

Perspectives on Colon Cancer Screening—A Physician Panel Discussion for Preclinical Medical Students

Christen K. Dilly, MD, MEHP*, Hannah J. Craven, MLIS, Jean P. Molleston, MD

*Corresponding author: cklochan@iu.edu

Abstract

Introduction: Colon cancer is the third most common cancer in the US, and the survival rate improves drastically with early detection. It is important for medical students to understand screening options, and to be able to effectively discuss these options with their patients. While basic information about colon cancer screening is ubiquitous in US medical school curricula, no published curricula describe teaching students the nuances of negotiating this discussion with patients and tailoring screening to individual patients' needs. **Methods:** We developed a 90-minute session for second-year medical students as part of a gastroenterology and nutrition course. We provided a short lecture on colon cancer screening. We then had a panel of practicing gastroenterologists and a primary care physician discuss their approaches to six hypothetical cases. The students reflected in writing on what they learned from the session and on their opinions of the session format. **Results:** Of second-year medical students, 139 attended the session and 110 submitted written reflections on the session (79% response rate). The students perceived significant gains in knowledge, communication skills, and attitudes around the discussions. **Discussion:** This expert panel session taught medical students knowledge and communication skills related to colon cancer screening. The session could be easily implemented at any medical school, either at the preclinical or clinical level.

Keywords

Colon Cancer, Panel Discussion, Reflection, Physician, Communication Skills, Gastroenterology, Preventive Medicine, Primary Care

Educational Objectives

By the end of this activity, learners will be able to:

1. Make a plan for discussing colon cancer screening with an average-risk patient.
2. Describe how they would tailor a discussion of screening options to a patient's unique needs and preferences.
3. Reflect on examples of shared decision-making presented by the panelists.

Introduction

Colon cancer is the third most common cancer diagnosed in men and women in the United States.¹ The lifetime risk of disease is approximately 5% in men and 4% in women.¹ The overall 5-year survival rate is approximately 65%; this rate is much higher for those with localized disease (90%) than distant-stage disease (14%).¹

Citation:

Dilly CK, Craven HJ, Molleston JP. Perspectives on colon cancer screening—a physician panel discussion for preclinical medical students. *MedEdPORTAL*. 2020;16:11019.
https://doi.org/10.15766/mep_2374-8265.11019

A variety of options and approaches are available for colorectal cancer screening. A physician can choose to offer multiple screening options to a patient, offer a preferred test first, or offer tests based on a patient's predicted risk.² Professional societies and public health agencies disagree about some aspects of screening. For example, the US Preventive Services Task Force recommends screening in general and provides information about screening options,³ whereas the US Multi-Society Task Force recommends a tiered approach to screening, with either a colonoscopy every 10 years or an annual fecal immunochemical test as the top tier.² Despite the availability of guidelines, medical school graduates are not fully prepared to recommend appropriate screening and surveillance intervals. In a study of primary care and subspecialty residents, Patell and colleagues found that the residents were able to choose a screening strategy supported by guidelines in only 11%-23% of scenarios.⁴ Other studies have found similar deficits in the knowledge or practice of practicing physicians⁵⁻⁷ or international medical students.^{8,9}

The AAMC has developed core entrustable professional activities (EPAs) for students entering residency. EPA 3 states, "recommend and interpret common diagnostic and screening tests."¹⁰ This

EPA requires that students are able to understand the principles of screening, choose a cost-effective test, account for patient preferences and unique characteristics, and interpret test results. Colon cancer is a good example of the type of disease that is appropriate for screening, and students preparing for careers in many specialties will need to be skilled in screening for this disease.

Because there is not one single correct way to screen, students must be able to take into account test characteristics, patient preferences, and patient risk profiles when framing their discussion with their patients. This requires skill in patient-centered communication. This session was not intended to provide comprehensive training in patient-centered communication or shared decision-making, as this topic is taught elsewhere in the preclinical curriculum. Instead, we aimed to demonstrate strategies used by experts when choosing a screening strategy in partnership with patients.

