

Colorectal Cancer: Positive Family History

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Key Points

- About 5% to 10% of people have a family history of colorectal cancer. These people are candidates for early initiation of routine colorectal cancer screening (at age 40 instead of age 50) and might be considered for more aggressive screening strategies.
- If a patient has a relative with colorectal cancer, a detailed evaluation of family history is warranted, to determine whether a rare high-risk inherited cancer syndrome is present.
- Communicating about family risk may raise issues of patient confidentiality.

Learning Objectives

Participants will be able to:

- Understand the family history characteristics associated with increased colorectal cancer risk and with inherited colorectal cancer syndromes;
- Understand the rationale for early and more frequent colorectal cancer screening in people with a positive family history;
- Understand the implications for patient confidentiality when family members receive care at the same health care facility.

Overview of Genetics of Colorectal Cancer

Family History Issues

A family history of a first-degree relative with colorectal cancer confers an approximately twofold increased risk for colorectal cancer. In addition, colorectal cancer tends to occur earlier in people with a positive family history, compared to those without such family history.

Some family history characteristics raise the possibility of an inherited colorectal cancer syndrome associated with high lifetime cancer risks. These characteristics include:

- Two or more relatives with CRC in the same biological line
- Relatives with CRC before age 50
- Relatives with other cancers associated with CRC, including endometrial cancer, other gastrointestinal cancers, urinary tract cancers, and ovarian cancer

Red Flags



Inherited CRC risk should be suspected if:

- CRC occurs before age 50;
- Multiple colonic polyps are noted on endoscopy;
- Two primary colon cancers occur in the same individual;
- CRC and another associated cancer (endometrial cancer, other gastrointestinal cancers, urinary tract cancers, and ovarian cancer) occur in the same individual.

Case 8. A 42-Year-Old Woman Unaware of her Family History of Colorectal Cancer (CRC)

A resident presents a 42-year-old woman who has come for an annual examination. The resident has performed routine health maintenance, including a pelvic examination with Pap test and a clinician breast examination; a dT booster has been ordered. The patient is a non-smoker, drinks minimal alcohol, and has no known family history of breast, colorectal or ovarian cancer. The resident asks if any other preventive care is indicated.

You are aware that the patient's 50-year-old sister (who is your patient) recently underwent surgery for a small Stage 1 colorectal cancer, found as a result of routine colorectal cancer screening.

Clinical Care Issues

Other preventive care for this patient would include routine mammography, counseling about healthy lifestyle (regular exercise; diet low in fat and high in fruits and vegetables), review of past medical history and family history

for any other targeted preventive care, and routine measurement of weight and blood pressure.

From the attending physician's perspective, the most obvious concern is the patient's family history of colorectal cancer (CRC). However, acting on this concern is difficult in the present situation because of the strict protection of patient privacy called for under the [Health Insurance Portability and Accountability Act of 1996 \(HIPAA\)](#). See further discussion below in [Ethical/Legal/Social/Cultural Issues](#).

Risk Assessment

Relevant risk factors

Risk of colorectal cancer increases with age. After age, a history of CRC in a close relative is the leading risk factor for CRC. Other risk factors include high intake of red meat; low intake of vegetables and folate; inflammatory bowel disease; and a personal history of one or more adenomatous polyps.

Role of family history in assessing risk

Because the patient has a first-degree relative with CRC at age 50 years, her lifetime risk is estimated to be about 2x higher than average risk [[Table, CRC Overview](#)]. She may be a candidate for screening starting at age 40 years, as noted below in [Interventions](#). Before this screening strategy can be discussed with her, it will be necessary to consider how the issue of her sister's cancer history could be addressed in an ethical manner. See further discussion below in [Ethical/Legal/Social/Cultural Issues](#).

About 5% to 10% of people in the general population have a first-degree relative (parent, sibling, or child) with CRC. In addition to an approximately twofold increased risk of CRC, a positive family history leads to an increased risk that CRC will occur at an earlier age. The CRC risk for a person at age 40 years who has an affected first-degree relative is approximately the same risk as the average risk for a person at age 50 years [[Fuchs et al 1994](#)].

When the relative risk is analyzed in different age groups, the increased risk is found to be more pronounced at younger ages [[Fuchs et al 1994](#)], e.g., before age 50 years, at a time when routine CRC screening is not recommended.

Should an inherited syndrome be considered?

When initial family history assessment indicates that a first-degree relative has CRC, it is appropriate to ask about CRC in other relatives. Additional affected second-degree relatives (grandparents, aunts, uncles) would raise the possibility of an inherited colorectal cancer syndrome such as familial adenomatous polyposis (FAP) or hereditary non-polyposis colon cancer (HNPCC) [[CRC Overview](#), [GeneReviews: FAP, HNPCC](#); [PDQ colorectal cancer genetics summary](#)].

In considering HNPCC, the more common inherited CRC syndrome, it is important to recognize that the occurrence of cancers besides colorectal cancer can be important clues to the diagnosis; focusing only on colorectal cancer history may miss some families. Other HNPCC-associated cancers include endometrial cancer (40%-60% lifetime risk in women with HNPCC), cancers of the urinary tract and small bowel, and ovarian cancer.

Genetic Counseling and Testing

If this patient has no additional family history of either CRC or related cancers, an inherited CRC syndrome is unlikely, and the patient would not be a candidate for genetic counseling, or for genetic testing for HNPCC-associated gene mutations.

