

## Brief report

# Colorectal Cancer Screening in Cystic Fibrosis: A Missed Opportunity in Medical Education

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## Background

People with cystic fibrosis (CF) are at higher risk for early-onset, aggressive colorectal cancer (CRC). The CF Foundation recommends initiating colonoscopy screening at age 40. However, awareness of these guidelines among Internal Medicine (IM) physicians remains unclear.

## Methods

A cross-sectional survey was conducted to assess knowledge of CRC screening guidelines in people with CF among medicine faculty, trainees, and fellows in Gastroenterology (GI) and Pulmonary and Critical Care (PCC) at a large academic center. The anonymous survey included three questions: level of training, recommended screening age, and preferred screening modality.

## Results

Among 40 respondents, only 47.5% correctly identified age 40 as the recommended screening initiation age, and 45% answered both questions correctly. Medical students demonstrated the highest knowledge. None of the medicine attendings answered both correctly.

## Conclusion

This highlights substantial gaps in knowledge of CF-specific CRC screening guidelines among medicine trainees and faculty, with lower awareness observed among senior residents and attending physicians.

## INTRODUCTION

People with CF have a higher risk of early-onset, aggressive CRC, with incidence 5-10 times greater than in the general population.<sup>1,2</sup> This is linked to CF transmembrane conductance regulator gene dysfunction, chronic gastrointestinal inflammation, and longer survival due to medical advances.<sup>3</sup> The Cystic Fibrosis Foundation recommends starting colonoscopy screening at age 40, repeated every 3-5 years depending on transplant status.<sup>1</sup> Despite these guidelines, awareness among Internal Medicine physicians appears limited. Educational interventions, such as near-peer teaching at the University of South Carolina School of Medicine, have been used to reinforce CF concepts among medical students. While the approach did not significantly improve exam performance, it effectively engaged learners by reinforcing prior knowledge.<sup>4</sup> Similar initiatives are needed at the graduate medical education level to address knowledge gaps among residents and attending physicians.

Most individuals in the general population report feeling poorly informed about CF following diagnosis. Medical providers must recognize and address the unique educational needs of patients diagnosed with cystic fibrosis in

adulthood.<sup>5</sup> However, awareness of CF-specific screening guidelines among medicine physicians remains unclear. Identifying these knowledge gaps is a critical first step toward quality improvement efforts aimed at improving adherence to guidelines and enhancing patient outcomes.

## METHODS

A cross-sectional survey was conducted between 2024 and 2025 among medicine faculty and trainees at a large academic medical center. The target population included medicine attending physicians, PGY-1 through PGY-3 residents, third- and fourth-year medical students, and subspecialty fellows in GI and PCC. The primary objective was to assess baseline knowledge of current CRC screening guidelines for people with CF.

The survey consisted of three multiple-choice questions: (1) level of training, (2) the appropriate age to initiate CRC screening in people with CF (response options: age 40, age 45, age 50, or 10 years after CF diagnosis), and (3) the recommended screening modality (options: DNA FIT test, flexible sigmoidoscopy, colonoscopy, or all of the above).

**Table. Knowledge Assessment of Colorectal Cancer Screening in Cystic Fibrosis Among Gastroenterology, Pulmonary & Critical Care Fellows and Internal Medicine Faculty, Trainees, and Medical Students**