While colorectal cancer screening is taught at every medical school in some format, there are no published curricula on teaching preclerkship medical students about colon cancer screening. Some relevant curricula include a podcast introducing risk stratification, colonoscopy, and fecal occult blood testing, but this was published prior to the most recent guidelines.^{11,12} Similarly, Bergl and Feagles published a team-based learning curriculum discussed the nuances of screening for prostate, lung, and breast cancer, but colon cancer is not included.¹³

Before our school's curriculum revision, colon cancer screening was taught in a lecture format. While this format was able to convey screening options and their test performance characteristics, the format was not ideal for conveying the subtleties related to discussing the options with patients, especially those with distinct needs, preferences, and life experiences. With the curriculum revision, we first developed this as a small-group discussion session. However, students were not engaged with the material, likely because of the number of small-group sessions they were required to attend, and because learning from this session was not directly assessed on examinations. To address this, we changed the format of the session to one where physicians discussed their approaches to the screening discussion. Our instructional approach of having practicing physicians describe how they combine clinical guidelines with patient characteristics and preferences allowed us to emphasize the art of communicating with patients in ways that have not been previously described in the literature.

Methods

Curricular Context

The 90-minute session was part of a gastroenterology course for second-year medical students that combined pathology, pathophysiology, pharmacology, and clinical medicine; at least 50% of the curriculum was mandated to be nonlecture/creative teaching approaches.

Pework

In order to understand the different approaches to colon cancer screening, students must have some important prerequisite knowledge. First, it is helpful to understand screening principles in general. For this, we asked students who were not comfortable with these principles to read a textbook section.¹⁴ Second, they needed to understand the genetic basis of colon cancer. Our students had a lecture and pathology lab on colon cancers; however, we encouraged them to read a textbook section to refresh the material.¹⁵ Finally, we wanted them to have a familiarity with the guidelines. We required an article³ and included the commentary as optional reading.¹⁶

Implementation in the Local Setting

The first iteration of this session lasted 2 hours and took place in a lecture hall. The facilitator started by giving a 30-minute mini-lecture on colon cancer screening. In subsequent iterations, we offered a narrated PowerPoint presentation on colon cancer screening (Appendix A) that was assigned prior to the session, which was reduced to 90 minutes.

During the session, we invited the three practicing physicians to a table at the front of the room. One was a gastroenterologist with expertise in colon cancer screening and outcomes. One was a gastroenterologist with expertise in noninvasive screening tests for colon cancer. One was a primary care doctor with expertise in talking with patients about their screening options. They each had a microphone, and all faced the students. The facilitator went through six hypothetical patient cases where a decision about screening needed to be made (Appendix B). After each case was presented, the clinicians debated the optimal approach to screening, and the facilitator moderated the discussion. The discussants also addressed their approaches to communicating with the patients in each scenario. Their main points were summarized in Appendix C. The students were afforded multiple opportunities to ask questions. At the end of the session, we provided the students with a list of take-home points (Appendix D).

After the session, we asked the students to reflect on what they learned in writing. We asked them to submit answers to two

questions to Canvas (Instructure), our learning management system:

1. What will you use from today's session when you speak with your patients about colon cancer screening?
2. How effective or ineffective was the physician panel format for your learning?

Implementation Recommendations for Other Settings

This session could be easily implemented at any medical school. The physician panel should include at least two physicians who practice in colon cancer screening. We believe it is helpful if the panelists have real-world experience talking with patients about colon cancer screening. Ideally the panelists should include a primary care physician who discusses screening approaches with patients and a gastroenterologist who performs screening colonoscopy. The facilitator need not be a clinician. The panelists should be prepared to discuss the following:

- Colon cancer screening guidelines and their evidence.
- Their strategies for communicating with patients.
- How they take individual patient characteristics into account when using clinical guidelines.
- How they make decisions when guidelines do not clearly apply to their patients, or when there is weak evidence behind a guideline.

