

Multimorbidity and Screening Colonoscopy: A Framework for Patients and Policy

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Description

Colonoscopy is generally viewed as an effective screening tool that should be widely promoted. However, the potential benefits and risks of colonoscopy can vary substantially according to a patient's age, sex, and chronic disease burden. This study examined how co-occurring chronic diseases, sex, and age affect the risks and benefits of screening colonoscopy and developed a framework for determining the likelihood that elderly patients with varying levels of chronic disease burden would benefit from this screening. The resulting framework can help facilitate individualized clinical decision-making, inform the revision of screening guidelines, and provide guidance for quality of care initiatives.

Specific Aims

1. Estimate the impact of screening colonoscopy on life expectancy and determine the earliest time when the incremental benefits of the procedure exceed the incremental harms (i.e., the payoff time) as a function of age, sex, and chronic disease burden.
2. Employ a modeling approach to develop simple, transportable decision rules for determining which patients are likely or unlikely to benefit from a one-time screening colonoscopy.
3. Analyze Medicare claims to determine the population-level benefit of aligning colorectal cancer screening with these decision rules.
4. Examine the effect of reallocating screening colonoscopies according to calculated decision rules on vulnerable populations, including minority race and those with lower socioeconomic status, in terms of use of screening colonoscopy and overall mortality.

Findings

- Comorbidity had a substantial impact on the expected benefit of screening colonoscopy. For both men and women ages 75 to 79 with fewer than 3 chronic conditions, the procedure was likely to be beneficial. For patients without chronic conditions, screening colonoscopy was beneficial up to age 84.

Main Objective

Increase understanding of how co-occurring chronic diseases, sex, and age affect the risks and benefits of screening colonoscopy. Develop a framework for determining which elderly patients are most likely to benefit from this screening.

Chronic Conditions Considered

Focused on burden of chronic disease: chronic conditions not specified.

Preventive Service Considered

Colorectal cancer screening

Study Design, Data Sources & Sample Size

Analytic epidemiological study
68,073 patients with and 226,868 patients without colorectal cancer, aged 67-94, from the linked Surveillance, Epidemiology, and End Results (SEER) Medicare database.

Strategies Addressed from the HHS Strategic Framework on Multiple Chronic Conditions

- 3.A. Identify best practices and tools
- 4.C. Increase clinical health research
- 4.D. Address disparities

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- Conversely, among patients with ≥ 3 conditions, the expected benefits were uncertain for patients as young as ages 67 to 69, and the procedure had no expected benefit for men and women older than the ages of 75 and 80, respectively.
- The effectiveness of screening colonoscopy was equivalent for men and women. However, women had lower screening rates at every age and comorbidity level compared with their male counterparts.
- Although women were less likely to undergo a colonoscopy for screening purposes, women and men had similar rates of diagnostic colonoscopy.

Implications

- The current U.S. Preventive Services Task Force age-based recommendations for colorectal cancer screening are not aligned with the benefits and harms observed due to comorbidity burden.
- Substantial population-level health benefits could be achieved if current patterns of care were modified to ensure that the patients who are most likely to benefit from colonoscopy screening are the ones who receive the procedure, based on comorbidity burden as well as age.
- Remedies to address sex-based disparities should include increasing use among women who are likely to benefit (i.e., those with a life expectancy of 5 years or more) and decreasing use among men who are unlikely to benefit (i.e., those with a life expectancy of < 5years).

Publications (as of September 2013)

Khiani VS, Soulos P, Gancayco J, Gross CP. Anesthesiologist involvement in screening colonoscopy: temporal trends and cost implications in the medicare population. Clin Gastroenterol Hepatol. 2012 Jan;10(1):58-64.e1.

Gross CP, Soulos PR, Ross JS, Cramer LD, Guerrero C, Tinetti ME, and Braithwaite RS. Assessing the impact of screening colonoscopy on mortality in the Medicare population. J Gen Intern Med. Dec 2011; 26(12):1441-9. Epub 13 Aug 2011.

Posters and Presentations

Gancayco J, Khiani V, Soulos P, Cramer LD, Ross JS, Braithwaite S, Genao I, Tinetti ME, Gross CP. Effect of gender, age, and life expectancy on receipt of screening colonoscopy in the Medicare population. Presentation at Digestive Disease Week; 2010 May 1-5; New Orleans, Louisiana.