| Department                  | Stage of training (N) | Correct age for screening % (N) | Correct screening modality % (N) | Both correct % (N) |
|-----------------------------|-----------------------|---------------------------------|----------------------------------|--------------------|
| Internal Medicine           | Medical student (8)   | 75% (6)                         | 87.5% (7)                        | 75% (6)            |
|                             | PGY-1 (11)            | 45.45 % (5)                     | 81.81% (9)                       | 45.45% (5)         |
|                             | PGY-2 (3)             | 0%                              | 66.66% (2)                       | 0%                 |
|                             | PGY-3 (6)             | 33.33% (3)                      | 50% (3)                          | 33.33% (2)         |
|                             | Attending (3)         | 0%                              | 66.66% (2)                       | 0%                 |
| Gastroenterology            | PGY-4 (2)             | 100% (2)                        | 100% (2)                         | 100% (2)           |
|                             | PGY-5 (2)             | 50% (1)                         | 100% (2)                         | 50% (1)            |
|                             | PGY-6 (1)             | 100% (1)                        | 100% (1)                         | 100% (1)           |
| Pulmonary and Critical Care | PGY-4 (2)             | 0%                              | 100% (2)                         | 0%                 |
|                             | PGY-5 (1)             | 0%                              | 100% (1)                         | 0%                 |
|                             | PGY-6 (1)             | 100% (1)                        | 100% (1)                         | 100% (1)           |
| <b>Total</b>                | <b>40</b>             | <b>47.5% (19)</b>               | <b>80% (32)</b>                  | <b>45% (18)</b>    |

The correct response age 40 and colonoscopy were based on the most recent Cystic Fibrosis Foundation guidelines.

The survey was administered in person during regularly scheduled morning reports for medicine attendings, residents, and medical students. Participation was voluntary, anonymous, and uncompensated. No educational materials or instruction on CRC screening in people with CF were provided prior to survey administration. Residents reported no prior clinical exposure to a CF clinic. Interns had less than six months of postgraduate training, and all PGY-3 residents had completed the USMLE Step 3 examination.

GI and PCC fellows, all of whom were board-certified in medicine, received the same survey electronically via a secure online form. Their responses were collected anonymously and integrated with the broader dataset for analysis. Data were grouped by training level to evaluate trends in knowledge across the educational continuum.

## RESULTS

A total of 40 participants completed the survey, comprising 3 medicine attending physicians, 8 medical students, 11 interns (PGY-1), 9 senior residents (PGY-2 and PGY-3), and 9 subspecialty fellows (5 GI, 4 PCC). Overall, 47.5% correctly identified age 40 as the recommended CRC screening initiation age for people with CF, 80% selected colonoscopy as the preferred screening modality, but only 45% answered both correctly.

Medical students demonstrated the highest knowledge, with 75% correctly identifying the screening age and 75% accurately selecting both parameters. Among interns, 45.5% correctly identified the screening age and both parameters. Senior residents had lower scores, with only 33.3% identifying the correct age and 22.2% selecting both parameters correctly. None of the attendings identified age 40 or both parameters accurately.

Among subspecialty fellows, 80% of GI fellows correctly identified age 40, and all selected colonoscopy. In contrast, only 25% of PCC fellows answered both questions correctly. Knowledge deficits were most pronounced among attending physicians, senior residents, and non-GI fellows.

## CONCLUSION

This highlights substantial gaps in knowledge of CF-specific CRC screening guidelines among trainees and faculty, with lower awareness observed among senior residents and attending physicians. It serves as a baseline needs assessment to identify knowledge gaps and inform future quality improvement efforts aimed at increasing CRC screening rates in people with CF. To address this, we propose a targeted intervention that includes alerts for both patients and providers when a person with CF turns 40, along with guidance on the recommended colonoscopy screening. We also plan to implement automatic order sets to support adherence to guidelines while minimizing alert fatigue.<sup>6</sup> The small sample size of this study limits the ability to perform statistical analysis. Additionally, since the study was conducted at a single academic center and included only internal medicine faculty, residents, and subspecialty fellows, the findings may not be generalizable to other specialties or practice settings. By promoting timely, guideline-driven care, this approach aims to enhance patient safety, optimize resource utilization, and deliver high-value care to people with CF.

## DECLARATIONS OF INTEREST

None for all authors

CONFLICTS OF INTEREST

None for all authors

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AUTHOR CONTRIBUTIONS

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## SUPPLEMENTARY MATERIALS

### Title Page

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