Scott A. Wiltz, MD, MPH

Eglin Air Force Base Family Medicine Residency, Eglin Air Force Base, Fla

Roxanne M. Nelson, MSLIS

Medical Library and Peyton T. Anderson Learning Resources Center, Mercer University School of Medicine, Macon, Ga

Q/What's the most effective way to screen patients with a family history of colon cancer?

Begin screening at 40 years of age for patients with a history of colorectal cancer or polyps in at least 1 first-degree relative or colorectal cancer in at least 2 second-degree relatives.

EVIDENCE-BASED ANSWER

A/ THE BEST APPROACH HINGES on the number, degree, and age of relatives diagnosed with colorectal cancer (CRC) or adenomatous polyps (AP). Screening should begin at 40 years of age for patients with a family history of CRC or AP in at least 1 first-degree relative or CRC in at least 2 second-degree relatives (strength of recommendation [SOR]: **B,** extrapolation from systematic reviews).

Patients at highest risk—who have 1 first-degree relative diagnosed with CRC or AP before 60 years of age or multiple first-degree relatives diagnosed at any age—should begin screening with colonoscopy at 40 years of age or 10 years younger than the earliest affected relative and undergo a repeat colonoscopy every 5 years (SOR: **C,** consensus guidelines).

Patients who have a first-degree relative diagnosed with CRC or AP after 60 years of age or 2 or more second-degree relatives with CRC should start screening at 40 years of age, with routine options and follow-up intervals (SOR: **C,** consensus guidelines). (Routine options and follow-up intervals include any of the following 3 regimens: annual high-sensitivity fecal occult blood testing, sigmoidoscopy every 5 years combined with high-sensitivity fecal occult blood testing every 3 years, or screening colonoscopy every 10 years.[1])

Evidence summary

Prospective studies and systematic reviews show increased risk for CRC in people with a significant family history. Little or no data are available regarding outcome improvements or head-to-head comparisons of the effects of different screening methods. Recommendations for screening rest largely on inference and consensus opinions.

Family history=higher risk at lower age

The US Preventive Services Task Force (USPSTF) recommends CRC screening starting at 50 years of age for patients with average risk, based on a 5.6% lifetime risk of developing CRC and good evidence that screening reduces morbidity and mortality.[1] Patients with a family history of CRC or AP have a risk of CRC at 40 years of age that approximates average risk at 50 years.[2] Right-sided colonic lesions are also more likely in patients with a family history of CRC (relative risk [RR]=2.25; 95% confidence interval [CI], 1.96-2.59).[3]

Risk increases with number of affected first-degree relatives

Moreover, systematic reviews show the RR of CRC to be 1.99 (95% CI, 1.55-2.55) in patients with a single first-degree relative with AP, 2.25 (95% CI, 2.00-2.53) with a single first-degree relative with CRC, and 4.25 (95% CI, 3.01-6.02) with 2 or more first-degree relatives with CRC.[3]

Younger age at diagnosis also increases risk

The effect of the relative's age at diagno-

TABLE

ACS and AGA guidelines for screening patients with a family history of colorectal cancer

Risk factor	Screening method	Age to start	Surveillance
CRC or AP in 1 first-degree relative diagnosed at <60 yr or multiple first-degree relatives	Colonoscopy	40 yr, or 10 yr before earliest age at diagnosis of an affected relative	Repeat every 5 years
1 first-degree relative with CRC diagnosed at ≥60 yr or ≥2 second-degree relatives with CRC	Same as average-risk screening*	40 yr	Same as average-risk screening
1 second-degree or any more distant relatives with CRC	Same as average-risk screening	Same as average-risk screening	Same as average-risk screening

*The ACS recommends screening these patients as average risk, meaning that screening should occur at age 50 and can use other recommended screening methods besides colonoscopy.

ACS, American Cancer Society; AGA, American Gastroenterological Association; AP, adenomatous polyps; CRC, colorectal cancer.

