRs from screening colonoscopies was intended to provide an "apples to apples" comparison between physicians and across practices, measuring ADR from one indication has been challenging for many health care systems and practices. Often, ascertaining colonoscopy indication may include manual chart review or utilization of natural language processing tools; this can be extremely labor intensive and subject to misclassification, especially since multiple indications (e.g., screening and rectal bleeding) may be listed for a single colonoscopy. Thus, this study fills in an important gap in colonoscopy quality measurement by testing whether ADR calculated from all colonoscopies shows similar inverse associations with PCCRC as compared with ADR calculated from only screening examinations.

Key Study Findings

There was variation in the median ADR across colonoscopies by indication (ranging from 29.7% for screening to 48.6% for surveillance). Physician ADR across each colonoscopy indication were similarly inversely associated with PCCRCs. Patients of physicians with overall ADRs of ≥45% had a 56% reduced risk of PCCRC (HR: 0.44, 95% CI: 0.35-0.55) compared with patients of physicians with overall ADRs of <25%.

Similarly, patients of physicians with screening ADRs of ≥ 45% had a 57% reduced risk of PCCRC (HR: 0.43, 95% CI: 0.32-0.59) compared with patients of physicians with screening ADRs <25%. Nearly all endoscopists remained within the same ADR quartile regardless of whether overall or screening indication was used. This multicenter cohort study further supports the relationship between physician ADR and PCCRC, and this inverse relationship is the same regardless of whether the ADR is calculated from screening colonoscopies or from all colonoscopies. This study provides an important step to supporting a more pragmatic and less burdensome way to measure ADR for colonoscopy quality reporting.

Caution

Each institution from this study utilized different methods for capturing adenoma information and the indication for each colonoscopy.

My Practice

Over the past few years, our healthcare system has provided annual ADRs from screening colonoscopies for each gas-

troenterologist along with other important colonoscopy quality indicators (e.g., cecal intubation rate) to facilitate self-assessment and performance improvement. To do this, our healthcare system leveraged the electronic health record system and pathology databases to identify all colonoscopies performed by a gastroenterologist and whether an adenoma was detected. Each colonoscopy examination was then assigned an indication (e.g., screening, surveillance, or diagnostic) using a validated colonoscopy algorithm. This algorithm was designed to minimize misclassification of screening examinations by using a combination of administrative, diagnostic, and procedure codes linked with laboratory, pathology, and cancer registry data to classify colonoscopy indications. Because of the compelling findings from this study, our healthcare system has now modified its approach to calculating ADR for each gastroenterologist by using all examinations, regardless of its indication, rather than screening examinations. This has truly simplified the once time-consuming process of generating ADRs for each gastroenterologist and has minimized the concern of "indication bias."

In addition to simplifying ADR calculation for quality improvement, there are several tips I share with my fellows and colleagues to improve adenoma detection. First, it is critical to use a high-definition colonoscope with image enhancement capabilities to help detect and evaluate subtle lesions. Second, it is important to have mindset for detecting flat polyps since these lesions are often missed. Third, I maximize mucosal exposure by "working the folds" (i.e., deflecting the tip of the colonoscope into the inner-haustral valley and exposing the proximal sides of each haustral folds), cleaning and suctioning any stool debris, and distending the lumen adequately. Fourth, I perform 2 or 3 passes in the right colon since adenomas are often missed in this location. Lastly, when available, I often use a distal attachment device such as a clear translucent cap to help expose the proximal sides of each haustral fold and improve mucosal exposure.

For Future Research

Additional studies are needed to develop thresholds or benchmarks (minimum and aspirational) for overall ADR. More studies are also needed to evaluate whether improvement in overall ADR over time for physicians is associated with reduced PCCRC risk. Based on these data, an ADR threshold of 35% may be appropriate if an overall ADR is calculated from all colonoscopies.

Conflict of Interest

The authors of the article published in *Gastroenterolgy* are active on social media. Tag the to discuss their work and this EBGI summary!

@douglascorley @jessicachubak

@jeffleemd

Dr. Lee was a co-author and investigator of this study.

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Cannabidiol: A Potential Therapeutic Option for Idiopathic and Diabetic Gastroparesis

Dr. Philip N. Okafor
Associate Editor

Dr. Linda B. Nguyen
Guest Contributor

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This summary reviews Zheng T, BouSaba J, Taylor A, et al. A randomized controlled trial of efficacy and safety of cannabidiol in idiopathic and diabetic gastroparesis. Clin Gastroenterol Hepatol 2023 Jul 22;S1542-3565(23)00543-8. Epub ahead of print. doi: 10.1016/j.cgh.2023.07.008.

