

Colonoscopy Quality Metrics After a Multi-target stool DNA or Fecal Immunochemical Test: A Systematic Review & Meta- Analysis

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Background:

- Colorectal cancer (CRC) accounts for approximately 50,000 deaths or 14 deaths per 100,000 people yearly in the United States.
- Multi-target stool DNA (mt-sDNA) and fecal immunochemical test (FIT) are validated CRC screening strategies in average-risk asymptomatic individuals.
- This study aims to evaluate the colonoscopy quality metrics following positive mt-sDNA and FIT tests.

Methods:

- We performed a comprehensive search in the databases of PubMed/MEDLINE, Embase, and the Cochrane Central Register of Controlled Trials from inception through May 2022.
- Meta-analysis was performed by standard methodology using the random-effects model and heterogeneity was assessed using the I² statistics.
- Outcomes of interest were adenoma detection rate (ADR), colorectal cancer detection rate (CRCDR), withdrawal time (WT), and cecal intubation rate (CIR).

Outcomes	Multi-target stool DNA (mt-sDNA)	Fecal Immunochemical Test (FIT)
Withdrawal time (WT), mean (95%CI)	Positive: 16.1 (9.4-22.8) (SE: 3.4); 4 studies Negative: 13.2 (12.7-13.7) (SE: 0.2) 1 study	Positive: 11.6 (10.9-12.3) (SE: 0.3); 22 studies Negative: 10.2 (9.3-11.2) (SE: 0.5) 6 studies
Cecal intubation Rate (CIR), pooled rate (95%CI)	Positive: 99% (98.6-99.3) 2 studies	Positive: 96.8% (95.8-97.6, 94%) 12 studies
Adenoma Detection Rate (ADR), pooled rate (95%CI)	Positive: 73% (69.9-75.8) 1 study Negative: NR	Positive: 54.2% (49.8-58.4, 97%) 20 studies Negative: 35.1% (30.5-39.9, 95%) 6 studies
Colorectal Cancer Detection Rate (CRCDR), pooled rate (95%CI)	Positive: 1.9% (0.9-4.2, 81%) 3 studies Negative: 7.9% (2.6-21.8) 1 study	Positive: 4% (3.2-4.9, 88%) 17 studies Negative: 0.5% (0.2-1.6, 85%) 5 studies

Colonoscopy quality metrics including withdrawal time, cecal intubation rate, adenoma detection rate, and colorectal cancer detection rate after positive and negative multi-target stool DNA and fecal immunochemical test testing.

Results:

- 27 high-quality studies (97825 patients) were included in the analysis. 94161 had a positive FIT test in 23 studies and 3664 had positive mt-sDNA in 4 studies.
- The pooled WT after positive mt-sDNA was 16.1 minutes (95% CI 9.4-22.8, I²=99%), whereas after positive FIT was 11.6 minutes (10.9-12.3, 99%).
- The corresponding WT in the negative tests was 13.2 minutes (12.7-13.7) for mt-sDNA and 10.2 minutes (9.3-11.2) for FIT.
- The pooled ADR was 73% (69.9-75.8) and CRCDR was 1.9% (0.9-4.2) in positive mt-sDNA.
- The pooled ADR was 54.2% (49.8-58.4) and pooled CRCDR was 4% (3.2-4.9) in positive FIT.

Conclusion:

- Our meta-analysis demonstrated that positive mt-sDNA or FIT patients had a higher WT and CIR when compared to negative or unknown tests.
- ADR and CRCDR were high, however, it is not known if it is secondary to positive stool test or to longer WT.