Some examples of what might be discussed are outlined in Appendix C. We believe this session could serve as a flipped classroom alternative to a colon cancer screening lecture, or it could be integrated into a clinical medicine course where communication skills are emphasized. We recommend assigning the narrated PowerPoint (Appendix A) as a preclass activity. During the session, the facilitator should present the cases and direct questions to the panelists, depending on their area of practice. If the panelists' answers do not address important points from Appendix C, the facilitator can prompt the panelist to elaborate. Students should have multiple opportunities to ask questions of the panelists.

We recommend assigning the reflection activity after the session, as we believe that reflection helps with professional identity formation.¹⁷ Our original reflection question and several additional options were listed in Appendix E. When implementing this session, educators could choose to assign one or two questions or allow students to choose one to two questions that are most meaningful to them. While we designed it for preclinical students, it could be useful for students on internal medicine or family medicine clerkships, or even for residents.

Evaluation

To evaluate the effectiveness of this activity, we deidentified the students' reflections and uploaded them into the Dedoose platform (SocioCultural Research Consultants, LLC). We then analyzed the responses along with responses to two other reflection assignments using an iterative analysis approach.^{18,19} Authors Christen K. Dilly and Jean P. Molleston had previously analyzed data from two other assignments and built a coding structure in an iterative manner. Christen K. Dilly used this coding structure to code the reflections on question 1 for this session.²⁰ She coded question 2 first using open coding, then Christen K. Dilly and Jean P. Molleston reviewed the codes and allowed themes and subthemes to emerge. As a group, we selected representative quotes that illustrated the meaning behind each theme. We also collected exam score results on questions from the midterm exam and the NBME exam related to colon cancer screening as a form of descriptive data; of note, we neither wrote these questions nor designed the session to prepare students for these assessments.

Results

Of second-year medical students, 139 attended the session. Of this group, 110 submitted written reflections on the session (79% response rate). Analysis of the students' responses related to the structure of the session were shown in Table 1. Overall, most students felt the session was valuable in their education. Some expressed a preference to have the lecture portion conducted as an asynchronous assignment, prior to the session. Several themes emerged that described why the physician panel was a valuable instructional strategy. A few students' reflections indicated that they had conflicting beliefs about where they should focus their attention, as standardized testing is their main measure of success at their stage of training.

Themes related to what students learned from the session are shown in Table 2. Themes emerged in the knowledge, communication skills, and attitudes domains. Students appeared to learn about aspects of screening that are not often emphasized, such as when not to screen a patient. Students perceived improvements in their communication skills after attending the session, particularly around shared decision-making. Attitudinal gains seemed to be around the art of medicine. In particular, students' reflections indicated that they were realizing the complex factors involved with these care decisions, beyond simply following guidelines.

On the midterm examination, there were six questions related to colon cancer, but only two related to screening. On the questions

Table 1. Themes Describing Students' Impressions of the Effectiveness of the Session

Category	Theme	Quote
Overall impression	Students want more of this type of session. A minority felt the session was ineffective.	"I encourage this activity to be a regular thing for future students." "It was not very effective. The experts have some cool stories and insights on cutting-edge topics, but they were less beneficial to help me learn about screenings. The PowerPoint would have sufficed."
	Students thought this was an important contribution to their education.	"The case scenarios presented by Dr. Dilly allowed the panel members to explain their approaches and recommendations for various patients and populations. This panel also afforded the kind of expert opinion and clinical wisdom that is sometimes absent from the phase 1 curriculum."
Panel	The panel part of the session was effective.	"The panel was extremely effective in helping understand the clinical mindset behind the decision making for the different scenarios."
	The panel made material memorable.	"The panelists provide real-world applications and experiences to the material we are learning and to me is more memorable and influential in my learning than a normal small-group session."
	The structure of the panel was important.	"Having the two different viewpoints of the gastrointestinal specialists who perform colonoscopies and the primary care physician who refers people for colonoscopies gave a thorough viewpoint of the topic."
	The ability to ask questions of the panelists was important.	"I liked the ability to ask detailed questions related to what we're learning."
	The expert panelists were effective teachers.	"I usually do not attend lecture in person, so the first part of the session was not my ideal learning situation, but hearing directly from the panelists was very beneficial and I was actually glad to be able to attend in person."
Concerns about efficiency of the session	A minority felt the session was too long.	"It was effective, but a little time consuming. The information could have probably been presented faster without the panel."
	A minority felt the session was not useful for testing.	"Overall, I thought this panel was helpful for rotations next year and it is valuable information that I will be able to apply in my career as a physician; however, it left me unsure to what I need to know for the exam Friday."