Adapted from: Winawer S et al. *Gastroenterology.* 2003[4] and Smith RA et al. *CA Cancer J Clin.* 2003.[5]

sis of CRC is demonstrated by an RR of 3.87 (95% CI, 2.40-6.22) if diagnosed at younger than 45 years, 2.25 (95% CI, 1.85-2.72) if diagnosed at 45 to 59 years, and 1.82 (95% CI, 1.47-2.25) if diagnosed at 60 years or older.[3]

Recommendations

Colonoscopy is the preferred screening option for most patients with family histories that put them at increased risk of CRC and right-sided colonic lesions.[4,5] The American Cancer Society (ACS) and the American Gastroenterological Association (AGA) recommend that patients with a first-degree relative diagnosed before the age of 60 years or 2 or more first-degree relatives with CRC are at highest risk and should undergo colonoscopy at age 40, or 10 years before the earliest relative's age at diagnosis; colonoscopy should be repeated every 5 years.[4,5]

Patients with a first-degree relative diagnosed with CRC or AP at 60 years or older or multiple second-degree relatives with CRC have an increased risk, but lower than the high-risk group.[4] Such patients may start screening early, at 40 years, but using the same options as patients at average risk (see the Evidence-Based Answer).[4] The **TABLE** summarizes these screening recommendations. Notably, the ACS recommends no screening change (from patients with average risk) for patients with CRC in second-degree relatives because of the modest increase in risk.[5]

The American Society for Gastrointestinal Endoscopy (ASGE) recommends screening colonoscopy for patients with a first-degree relative who was older than 60 when diagnosed with adenomas but notes that the timing of initial colonoscopy hasn't been established and should be individualized. The interval for follow-up colonoscopy in these patients should be the same as for average-risk patients. Patients with a second- or third-degree relative with colonic neoplasia should adhere to average-risk screening recommendations.[6] Otherwise, the ASGE recommendations agree with the ones described previously.

The most recent joint guidelines of the US Multisociety Task Force (USMSTF) on Colorectal Cancer, the American College of Radiology, and the ACS, released in 2008, make no recommendations regarding patients with a family history.[7] The USMSTF defers to guidelines from the ACS and the AGA described earlier. **JFP**

Screen the highest-risk patients with colonoscopy starting at 40 years, or 10 years younger than the earliest affected relative.

CONTINUED

ACKNOWLEDGEMENTS

The opinions and assertions contained herein are the private views of the authors and not to be construed as official, or as reflecting the views of the US Air Force Medical Service or the US Air Force at large.

References

1. US Preventive Services Task Force. Screening for colorectal cancer. Rockville, MD: Agency for Healthcare Research and Quality; July 2002. Available at: www.ahrq.gov/clinic/uspstf/uspscolo.htm. Accessed June 11, 2008.
2. Fuchs CS, Giovannucci EL, Colditz GA, et al. A prospective study of family history and the risk of colorectal cancer. *N Engl J Med*. 1994;331:1669-1674.
3. Johns LE, Houlston RS. A systematic review and meta-analysis of familial colorectal cancer risk. *Am J Gastroenterol*. 2001;96:2992-3003.
4. Winawer S, Fletcher R, Rex D, et al. Colorectal cancer screening and surveillance: clinical guidelines and rationale—update based on new evidence. *Gastroenterology*. 2003;124:544-560.
5. Smith RA, Cokkinides V, Eyre HJ, American Cancer Society. American Cancer Society guidelines for the early detection of cancer, 2003. *CA Cancer J Clin*. 2003;53:27-43. Available at: http://caonline.amcancersoc.org/cgi/content/full/53/1/27. Accessed June 11, 2008.
6. Davila RE, Rajan E, Baron TH, et al. ASGE guideline: colorectal cancer screening and surveillance. *Gastrointest Endosc*. 2006;63:546-557.
7. Levin B, Lieberman DA, McFarland B, et al. Screening and surveillance for the early detection of colorectal cancer and adenomatous polyps, 2008: a joint guideline from the American Cancer Society, the US Multi-Society Task Force on Colorectal Cancer, and the American College of Radiology. CA Cancer J Clin. 2008;58:130-160. Available at: http://caonline.amcancersoc.org/cgi/content/full/58/3/130. Accessed on June 11, 2008.