Introduction: Technology offers an opportunity to scale screening programs; however, overscreening may be a concern. Our objective was to systematically review mailed FIT studies and conduct key informant interviews to describe implementation strategies that selected patients for colorectal cancer screening.

Method: Randomized and nonrandomized studies from Embase and Pubmed from database inception through December 2018 were evaluated. Study characteristics, patient selection criteria, screening outcomes and algorithmic screening program processing were extracted independently by 2 investigators. Only representative studies with patient exclusion criteria’s utilizing mailed FIT were summarized descriptively and assessed qualitatively. Main outcomes and measures were factors and algorithms used to exclude patients from population-based mailed FIT CRC screening programs.

Result: From 2,526 studies, 124 mailed FIT CRC screening studies were identified; however, for health organization with multiple publications, the most representative study was selected (n=51). In total, 46 studies used multiple patient selection criterias. Common exclusion screening criterias that were non-mutually exclusive include comorbidities (n=29), up-to-date with CRC screening status (n=24), and personal (n=35) or family (n=15) history of cancer. Specifically, the average FIT screening rate of studies excluding patients with comorbidities were 48.1% (95 CI% 40.3-55.8), history of cancer 58.3% (95% CI 44.1-72.5), and up-to-date with CRC screening 61.5% (95% CI 43.9-79.1). From the 26 of 51 study investigators who responded to outreach inquiry, 16 studies used patient exclusions from various data sources: 8 studies used EMR, 4 studies used registry, 2 studies required patient opt-in, and 2 studies required PCP referral. Of these, only 6 studies used ICD/CPT codes to facilitate patient selection; the categories for exclusion included CRC related symptoms (blood in stool, bowel obstructions), inflammatory bowel disease (IBD), comorbidities (e.g., cancer, institutionalization, and terminal diseases), up-to-date (colonoscopy in the prior 5-10 year, sigmoidoscopy in the prior 5 years, FIT test in prior year, positive FIT, and colectomy), and cancer history (familial adenomatous polyposis, hereditary nonpolyposis cancer, and other cancers).

Conclusion: Patient selection algorithms can improve the operation of CRC screening outreach programs; however, few studies and organization use patient factors to exclude individuals from screening.

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