Table 2. Themes Describing What Students Learned From the Session

Category	Theme	Quote
Knowledge	Students gained clinical knowledge.	"Understanding how family history, lifestyle factors, environmental exposure, and age all contribute to the big picture and risk of colon cancer."
	Students learned when not to screen for colorectal cancer.	"I thought the most interesting part that will be beneficial for me as a clinician was learning about when patients may no longer need screenings. We have been so focused on learning when to start screening, I didn't think about when it is no longer necessary. This will help me be a better clinician and mindful of my patient's time, finances, and health."
	Students were uncomfortable with ambiguity.	"Honestly, I found it odd that these experts had conflicting opinions on whether or not to screen someone in a scenario that was say very ill or very old. I'd think the guidelines would have better recommendations, but apparently a lot of the cases were in the grey area. It was interesting to hear their different opinions, but makes me wonder what is the best thing to do."
	Students understood the financial burden of disease.	"This was also an interesting panel to look at costs of different screenings."
Communication skills	Students learned communication strategies.	"I think they had really useful advice on appropriate conversation, especially with patients who are apathetic and don't want to know, etc." "I learned to be receptive to their questions, as well as ask them if they have any questions because they may be reluctant to ask."
	Students learned to take a patient-centered approach to care.	"I will make sure to always make a joint decision with my patient about what is best for their health. I will always also let them know that if they don't want to get a colonoscopy that there are many other options. As the panelists, said 'the best test to get done is one that is done.'"
Attitudes	The session humanized disease.	"I thought it was very interesting to see how the docs see and consider the humanity of each individual patient (age and/or comorbidities). Like when they were talking about how demoralizing for a patient with ALS to have a bowel prep and everything involved with it."
	Students gained a different perspective on medicine.	"It is always nice to get real world perspective from experts in a field we are learning about in the classroom."
	Students were inspired to become advocates for patients.	"Their experience in patient care was truly inspiring and I hope to be just as strong advocate as they are."

related to screening, 83% of the students answered the first question correctly and 44% answered the second question correctly. The point biserial indices ranged from 0.11-0.13. The NBME final exam had three questions related to colon cancer screening. The students scored 58% on the first question, 84% on the second question, and 93% on the third question.

Discussion

This session used a panel of physicians to provide personal experiences and context to a discussion of colon cancer screening. This was done to show that guidelines are only part of this type of discussion; that there are human factors that lead us to deviate from guidelines. Our panelists modeled their approaches to engaging in the art of medicine. To our knowledge, this is the only such curriculum that has been described, although all medical schools teach colon cancer screening in some way. From our analysis of our students' reflections, it appeared that the session was impactful and that the students appreciated seeing the material from a different perspective than our usual lectures and small-group discussions. Exam performance was suboptimal, but this may have been related to poor item quality.

Based on our students' feedback from the first iteration, we separated the lecture portion from the physician panel discussion. The next year, we offered a narrated PowerPoint presentation (Appendix A) that was assigned prior to the session. The entire in-person session was then dedicated to the physician panel discussion. During the first iteration of this session, our clinician panel discussion was held live at a main campus and streamed to eight additional campuses. We have learned that this can work well if an additional facilitator is available to field questions from remote sites. Going forward, we plan to provide the discussion guide to local facilitators so that all discussions can be held in person.

