

APPENDIX 3. SCREENING TEST PERFORMANCE

NOTE: It is difficult to provide definitive values for the sensitivity and specificity of these screening tests. The gold standard for diagnosing colorectal cancer (generally considered to be colonoscopy plus biopsy) was not applied to participants in all trials (screen negative groups often excluded). As a result, the numbers below are approximations only.

Screening Test	Effectiveness in Reducing Colorectal Cancer	Ability to Detect Cancer (Sensitivity)	Chance of False-Positive Results (Specificity)
FECAL OCCULT BLOOD TEST <i>Variable results with different test brands, test characteristics, and methods of collecting and processing</i>	<i>Annual testing:</i> ~33% mortality reduction; ~20% reduction in cancer incidence <i>Biennial testing:</i> ~15%- 20% mortality reduction ~17% reduction in cancer incidence Level I	Sensitivity for single (3-panel) test: 13%–79% [13%-25% for commonly used guaiac-based fecal occult blood tests] With repeated testing over 10–15 years, FOBT finds majority of cancer cases (sensitivity: 50%–98%) [~ 50% for commonly used guaiac-based tests]	For each individual screening test, 2–3% of patients will have a positive test (specificity: 80%–95% for commonly used guaiac-based tests) With repeated annual or biennial testing, over 10–15 years, ~30–40% of patients require colonoscopy; 40–50% of these patients will have cancer (specificity: 96–98% for commonly used guaiac-based tests)
COLONOSCOPY <i>Variability in quality and completeness of examination depending on thoroughness of bowel cleansing and skill of endoscopist</i>	No RCTs of effectiveness in preventing CRC Two large cohort studies show 76–90% reduction in incidence of colorectal cancer. Level II	Sensitivity for cancer: > 94% Sensitivity for adenomatous polyps: large > 10mm: > 90% small < 10 mm: 73%–87% Cannot visualize complete to cecum in 5-15%	Specificity: 99%–100%, assuming that detected adenomas represent true-positive results
SIGMOIDOSCOPY <i>Variability in quality and completeness of examination</i>	Small RCT found 50% reduction in colorectal cancer mortality rates Level I-2 Case-control studies suggest 50–80% reduction in mortality rate when CRC within reach of scope Level II-2	Sensitivity 70-80% for cancer and advanced adenomas in region detectable by scope (~ 50–60% of advanced neoplasia is in this part of distal colon) May increase detection of proximal neoplasia occurring without distal lesions by adding FOBT	Difficult to determine
DOUBLE-CONTRAST BARIUM ENEMA <i>Variability in quality and completeness of examination</i>	No RCTs have studied the effectiveness in reducing the incidence or mortality of colorectal cancer Small case-control study showed 33% reduction in mortality Level II-2	Sensitivity: Cancer or large polyps: 39%-97% Smaller polyps: 32%–53%	Specificity difficult to determine, but estimated at ~85%
CT COLONOGRAPHY <i>Quality of exam less variable</i>	Population-based screening studies underway. No current data on reduction in incidence or mortality of colorectal cancer	Sensitivity: Cancer: 82%–100% Polyps (>10mm): 55%–94%	Specificity: ~97% for large polyps; 70%-91% for smaller polyps (6-10mm)

Sources:

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