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STRUCTURED ABSTRACT

Question: Does 4 weeks of treatment with cannabidiol (CBD) provide symptom relief compared to placebo in patients with idiopathic or diabetic gastroparesis?

Design: Randomized, double-blinded, placebo-controlled (1:1), parallel-design, 4-week study, between September 2020 and March 2023.

Setting: Mayo Clinic, Rochester, Minnesota.

Participants: Symptomatic individuals with scintigraphic evidence of delayed gastric emptying (≤ 25% emptied at 2 hours and/or ≥75% emptied at 4 hours) for at least 3 months were eligible for participation. Patients with post-surgical gastroparesis were excluded from the study.

Intervention/Exposure: Twice daily, oral Cannabidiol, in divided doses starting at 2.5 mg/kg/day, and increased by 2.5-5.0 mg/kg/day until the target dose of 20 mg/kg/day.

Outcomes: The primary end point was change in patient response based on the Gastroparesis Cardinal Symptom Index Daily Diary (GCSI-DD) score, which was appraised daily and summarized for the 4-week treatment period. Secondary end points included aggregate symptoms during the 4 hours after the standard meal for the gastric emptying study (GES), and pharmacodynamics such as GES lag time, percentage of solid meal emptied at 1, 2, 4 hours, and maximum tolerated volume (MTV). Aggregate symptoms scored 30 minutes after MTV was also estimated. Other secondary end points included individual symptoms on the GCSI-DD. An exploratory end point was the association of fatty acid amide hydrolase (FAAH) and cannabinoid receptor 1 (CNR1) with responses to treatment.

Data Analysis: Statistical analysis compared changes in patient responses and pharmacodynamic outcomes (from baseline to while on treatment) between both intervention and placebo arms of the trial using analysis of variance. A sample size of 44 was determined after an interim analysis of 24 participants. Baseline measurements and body mass indices were used as covariates.

Funding: National Institute of Health RO1 grant (R01-DK122280).

Results: Among 44 study patients, mean age was 44.0 years; 89% female; 89% White; and 73% with idiopathic gastroparesis. Ninety-five percent of participants completed 4 weeks of treatment. Both groups were matched for age, sex, race, body mass index, and baseline gastric emptying. Compared to the placebo group, patients in the CBD group had slower gastric emptying parameters, but also had significantly lower GCSI scores (P=0.008), lower scores for inability to finish a meal (P=0.029), fewer episodes of vomiting in a 24-hour period (P=0.006), and lower perceived severity of gastroparesis symptoms (P=0.034). Importantly, no significant differences in lab values between both groups was observed. Also, no difference was seen in nausea and fatigue, though patients in the CBD group reported more diarrhea. Relevant pharmacodynamic outcomes are highlighted in **Table 1**.

COMMENTARY

Why Is This Important?

Gastroparesis significantly impacts patient quality of life and is associated with substantial health resource utilization including hospitalizations[1]. In addition, the number of inpatient admissions and associated costs in the United States is on the increase[1]. This is likely related to the limited therapeutic options available for managing gastroparesis, especially in the United States. Presently, metoclopramide is the only medication approved for the management of gastroparesis by the Food and

	Cannabidiol (n=21)	Placebo (n=23)	*P* value
Fasting gastric volume (ml)	276.2 (222.8-329.6)	257.8 (206.8-308.8)	0.616
Accommodation gastric volume (ml)	435.5 (396.8–474.1)	405.0 (368.1–441.9)	0.255
Fullness kcal on nutrient drink test	817.1 (719.9–914.3)	665.4 (572.5–758.2)	0.028
Maximum kcal on nutrient drink test	1114.7 (981.8–1247.7)	889.3 (762.2–1016.3)	0.018
Gastric emptying at 4 hours, %	52.2 (44.8–59.6)	62.8 (55.8–69.9)	0.045

Table 1. Effect of cannabidiol and placebo on pharmacodynamic end points in gastroparesis.

