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Fecal DNA testing compared with conventional colorectal cancer screening methods: a decision analysis.

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**BACKGROUND & AIMS:** Fecal DNA testing is an emerging tool to detect colorectal cancer (CRC). Our aims were to estimate the clinical and economic consequences of fecal DNA testing vs. conventional CRC screening. **METHODS:** Using a Markov model, we estimated CRC incidence, CRC mortality, and discounted cost/life-year gained for screening by fecal DNA testing (F-DNA), fecal occult blood testing (FOBT) and/or sigmoidoscopy, or colonoscopy (COLO) in persons at average CRC risk from age 50 to 80 years. **RESULTS:** Compared with no screening, F-DNA at a screening interval of 5 years decreased CRC incidence by 35% and CRC mortality by 54% and gained 4560 life-years per 100,000 persons at USD \$47,700/life-year gained in the base case. However, F-DNA gained fewer life-years and was more costly than conventional screening. The average number of colonoscopies per person was 3.8 with COLO and 0.8 with F-DNA. In most 1-way sensitivity analyses and Monte Carlo simulation iterations, F-DNA remained reasonably cost-effective compared with no screening, but COLO and FOBT dominated F-DNA. Assuming fecal DNA testing sensitivities of 65% for CRC and 40% for large polyp, and 95% specificity, a screening interval of 2 years and a test cost of USD \$195 would be required to make F-DNA comparable with COLO. **CONCLUSIONS:** Fecal DNA testing every 5 years appears effective and cost-effective compared with no screening, but inferior to other strategies such as FOBT and COLO. Fecal DNA testing could decrease the national CRC burden if it could improve adherence with screening, particularly where the capacity to perform screening colonoscopy is limited.