



Fecal immunochemical test (FIT) for early detection of colorectal cancer: expanding access to precision screening

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Prueba inmunológica fecal (FIT) para la detección temprana del cáncer colorrectal: ampliando el acceso a la detección precisa

REVISTA MEXICANA DE CIRUGÍA DEL APARATO DIGESTIVO / Vol. 15 Núm. 2 / Abril-Junio, 2026 / p. 45-46

Colorectal cancer (CRC) remains one of the leading causes of cancer-related morbidity and mortality worldwide despite being largely preventable through effective screening and early intervention. According to recent global epidemiological estimates, CRC is currently the third most commonly diagnosed malignancy and the second leading cause of cancer death globally, reflecting persistent deficiencies in population-based screening programs and inequities in healthcare access.¹ In this context, the fecal immunochemical test (FIT) has emerged as one of the most transformative noninvasive strategies for the early detection of colorectal neoplasia.

The FIT represents a major advancement over traditional guaiac-based fecal occult blood testing (gFOBT). Unlike gFOBT, FIT specifically detects human globin through immunochemical methods, thereby improving analytical specificity for lower gastrointestinal bleeding and eliminating dietary restrictions that historically reduced adherence to screening programs.² The increased sensitivity and patient acceptability associated with FIT have significantly enhanced participation rates in organized CRC screening initiatives.

The clinical relevance of FIT lies not only in its diagnostic performance but also in its adaptability to large-scale public health implementation. Multiple studies and meta-analyses have demonstrated that FIT possesses substantial sensitivity for detecting colorectal cancer, particularly advanced-stage lesions associated with occult bleeding. Imperiale et al. demonstrated that FIT-based screening strategies achieve high detection rates for advanced neoplasia while maintaining favorable specificity profiles, thus reducing unnecessary colonoscopic evaluations.³ Furthermore, annual or biennial FIT screening has been associated with meaningful reductions in CRC-related mortality in longitudinal population cohorts.

Importantly, FIT has become a cornerstone of modern risk-stratified colorectal screening paradigms. Contemporary guidelines from major international organizations, including the American Cancer Society and the U.S. Preventive Services Task Force, recommend FIT as a first-line screening option for average-risk individuals beginning at age 45 years.^{4,5} These recommendations reflect growing recognition that accessible, low-cost, and minimally invasive screening tools are essential to improving adherence and reducing disparities in cancer detection.

The COVID-19 pandemic further highlighted the strategic importance of FIT-based screening. During periods of restricted endoscopic capacity, many healthcare systems adopted FIT triage algorithms to prioritize colonoscopy referrals and maintain CRC surveillance continuity. This shift accelerated broader acceptance

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of FIT as a scalable population-health instrument rather than merely an alternative for patients unwilling to undergo colonoscopy. Emerging evidence suggests that FIT-based prioritization models may continue to play an important role in optimizing healthcare resource utilization even beyond pandemic conditions.⁶

Nevertheless, FIT screening is not without limitations. The sensitivity of FIT for advanced adenomas remains inferior to its performance for invasive carcinoma, and false-negative results may occur in nonbleeding lesions or right-sided neoplasms. Moreover, adherence to repeated annual testing remains a critical determinant of long-term effectiveness. A single negative FIT should never be interpreted as definitive exclusion of colorectal pathology in symptomatic individuals or high-risk populations. Consequently, FIT must be integrated into comprehensive screening frameworks that incorporate colonoscopy, risk stratification, and longitudinal follow-up.

From a public health perspective, the future of FIT screening may lie in personalized threshold adjustment and integration with molecular biomarkers. Quantitative FIT platforms already permit individualized hemoglobin cutoffs based on demographic risk profiles and healthcare resource availability. Additionally, ongoing investigations combining FIT with stool DNA markers, microbiome signatures, and artificial intelligence-based predictive models may further improve sensitivity for precursor lesions and early-stage malignancies.

In conclusion, the fecal immunochemical test has fundamentally reshaped contemporary colorectal cancer screening by providing a highly accessible, evidence-based, and cost-effective strategy for early detection. While colonoscopy remains the diagnostic gold standard, FIT offers an indispensable population-level approach capable of increasing screening participation and reducing CRC mortality worldwide. Expanding equitable access to FIT-based programs, particularly in low-resource settings, should constitute a global oncologic priority in the coming decade.

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