

Development of a Colorectal Cancer Risk Assessment Tool

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Background: Several modifiable risk factors have been consistently identified for colorectal cancer. To date, few models that estimate the absolute risk of colorectal cancer are available for research purposes or clinical use.

Purpose: To develop a statistical model that estimates the absolute probability of developing the first incident proximal, distal or rectal cancer in white males, age 50 years and older, over a defined period of time. We will also develop a short colorectal cancer risk factor questionnaire that can be used to estimate absolute risk.

Methods: We used data on white men (age 50 years and older) from two large population-based case-control studies of colon and rectal cancer, both conducted in Utah and Northern California Kaiser Permanente between 1991 and 2001. Logistic regression was used to estimate relative risks separately for proximal, distal and rectal cancer for a number previously identified risk and protective factors. Incidence rates from SEER and attributable risks were used to compute baseline age-specific hazard rates. National mortality rates were used to estimate the hazard for competing causes of death.

To facilitate use of this risk model, a cognitive psychologist developed a short questionnaire to capture reliable information on modifiable risk factors, based on cognitive testing.

Results: The risk and protective factors for colorectal cancer in the model include sigmoidoscopy in the last 10 years, history of polyps, family history of colorectal cancer, vigorous exercise, regular aspirin/NSAIDs use, smoking, BMI, and vegetable intake. Relative risk estimates and risk factors differed between proximal, distal and rectal cancer sites.

In cognitive testing, the questionnaire performed well and took only 5 to 8 minutes to complete.

Conclusions: Although validation studies for this model are needed, it may prove useful for physicians to identify individuals at higher risk for the disease, allowing for earlier or more frequent screening and counseling of behavioral changes to decrease risk. This model may also be useful for planning chemoprevention and screening intervention trials in individuals at high risk for colorectal cancer. We plan to extend the current risk model to women, and men of black and Hispanic ethnicity using SEER baseline hazard rates and validate these risk models in several large cohort studies.