A major limitation to this session was the potential for loss of effectiveness when the session is conducted with a different facilitator and panelists. To minimize this risk, the facilitator guide has been structured in a way that we hope will enable presenters to have a productive panel discussion. Some clinician panels may steer the conversation in a different direction, but we believe this is perfectly acceptable. Another limitation to the evaluation of this session is that we only analyzed reflections from students at a single training site. We did this in order to reduce variability related to technical issues. Only 110 of 139 students completed the reflections (79%). It is possible that those who did not complete reflections did not develop the

insights we saw from those who did complete the reflections, or that their experiences were more negative. However, we felt we reached saturation with sampling those that did reflect. Finally, the exam results data were only descriptive, and the exam questions were not intended to directly test material taught during this session. More objective measures of students' gains from the session, such as an observed structured clinical exam, would be helpful in determining the session's effectiveness.

In summary, we described a curriculum for preclinical medical students to gain insight into different perspectives on colon cancer screening. We used a panel discussion to present examples from seasoned clinicians of how they engaged in the art of medicine in making decisions with their patients. By watching clinicians discuss their approaches to screening and to communicating with patients, our students learned clinical knowledge, communication skills, and perspectives on the art of medicine that will help them navigate these conversations later in practice.

Appendices

- A. Colon Cancer Screening_Narrated.pptx
- B. Cases for Discussion.docx
- C. Clinician Panel Facilitator Guide.docx
- D. Take-Home Points.docx
- E. Reflection Questions.docx

All appendices are peer reviewed as integral parts of the Original Publication.

Christen K. Dilly, MD, MEHP: Assistant Professor of Medicine, Division of Gastroenterology, Hepatology, and Nutrition, Indiana University School of Medicine; Staff Physician, Roudebush VA Medical Center; ORCID: <https://orcid.org/0000-0001-7171-0809>

Hannah J. Craven, MLIS: Assistant Librarian, Ruth Lilly Medical Library, Indiana University School of Medicine; ORCID: <https://orcid.org/0000-0002-1701-3655>

Jean P. Molleston, MD: Professor of Clinical Pediatrics, Department of Pediatrics, Indiana University School of Medicine; ORCID: <https://orcid.org/0000-0002-8708-0298>

Acknowledgments

The authors would like to acknowledge Drs. Charles Kahi, Thomas Imperiale, and James Hotz for their contributions to the facilitator guide and participation on our original panel.

Disclosures

None to report.

Funding/Support

None to report.

Ethical Approval

The Indiana University Institutional Review Board approved this study.