Interventions

Routine CRC screening is recommended to begin at age 50 years for people of average risk [[Smith et al 2001](#), [Winawer et al 2003](#)]. Because of epidemiological data indicating that CRC may occur earlier in people with an affected first-degree relative, experts have concluded that it is beneficial to begin CRC screening at an earlier age in such individuals — e.g., at age 40 years, or 10 years before the age of the earliest affected family member [[Winawer et al 2003](#)]. Before implementing this recommendation, however, it is important to evaluate family history sufficiently to rule out an inherited CRC syndrome, which would require much earlier screening [[CRC Overview](#)].

Rationale [[Winawer et al 1997](#), [Winawer et al 2003](#)]

- Higher risk and earlier age of onset of colorectal cancer in people with an affected first-degree relative
- Evidence for benefit of colorectal cancer screening in average-risk populations [[Smith et al 2001](#), [Winawer et al 2003](#)]

- Screening test performance assumed to be the same at age 40 years as at age 50 years

Specific CRC screening recommendations for people with moderately increased CRC risk have been made by the American Cancer Society and the American Gastroenterological Association:

Agency	Family History Criteria	CRC Screening Recommendation
American Cancer Society [Smith et al 2001]	CRC or AdP in one or more first-degree relatives before age 60 or two or more first-degree relatives at any age (after excluding HNPCC and FAP)	Colonoscopy every 5-10 years, starting at age 40
American Gastroenterological Association [Winawer et al 2003]	Two or more first-degree relatives with CRC/AdP, or more than one first-degree relative affected before age 60 (after excluding HNPCC and FAP) One first-	Colonoscopy every five years, beginning at age 40 or 10 years before youngest diagnosis in family, whichever came first Same as average risk, but beginning at age 40

	degree relative affected with CRC/AdP at or after age 60	
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CRC = colorectal cancer

AdP = adenomatous polyp

HNPCC = hereditary non-polyposis cancer

FAP = familial adenomatous polyposis

Ethical/Legal/Social/Cultural Issues

The patient is apparently unaware of her sister's diagnosis. This may indicate that her sister does not wish to disclose her CRC diagnosis, or her sister may not understand the medical significance of her diagnosis for family members. The ethical concerns include:

- Obligation to protect the confidentiality of the sister's medical condition
- Obligation to provide the best care recommendations to the patient

These obligations are potentially conflicting, and may be more difficult to address because of the teaching role of the attending physician.

Confidentiality

Physicians are obligated to respect the confidentiality of medical information. In this case, the attending physician has family history information that may be of value in the care of the resident's patient, but s/he is not free to make it known to that patient (or the resident) without permission. The need for strict protection of patient privacy has been codified in federal regulation under the [Health Insurance Portability and Accountability Act of 1996](#) (HIPAA).

To address this concern, the attending physician may choose to contact the sister recently diagnosed with CRC, in order to discuss with her the potential value of sharing her diagnosis with her sister. This conversation will enable the attending physician to determine whether information about the diagnosis was purposely withheld.

Potential duty to disclose. Given expert consensus that the resident's patient should have CRC screening now because of her positive family

history [Smith et al 2001, Winawer et al 2003] it could be argued that the health care providers (attending and resident) have an obligation to ensure that the family history and its implications are disclosed. Family members may also have an obligation to share information that could affect the health care decisions of their relatives. This putative duty assumes that an action can be taken on the basis of the disclosed information that will improve health outcome. There is no duty to disclose family history if it will not lead to a specific health care action; thus, if the resident's patient were herself over 50 years and already a candidate for CRC screening on the basis of age, this case would not raise the same concerns about disclosure of family history.

A recent position statement by the American Society of Clinical Oncology proposes that when a patient's diagnosis has risk implications for family members, a health care provider's duty is limited to counseling the patient about the family risk and encouraging the patient to discuss the risk and its implications with family members [ASCO 2003].

Implications for practice

After discussing this case in a post-clinic conference (following a discussion with the patient's sister and subsequent disclosure of the family history), you and your colleagues realize that no one in the practice routinely counsels patients diagnosed with colorectal cancer to discuss their diagnosis with family members. Should a change be made?

If the members of the practice agree that early CRC screening should be offered to those with a family history of CRC, it follows that patients with CRC should be encouraged to discuss their CRC diagnosis with family members, together with its implications for early CRC screening of family members.

Methods to accomplish the task of informing family members are unresolved. Medical geneticists often send a letter to the patient, encouraging him/her to share the information with family members. The practice could potentially aid in this effort by producing a fact sheet about CRC risk and CRC screening, for distribution to family members. However, the most effective approaches to this task have not yet been established.

Resources

- **Hereditary Colon Cancer Association (HCCA)**
3601 N 4th Ave, Suite 201
Sioux Falls, SD 57104
Phone: 800-264-6783; 605-373-2067
Fax: 605-336-6699
Email: info@hereditarycc.org
- **Colorectal Cancer Network**
- **Cancer.gov - Colon and Rectal Cancer: Prevention, Genetics, Causes**
- **Cancer.gov - Colorectal Cancer (PDQ): Prevention**
- **Johns Hopkins Hereditary Colon Cancer Web site**
- **GeneTests Online Medical Genetics Information Resource**
- **GeneReview: Familial Adenomatous Polyposis**
- **GeneReview: Hereditary Nonpolyposis Colon Cancer**

References

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