Drug Administration (FDA) and prescription comes with a black box warning because it crosses the blood-brain barrier and is associated with extrapyramidal side effects including tardive dyskinesia[2]. Motilin receptor agonists (e.g. erythromycin) and the 5-HT4 receptor agonist, prucalopride, are often used off-label with varying levels of success[2]. As such, novel therapeutics are needed to manage this chronic condition. Zheng et al, in this randomized clinical trial, attempt to address this unmet need by investigating the efficacy and safety of pharmaceutical grade CBD on gastroparesis symptoms.

Cannabidiol or CBD is the second most prevalent active ingredient in marijuana after THC or tetrahydrocannabinol, which is the primary psychoactive agent in marijuana. CBD is a cannabinoid receptor 2 inverse agonist with central nervous system mediated effects. That helps explain why CBD, which is widely available as oils, gummies, and capsules, has been purported to improve anxiety, insomnia, and chronic pain. It's also reported to impact visceral or somatic sensation peripherally and is anti-inflammatory, which makes it an attractive alternative therapy for patients with gastroparesis.

Key Study Findings

In this single center study of 44 participants, the authors show that

CBD lowered GCSI-DD scores, reduced severity of symptoms, including the inability to finish a normal meal, and reduced number of vomiting episodes despite slowing of solid food gastric emptying.

Caution

This is a small, single-center study

which limits generalizability. Though adequately powered to detect differences in outcomes, most participants in the study (73%) had idiopathic gastroparesis. Patients with post-surgical gastroparesis were excluded. Since the study duration was 4 weeks, the sustainability of the benefit from CBD and its impact on reducing gastroparesis flares and subsequent hospitalizations could not be ascertained. Nevertheless, given the lack of effective therapies for gastroparesis, this is an important first step in identifying new therapeutics for this disabling disorder.

My Practice

Medical grade cannabidiol as used in this study is currently FDA approved for seizures associated with Lennox-Gastaut syndrome (LGS), Dravet syndrome, or tuberous sclerosis complex (TSC); therefore, I [L.B.N.] have no experience with this compound. However, cannabis and cannabinoids are being used by gastroparesis patients. The NIH Gastroparesis Consortium reported 12% of patients used marijuana and those with more severe nausea or abdominal pain were more likely to use marijuana[3]. In our [Stanford] survey of patients with chronic nausea, 15% of patients reported marijuana was the most effective treatment for their symptoms[4]. Based on this data, it is important to be able to counsel patients about cannabis use and know the laws in the state where you practice. In California, physicians can recommend but not prescribe cannabis. For patients who have symptoms of nausea or pain refractory to anti-emetics and neuromodulators who are interested in trying CBD, I recommend working with a dispensary that can formulate a product that has more CBD than tetrahydrocannabinol (THC). As with most therapies, I recommend starting low and titrating slowly to the lowest effective dose. I do not prescribe dronabinol (Marinol) which is a synthetic THC due to central nervous system effects and the effects of THC on gastric motility by slowing gastric emptying. I do not recommend CBD as first line therapy; however, it should be an option considered in patients with medically refractory symptoms while FDA approved therapies for gastroparesis remain elusive.

For Future Research

Multi-center clinical trials with larger and more diverse patient populations and longer study duration are warranted to see if these benefits from CBD can be replicated. This would also allow exploration of any subgroup differences in efficacy based on the etiology of gastroparesis. Studies that evaluate the efficacy of CBD in combination with other therapeutic agents, such as metoclopramide, on patient reported outcomes and healthcare resource utilization would also be helpful.

Conflicts of Interest

Drs. Okafor and Nguyen report no potential conflicts of interest related to this article.

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CRC SCREENING

American College of Physicians Guidance Statement on Colorectal Cancer Screening: Pitfalls of Second-Guessing Guidelines

Dr Philip Schoenfeld
Editor-in-Chief

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This summary reviews Qaseem A, Harrod CS, Crandall CJ, et al. Screening for colorectal cancer in asymptomatic average-risk adults: A guidance statement from the American College of Physicians (Version 2). Ann Intern Med 2023; 176(8):1092-1100.

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STRUCTURED ABSTRACT

Question: At what age should colorectal cancer (CRC) screening start and stop and what should be the type and frequency of CRC screening tests in average-risk, asymptomatic individuals?