References

1. Siegel RL, Miller KD, Fedewa SA, et al. Colorectal cancer statistics, 2017. *CA Cancer J Clin*. 2017;67(3):177-193. <https://doi.org/10.3322/caac.21395>
2. Rex DK, Boland CR, Dominitz JA, et al. Colorectal cancer screening: recommendations for physicians and patients from the US Multi-Society Task Force on Colorectal Cancer. *Gastrointest Endosc*. 2017;86(1):18-33. <https://doi.org/10.1016/j.gie.2017.04.003>
3. US Preventive Services Task Force. Screening for colorectal cancer: US Preventive Services Task Force recommendation statement. *JAMA*. 2016;315(23):2564-2575. <https://doi.org/10.1001/jama.2016.5989>
4. Patell R, Karwa A, Lopez R, Burke CA. Trainees' knowledge and application of guideline recommendations for colorectal cancer screening and surveillance. *Cancer Treat Res Commun*. 2019;21:100153. <https://doi.org/10.1016/j.ctarc.2019.100153>
5. Klabunde CN, Frame PS, Meadow A, Jones E, Nadel M, Vernon SW. A national survey of primary care physicians' colorectal cancer screening recommendations and practices. *Prev Med*. 2003;36(3):352-362. [https://doi.org/10.1016/S0091-7435\(02\)00066-X](https://doi.org/10.1016/S0091-7435(02)00066-X)
6. Sewitch MJ, Burtin P, Dawes M, et al. Colorectal cancer screening: physicians' knowledge of risk assessment and guidelines, practice, and description of barriers and facilitators. *Can J Gastroenterol*. 2006;20(11):713-718. <https://doi.org/10.1155/2006/609746>
7. Montañó DE, Phillips WR. Cancer screening by primary care physicians: a comparison of rates obtained from physician self-report, patient survey, and chart audit. *Am J Public Health*. 1995;85(6):795-800. <https://doi.org/10.2105/AJPH.85.6.795>
8. Pietrzyk Ł, Torres A, Denisow-Pietrzyk M, Torres K. What do we know about education in colorectal cancer prevention? Survey among 1130 medical students. *J Cancer Educ*. 2017;32(2):406-412. <https://doi.org/10.1007/s13187-015-0967-0>
9. Papanikolaou IS, Sioulas AD, Kalimeris S, et al. Awareness and attitudes of Greek medical students on colorectal cancer screening. *World J Gastrointest Endosc*. 2012;4(11):513-517. <https://doi.org/10.4253/wjge.v4.i11.513>
10. Biskobing D, Chang L, Thompson-Busch A. EPA 3 toolkit: recommend and interpret common diagnostic and screening tests. In: Obeso V, Brown D, Phillipi C, eds. *Core Entrustable Professional Activities for Entering Residency*. Association of American Medical Colleges; 2017.
11. White J, Rourke K, Ansari K, Sharma N, Olson J, Metcalfe P. Surgery 101 podcast: episodes 11-20. *MedEdPORTAL*. 2011;7:8585. https://doi.org/10.15766/mep_2374-8265.8585
12. Gupta S, Lieberman D, Anderson JC, et al. Recommendations for follow-up after colonoscopy and polypectomy: a consensus update by the US Multi-Society Task Force on Colorectal Cancer. *Gastroenterology*. 2020;158(4):1131-1153.e5. <https://doi.org/10.1053/j.gastro.2019.10.026>
13. Bergl PA, Feagles J. Individualizing cancer screening recommendations: a team-based learning activity for fourth-year medical students. *MedEdPORTAL*. 2017;13:10574. https://doi.org/10.15766/mep_2374-8265.10574
14. Crosswell JM, Brawley OW, Kramer BS. Prevention and early detection of cancer. In: Kasper D, Fauci A, Hauser S, Longo D, Jameson J, Loscalzo J, eds. *Harrison's Principles of Internal Medicine*. 19th ed. McGraw-Hill; 2015.
15. Mayer RJ. Lower gastrointestinal cancers. In: Kasper D, Fauci A, Hauser S, Longo D, Jameson J, Loscalzo J, eds. *Harrison's Principles of Internal Medicine*. 19th ed. McGraw-Hill; 2015.
16. Ransohoff DF, Sox HC. Clinical practice guidelines for colorectal cancer screening: new recommendations and new challenges. *JAMA*. 2016;315(23):2529-2531. <https://doi.org/10.1001/jama.2016.7990>
17. Wald HS. Professional identity (trans)formation in medical education: reflection, relationship, resilience. *Acad Med*. 2015; 90(6):701-706. <https://doi.org/10.1097/ACM.0000000000000731>
18. Charmaz K. *Constructing Grounded Theory*. 2nd ed. Sage Publications Inc.; 2014.
19. Tracy SJ. *Qualitative Research Methods: Collecting Evidence, Crafting Analysis, Communicating Impact*. Wiley-Blackwell; 2013.
20. Saldana J. *The Coding Manual for Qualitative Researchers*. 3rd ed. Sage Publications Inc.; 2016.

Received: April 9, 2020

Accepted: June 14, 2020

Published: October 30, 2020