

## Screening Colonoscopy Decreases Colorectal Cancer Incidence and Colorectal Cancer-related Mortality in Patients > 75 Years Old... As long as They Are HEALTHY!



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**Question:** Does screening endoscopy (colonoscopy or sigmoidoscopy) reduce colorectal cancer (CRC) incidence and CRC-related mortality in individuals > 75 years old with or without significant comorbidities?

**Design:** Prospective cohort study of male clinicians (Health Professionals Follow-Up Study) and female nurses (Nurses' Health Study) from 1988-2016.

**Setting:** The Nurses' Health Study was established in 1976 with 121,701 married registered nurses, aged 30-55, in the 11 most populous US states and the Health Professionals Follow-Up Study was established in 1986 with 51,529 male "clinicians" (e.g., physicians, optometrists, podiatrists, etc.), aged 40-75. Both groups completed bi-annual questionnaires about demographics, lifestyle factors, medical history and disease outcomes.

**Patients:** There were 56,374 participants who reached age 75 during follow-up between 1988-2016 with 63.2% women and 36.8% men.

**Exposure/Intervention:** History of screening sigmoidoscopy or colonoscopy (average risk or positive family history of CRC) prior to or at age 75 and after age 75.

**Outcome:** Incidence of CRC and CRC-related mortality based on reporting in health questionnaires and confirmed by review of pathology reports, medical records, and National Death Index.

**Data Analysis:** Hazard ratios determined by Cox proportional hazards regression models with sub-group analysis based on presence of co-morbidities, including cardiovascular disease (myocardial infarction or stroke), hypertension, diabetes, and hypercholesterolemia.

**Results:** Compared to no screening, screening endoscopy (i.e., colonoscopy or sigmoidoscopy) after 75 years of age was associated with a 39% reduced risk for CRC incidence (adjusted hazard ratio (aHR): 0.61; 95% confidence interval (CI): 0.52-0.74) and a 40% reduced risk for CRC-related mortality (aHR: 0.60; 95%: 0.46-0.78), regardless of any prior screening history (Table). The study also found no benefit in CRC-related mortality among individuals who underwent screening endoscopy after age 75 years if they had either cardiovascular disease defined as history of myocardial infarction or stroke (aHR: 1.18; 95% CI, 0.59-2.35) or at least three significant co-morbidities defined by hypertension, diabetes, hypercholesterolemia, and cardiovascular disease (aHR: 1.17; 95% CI, 0.57-2.43), although interactions were not statistically significant.

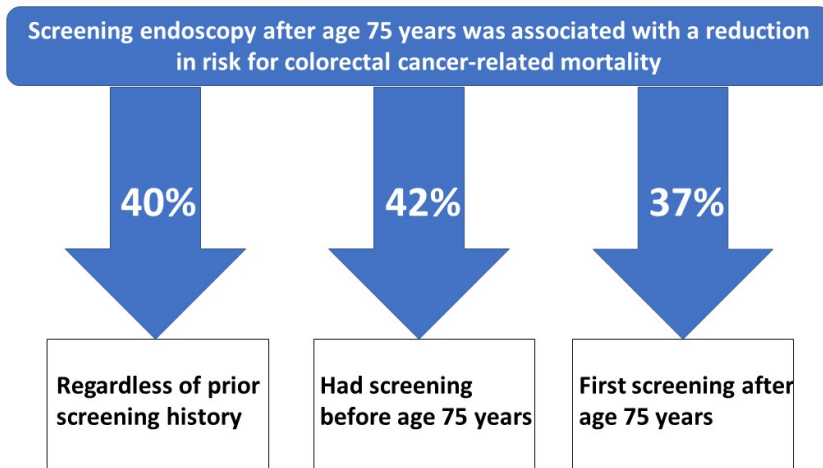
**Table. Summary of findings**

Exposure	Adjusted Hazard Ratio for CRC Incidence	Adjusted Hazard Ratio for CRC-related mortality
Screening endoscopy after age 75 years (regardless of any prior screening history)	0.61 (0.46-0.78)	0.60 (0.46-0.78)
Screening endoscopy after age 75 years (with prior screening before age 75 years)	0.67 (0.50-0.89)	0.58 (0.38-0.87)
First screening endoscopy after age 75 years	0.51 (0.37-0.70)	0.63 (0.43-0.93)

**Why is this important?** At what age should CRC screening be discontinued? Recent guidelines from the United States Preventive Services Task Force (USPSTF) and the American College of Gastroenterology (ACG) recommend CRC screening should continue until age 75 years, followed by individualized screening decisions for adults 76-85 years of age.<sup>1,2</sup> The latter recommendation is largely based on modeling studies because most trials have excluded individuals > 75 years old. This is the first well-designed

prospective observational cohort study to assess the impact of screening in individuals >75 years old on CRC incidence and CRC-related mortality.

**Key study findings:** CRC screening with endoscopy significantly reduces both CRC incidence and CRC-related mortality in individuals > 75 years old, regardless of prior screening history (Figure 1). However, this benefit appears to be seen among individuals who DO NOT have a history of cardiovascular disease (i.e., myocardial infarctions or stroke) or three or more significant co-morbidities (e.g., hypertension, diabetes, hypercholesterolemia, and cardiovascular disease).



**Figure 1.**

**Caution:** Although the Nurses' Health Study and the Health Professionals Follow-Up Study are the gold standard for prospective cohort studies in the United States in terms of methodology, the study participants are mostly White health care professionals, which limits generalizability. Also, confounding by indication is possible. Specifically, the improved CRC incidence and CRC-related mortality could be due to self-selection of "healthier" patients to be screened as opposed to actual benefit of screening. The authors acknowledged that the number of incident cases was too small to allow sub-group analysis in patients with other co-morbidities like congestive heart failure or chronic kidney disease.

**My practice:** For patients > 75 years old, I provide an individualized recommendation based on their age, co-morbidities, life-expectancy (e.g., ePrognosis – <http://eprognosis.ucsf.edu>),<sup>3</sup> preferences and values, and prior screening history. Although using a tool like ePrognosis takes a few moments to use, it can be very helpful to quantify likely life expectancy. It's probably worth the effort when you are uncertain about the appropriate recommendation.

I usually advise screening if the individual has no significant co-morbidities and likely life expectancy of 5-10 years, but I generally advise against screening if they have cardiovascular disease or multiple co-morbidities, like diabetes, hypertension, hypercholesterolemia or even others such as chronic lung disease, congestive heart failure or significant smoking history.

**For future research:** More data is needed to assess benefit of screening across all racial/ethnic groups, in 80–84 year-olds vs 75-79 year-olds, and to identify other co-morbidities that mitigate the benefit of screening.

## References

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