Methods: The American College of Physicians (ACP) develops Clinical Guidance statements in an attempt to reconcile published clinical guidelines with conflicting recommendations to help clinicians provide evidence-based care.[1] The ACP Clinical Guidance statement development process neither performs a de novo systematic evidence review nor uses GRADE to assess the certainty of evidence or strength of recommendations.[1] The ACP development process is to have ACP Clinical Policy staff perform a literature search for eligible guidelines which are current and connected to a systematic review, and then rate the quality of guidelines using the Appraisal of Guidelines for Research and Evaluation II (AGREE II) instrument.[2]

The AGREE II instrument asks raters to answer 23 questions about guideline scope

and purpose, stakeholder involvement, rigor of development, clarity of presentation, applicability, and editorial independence with a numeric score. In addition, each ACP appraiser then provides an overall score and determine if the guideline should be recommended for use based on the appraisers' own judgment on the transparency of the guidelines processes.[1]

Guidance statement authors review these guidelines and then make "guidance statements based on an assessment of the reported benefits, harms, costs, and patient preferences and values from the assessed guidelines and their evidence."[1]

Patients: Average-risk, asymptomatic individuals.

Intended Audience for Guidance Statement: All clinicians.

Funding: The ACP internal budget.

Results: Based on literature search, 5 guidelines were identified for review by ACP Clinical Policy staff: the American College of Gastroenterology (ACG), American College of Radiology (ACR), US Multi-Society Task Force (USMSTF), American Cancer Society (ACS), and US Preventive Services Task Force (USPSTF). Per the supplemental material, all of these guidelines contain essentially the same recommendations for starting and stopping CRC screening, and the type and frequency of use of CRC screening tools with the exception of the ACR guideline which only discusses radiologic tools.

All 5 raters recommended against using guidelines from ACG, ACR, and USMSTF, and 2 of the 5 recommended against using the ACS guideline, partly due to perceived lack of editorial independence, stakeholder involvement, and applicability (outlined in Supplemental Table 1). Only the USPSTF guideline was recommended for use, but with modifications. Using the data from the USPSTF 2021 evidence review and decision modeling[3,4], the authors provided the following guidance statements which differ from ACG, ACS, USMSTF, and USPSTF guidelines:

Clinicians should consider not screening asymptomatic average-risk adults between the ages of 45 to 49 years. They should discuss the uncertainty around benefits and harms of screening in this population (Statement 2). Clinicians should stop screening for colorectal cancer in asymptomatic average-risk adults older than 75 years or in asymptomatic average-risk adults with a life expectancy of 10 years or less (Statement 3). Clinicians should select among a fecal immunochemical (FIT) or high-sensitivity guaiac fecal occult blood test (gFOBT) every 2 years, colonoscopy every 10 years, or flexible sigmoidoscopy every 10 years plus a fecal

immunochemical test every 2 years as a screening test for colorectal cancer (Statement 4b). Clinicians should not use stool DNA or computed tomography colonography.

COMMENTARY

Why Is This Important?

Family practice physicians, general internists, and other primary care providers are the crucial link to ensure that average-risk adults get CRC screening. Since several options are available, including FIT, stool DNA tests, and colonoscopy, these physicians should educate their patients about the benefits and limitations of each option and perform shared decision-making with their patients. For example, patients should understand that screening colonoscopy is a CRC prevention tool whereas FIT is a tool to identify or detect CRC at an early and treatable stage. In order for family practice physicians and general internists *and* other health care providers to effectively educate their patients, we should follow nationally-recognized and approved guidelines. Essentially, we all want to be on the same page when we talk to patients.

Although the authors of the ACP Guidance Statement write that several clinical guidelines vary on the ages to start and stop screening, screening tests and time intervals, and strength of recommendations, the key recommendations are actually quite uniform in the ACG, ACS, USMSTF, and USPSTF guidelines, as noted in Supplemental Table 2 of the published article. An accompanying editorial[5] comments that the ACP Guidance Statement is more consistent with European guidelines, although these non-US guidelines did not meet ACP criteria to be evaluated by reviewers. Thus, it's unclear why the ACP Clinical Policy staff, which seem to guide this process, felt compelled to second-guess existing evidence-based guidelines while cherry-picking data to support divergent recommendations. Unfortunately, this document may do a considerable disservice to US patients by confusing primary care providers.

