



Emory Faculty Retroflexions: Blood Tests for Colorectal Cancer Screening William Breaux, MD in Discussion with Nikrad Shahnavaaz, MD



Colorectal Cancer Screening Overview

- Screening for average-risk individuals: **Ages 45-75**
- ACG 2021 updates: screening rate goal of over **80%** to effectively combat colorectal cancer (CRC)
- Colonoscopy and stool tests are the most commonly used for screening, but there has been growing interest in blood-based screening
- **Detection of circulating and cell-free tumor DNA (cfDNA) in the blood has opened up a potential for blood-based testing for CRC and advanced precursor lesions (APL)**

Clinical Implications of Blood Tests

- Non-invasive option that may increase screening adherence and early cancer detection
- **In patients who declined other screening, offering a blood test increased CRC screening by 17.5%**
- Ideally used for unscreened individuals who are unable to partake in other forms of CRC screening

Dr. Shahnavaaz: "The clinical impact of blood-based CRC screening relies on a programmatic approach: positives must be followed by colonoscopy and negatives repeated at appropriate intervals."

Challenges of Blood-based Testing

- The benefit of blood-based screening will largely be determined by follow-up colonoscopy
- If a patient has a positive blood test result, the next step would be a colonoscopy
 - ~50% of patients with a positive stool-based test **did not** complete a timely colonoscopy within 3-6 months
- Remains to be seen whether blood tests can overcome barriers to screening (cost, frequency, etc.)

Centers for Medicare and Medicaid Services (CMS) guidelines for approval:

- >90% specificity
- >75% sensitivity
- FDA approval and endorsed by at least one professional society

Screening Modalities

Direct Visualization

Stool-based Tests

Blood-based Tests

Screening Modality	Test Mechanism	CRC Sensitivity	CRC Specificity	APL Sensitivity	Frequency*
Colonoscopy	Direct visualization	~96%	~90%	75-95% (depending on lesion size)	Every 10 years
FIT	Stool-based	74-92%	~96%	~24%	Annually
Cologuard	Stool-based	92%	87%	42%	Every 3 years
Shield (Guardant)	cfDNA methylation	83.1%	90%	13.2%	Every 3 years
Epi proColon (Septin 9)	Methylated DNA PCR	48.2%	91.5%	11.2%	No established frequency
Freemove	cfDNA methylation	79.2%	91.5%	12.5%	Every 3 years

Shield Study Highlights (ECLIPSE trial):

- Primary outcomes were sensitivity for CRC and specificity for advanced neoplasia
- This test is effective at identifying existing cancers, but is less effective at detecting precancerous lesions

Dr. Shahnavaaz: "Blood tests expand our CRC screening toolbox, offering an alternative for average-risk patients who decline first-line screening."