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LETTER TO EDITOR

At-Home Colorectal Cancer Screening: The Potential and the Precautions of DNA Testing

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To the Editor

Colorectal cancer (CRC) ranks among the top three most prevalent cancers globally and is the second leading cause of cancer-related mortality, underscoring its profound impact on global health [1]. At-home stool DNA testing has emerged as a promising non-invasive screening tool that detects genetic markers associated with CRC in a simple stool sample.

This method offers several advantages, particularly in convenience and diagnostic accuracy. Unlike traditional colonoscopies, stool DNA tests can be performed at home without bowel preparation or dietary restrictions. In terms of diagnostic performance, stool DNA testing has demonstrated high sensitivity for CRC detection. For instance, a study published in the New England Journal of Medicine reported a 92.3% sensitivity for CRC with stool DNA testing, compared to 73.8% with fecal immunochemical tests (FIT). Implementing these tests at scale could lead to significant reductions in CRC incidence and mortality [2].

However, despite its convenience and sensitivity, at-home multi-target stool DNA (MT-sDNA) testing is has limitations. One major concern is the relatively high rate of false-positive (FP) results, which can cause patient anxiety and lead to unnecessary diagnostic procedures. In a cohort of 1,050 individuals, FP rates were reported at 15% using a standard per-protocol approach and ranged from 5% to 11% when calibrated thresholds were applied. Many of these patients underwent follow-up colonoscopies and additional gastrointestinal evaluations that revealed no malignancies or advanced neoplasia. Furthermore, no significant associations were found between FP results and long-term cancer incidence, mortality, or alarm symptoms over a median follow-up of four years [3]. These findings highlight the need to balance test sensitivity with specificity to avoid undue psychological and procedural burdens.

In conclusion, at-home stool DNA testing represents a significant advancement in colorectal cancer (CRC) screening, combining high diagnostic sensitivity with patient-centered accessibility. By enabling non-invasive, home-based sample collection, these assays enhance compliance and broaden population reach. Nevertheless, the elevated false-positive rate remains a notable limitation, potentially leading to patient anxiety and unnecessary follow-up procedures. Future efforts should focus on optimizing test specificity without compromising sensitivity. With continued validation and integration into screening protocols, stool DNA testing holds considerable potential to contribute to earlier detection and reduced CRC-related morbidity and mortality.

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