Since CRC screening in 45-49 year olds (grade B recommendation) and CRC screening in 50-75 year olds (grade A recommendation) are endorsed by the USPSTF guideline, insurers must cover CRC screening tests at no cost to the patient under the Affordable Care Act. The authors' rationale for suggesting against CRC screening in 45-49 year olds is that the net benefit is inadequate to outweigh potential harms, costs, and impact on healthcare disparities based on their review of modeling studies used by USPSTF while also questioning the methodology of the modeling studies. Although the authors state that individuals older than 75 and in good health may benefit from 1-time screening, the guidance statement does not allow for individualized decision-making between patient and provider as recommended in other

guidelines. Stool DNA tests were not recommended based on an unfavorable cost-analysis performed by the authors, although it's unclear if this analysis accounted for its increased sensitivity for advanced adenomas. Readers are encouraged to review the full ACP Guidance Statement and Supplemental Material for context.

Key Study Findings

Clinicians should consider not screening average-risk 45-49 year old individuals, and stop CRC screening after age 75. FIT should be performed every 2 years instead of annually, and stool DNA tests are not recommended.

Caution

There are many limitations inherent in the ACP Guidance Statement process. An abbreviated list would note that the primary authors appear to be a non-practicing physician specializing in healthcare policy and a PhD epidemiologist. While this background is optimal to minimize conflicts of interest, important context is lost when there is no input from practicing gastroenterologists, oncologists, and primary care providers, who actually conduct shared decision-making with patients on a daily basis. The AGREE II tool provides some transparency and standardization to assess guidelines, but the domains and numerical assessments are subjective. Then, the ACP Guidance Statement protocol asks reviewers to make an additional subjective assessment about whether or not they would recommend the guideline. Notably, only the USPSTF guideline was acceptable to the 5 reviewers, which included only 2 practicing physicians.

While the Guidance Statement emphasizes that it also assesses costs, they do not use a patient's cost perspective. Since USPSTF recommended screening tests almost uniformly have to be covered at no cost to patients, the ACP cost-analysis is more appropriate to the national health services of non-US countries. This should be explicit. Although the text of the ACP Guidance Statement acknowledges that CRC screening may be beneficial for healthy individuals over 75, they recommend against CRC screening in over 75 individuals instead of recommending the individualized approach recommended by ACG, USPSTF, etc. No clear rationale for this discrepancy is stated. Finally, when stating that any benefits of CRC screening in the 45–49-year-old age group are balanced or outweighed by the harms of colonoscopy, the estimated rates of serious GI and cardiovascular complications appear to be partly based on an older, non-screening population. Their assessment of the model probably does not account for the very, very low rates of serious complications in healthy, average-risk 45-49 year olds.

My Practice

In my own practice, I follow the USPSTF guideline—which are consistent with the ACG, ACS, and USMSTF guidelines—and offer CRC

screening starting at age 45 in average-risk patients while individualizing decisions about CRC screening in individuals over 75. We primarily offer annual FIT or colonoscopy every 10 years, although we'll consider stool DNA tests, too. We do not offer gFOBT which require sampling from three separate stool samples and dietary restrictions while collecting specimens. We do not offer flexible sigmoidoscopy, which is useful for reducing CRC in the recto-sigmoid area but has very limited benefit for impacting CRC beyond these portions of the colon.

Given the uncertainty created by the ACP Guidance Statement, I educate my primary care colleagues about ACG and USPSTF guidelines, while respectfully suggesting that they should not use the ACP Guidance Statement.

For Future Research

The results of ongoing randomized controlled trials, including the CONFIRM trial comparing annual FIT vs screening colonoscopy, will clarify unanswered questions in all CRC screening guidelines.

Conflict of Interest

Dr. Schoenfeld reports serving as a consultant for EXACT Sciences within the past 3 years.

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Note: An author of the article published in *Annals of Internal Medicine* are active on social media. Tag them to discuss their work and this EBGI summary.

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CRC SCREENING

The Long Road to Achieving Competence in Cold Snare Polypectomy: Video-Based Feedback Can Help

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This summary reviews Kaltenbach T, Patel SG, Nguyen-Vu T, et al. Varied trainee competence in cold snare polypectomy - Results of the COMPLETE randomized controlled trial. Am J Gastroenterol. 2023 Jun 13. doi: 10.14309/ajg.0000000000002368. Online ahead of print.
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STRUCTURED ABSTRACT

Question: Does structured video-based feedback accelerate Gastroenterology trainee competence in cold snare polypectomy?

Study Design: Single-blinded randomized controlled trial where consecutive cold snare polypectomies performed by trainees were video recorded.

Setting: Two US academic medical centers 2017-2020.

Participants: Senior gastroenterology trainees (second- or third-year fellows) who had completed an average of 140 colonoscopies prior to the study.

Intervention: Video-based feedback on polypectomy technique every 2 weeks. Feedback used the ACT approach: 1) ask the trainee, 2) conversation between the trainee and the trainer, and 3) review the take home message. The videos included trainee's videos and expert videos. Those

randomized to the control group received conventional feedback at the discretion of their supervising 'attending endoscopists.

Outcomes: Learning curve in achieving competence in cold snare polypectomy. Competence was assessed by a group of eight board certified gastroenterologists experienced in colon polyp resection. Each reviewer viewed the trainees' polypectomy videos and scored them according to the cold snare polypectomy assessment tool, a validated 12-item competency assessment tool that includes an overall assessment.[1] Competence was defined as a median score higher than 3 (4-perfect, 3-adequate, 2-sub-optimal, 1-unacceptable) on the overall assessment in the final 20 polypectomies a trainee performed.

Data Analysis: Learning curves were created using cumulative sum control curves at intervals of approximately 25 polyps. The sample size calculation was performed assuming that the video feedback group would achieve competency with 100 polypectomies +/-25 while the conventional feedback group would achieve competency with 150 polypectomies +/-25. This assumption required 8 trainees in each group.

Funding: American Society for Gastrointestinal Endoscopy Research Award.

Results: Twenty-two trainees participated (12 randomized to video feedback, 10 to conventional training) and completed 2,339 cold snare polypectomies. Only 2 trainees out of 12 (16.7%) in the video-feedback group achieved competence (after a mean of 135 polypectomies), whereas no trainees in the control group achieved competence (P=0.481). When extrapolating the association of cold snare polypectomy volume with performance, competence increased by 3% every 20 polypectomies in the video feedback arm, whereas there was no change in the control arm over polypectomy volume (**Figure 1**).

COMMENTARY

Why Is This Important?

Colonoscopy and polyp removal are cornerstones of effective colorectal cancer screening and prevention.[2, 3] Incomplete polyp removal is associated with a significantly increased risk of advanced colorectal neoplasia in the segment of the colon on surveillance colonoscopy[4] (See March 2022 EBGI summary by Jeff Lee). Unfortunately, approximately 10%-20% of all post-colonoscopy colorectal cancers are due to incomplete resection of polyps,[5] as reviewed by Dr. Jeffrey Lee in EBGI in March 2023.

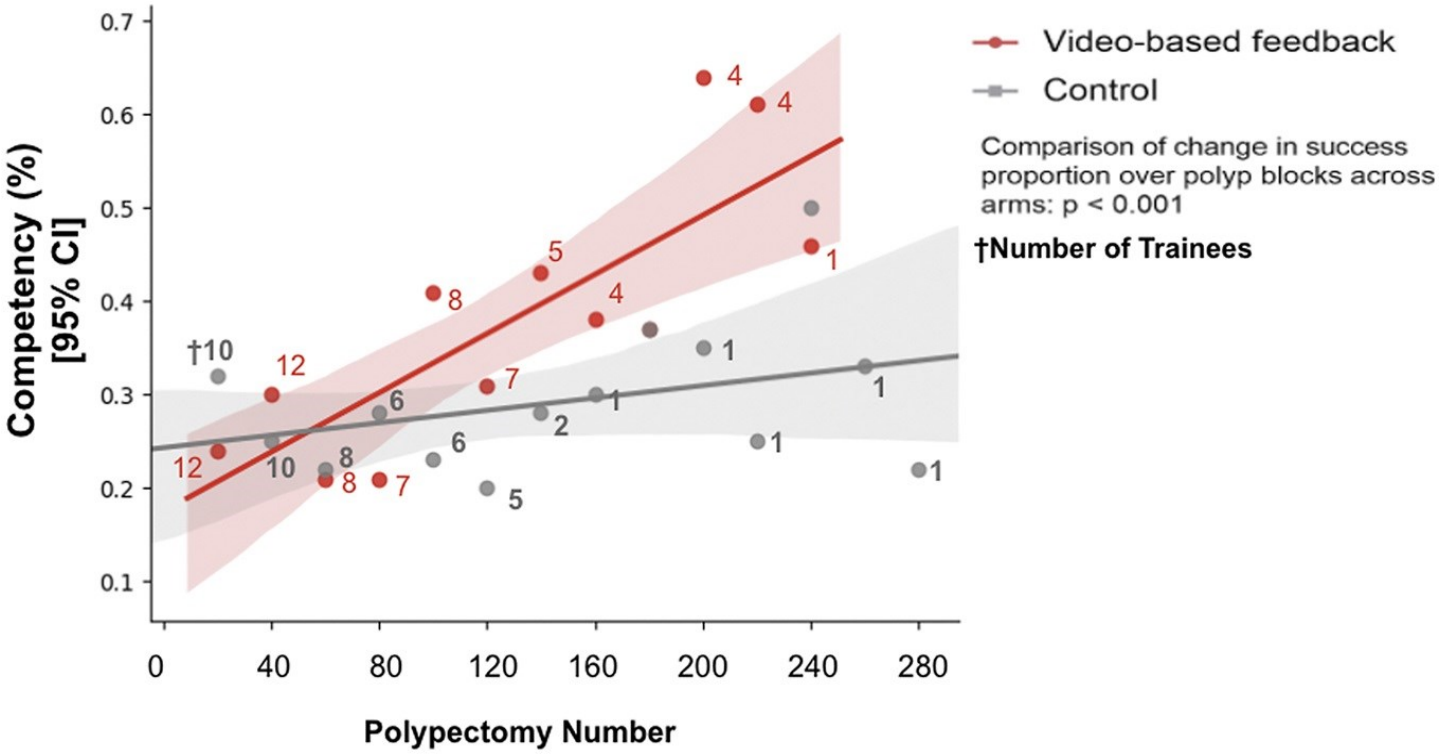

Figure 1. Change in success proportion of polypectomies among the video-based feedback group (red) and control group (gray). The trainees completed a variable amount of polypectomies during the study period, with approximately 1 trainee completing more than 280 polypectomies. † Represents the number of trainees used to calculate the success proportion for every 20 polypectomies.

Small polyps (<10mm) are the most commonly found polyps during colonoscopy, and they can be removed safely, completely, and efficiently via cold snare polypectomy. Cold snare polypectomy is therefore a core skill for practicing gastroenterologists. There is little data on learning curves for this important skill among trainees and effective interventions to improve competence.

Key Study Findings

This study demonstrated that the learning curve for cold snare polypectomy is very long.

The majority of trainees in the study did not achieve competence, despite having baseline experience of 140 colonoscopies, and then completing an additional 56-58 colonoscopies as part of the study, wherein they completed an average of 106 cold snare polypectomies each. Two of the 12 trainees who received feedback achieved competence, whereas none of the trainees in the control arm did. Although there was no statistically significant difference in the proportion of trainees who achieved competence between the groups, providing trainees video-based feedback every two weeks resulted in a steeper learning curve than no feedback **(Figure 1).**

Caution

This study demonstrates that the learning curve for achieving competence in cold snare polypectomy is very slow. Although video-based feedback accelerates the learning curve, it seems impractical to implement video review of consecutive trainee cold snare polypectomies and trainer-trainee feedback sessions every two weeks. With that said, this model can be adapted by having trainees view a selection of their own videos, as well as expert videos. This approach would require further study to determine whether it has the same impact on learning curves.

My Practice

The bottom line is that cold snare polypectomy is an important skill that takes a very long time to master. I emphasize to the trainees in our program that they will likely not master this skill by the end of their fellowship and that they must dedicate intentional practice in this skill in the first years of independent practice. I encourage graduating fellows to ensure they join practices where they can receive peer guidance and feedback, not only in this important skill, but the many clinical and procedural skills that will continue to develop when one enters independent practice. I also encourage trainees to embrace humility about colorectal lesions they encounter, but may not be able to resect. It is always reasonable to mark the lesion with a tattoo and refer to a colleague. Although there is always the fear that patients will be frustrated with repeat procedures, when explained carefully that the ultimate goal is cancer prevention, patients will understand that quality of resection is of utmost importance.

For Future Research

This study shows that video-based feedback accelerates learning curves in cold snare polypectomy, however the learning curve is very slow with most trainees not achieving competence. Future work needs to be dedicated on how we can incorporate automated video-based feedback into training without taxing individual trainers.

Conflict of Interest

Dr. Patel was a co-author and investigator of this study.

Note: The authors of the article published in *The American Journal of Gastroenterology* are active on social media. Tag the to discuss their work and this EBGI summary!
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