Published in final edited form as:

Am J Prev Med. 2008 September ; 35(3): 317–318. doi:10.1016/j.amepre.2008.06.002.

Improving CRC Screening Requires Innovative Approaches:

Can Electronic Medical Records Help?

Thomas M. Vogt, MD, MPH

From Kaiser Permanente Center for Health Research, Honolulu, Hawaii

Colorectal cancer (CRC) screening is probably more likely than any other routine screening test to extend the life of those screened. Despite very clear evidence of the value of CRC screening, adherence to screening recommendations is much lower than for other common screening tests such as mammography, Pap testing, lipid, and blood pressure screening.

Two papers in this issue of the American Journal of Preventive Medicine^{1,2} address trends in CRC screening. The first discusses screening among those aged 50–64 years. The second complements the first paper by describing screening trends among those eligible for Medicare who are aged 68–89 years. Since Medicare covers CRC screening, lack of insurance is an important issue for the first group, but not for the second. It is not surprising that lack of insurance is strongly related to failure to be screened among the younger group. As the only developed nation lacking near universal health insurance, the U.S. has created two populations—one with health care and the other without. The 15% who lack insurance have mortality rates similar to those of Third World nations. The low CRC screening rates among the uninsured¹ are one small example of the consequences of discarding people from the system rather than rationally limiting unnecessary services.

There are other factors, though, besides insurance that lead to low rates of CRC screening compared to other evidence-based screening tests. There are multiple ways to be screened for CRC, including fecal occult blood testing (FOBT), sigmoidoscopy, colonoscopy, dual-contrast barium enema (BE), and, more recently, immunochemical-based fecal occult blood test (iFOBT).^{3,4} As both papers in this issue point out, colonoscopy has been replacing sigmoidoscopy as the test of choice. But colonoscopy is more expensive and more invasive than the other tests. Some studies suggest that colonoscopy, while it has higher sensitivity, is less cost effective than sigmoidoscopy and FOBT either separately or in combination.^{5,6}

Colonoscopy is also less acceptable to many people, although all of the studies evaluated in these two papers involve a certain degree of patient distaste. The new iFOBT studies are less expensive and probably more acceptable. Patient acceptance and high cost are important reasons that adherence to CRC screening is so poor. A test with lower sensitivity and specificity than colonoscopy could, ultimately, be both more effective and cost effective than colonoscopy if its use can overcome resistance to screening. However, we currently have no data on the relationship of iFOBT to years of life saved or to how it might be used in combination with other CRC tests.

Address correspondence and reprint requests to: Thomas M. Vogt, MD, MPH, Kaiser Permanente Center for Health Research, 711 Kapiolani Blvd., Honolulu HI 96813. E-mail: tom.m.vogt@kp.org.

Publisher's Disclaimer: This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

The menu of tests for CRC screening is confusing to patients, clinicians, and even experts. Intervals for each test are not always clear, and intervals for combinations of tests (usually sigmoidoscopy plus FOBT) are not evidence based. Most attempts to evaluate screening quality utilize methodologies that are simply unable to cope with the plethora of guidelines—some evidence-based, some not—relating to the efficacy, cost effectiveness, and optimal frequency of individual tests, let alone combinations of them. The truth is that we have no way of knowing how adequately the population is being screened when all of the competing options are weighed together. We do not know what the optimal screening patterns are. How do we balance a test with higher sensitivity (i.e., colonoscopy) against its higher cost and lower acceptance when we make recommendations to patients? Where do the new immunochemical tests fit in? Should they be used in combination with sigmoidoscopy? With colonoscopy?

There are too many questions to expect that clear answers will ever come from expensive and lengthy randomized trials. Fortunately, there are other ways to address such questions. Electronic medical records systems in large population-based integrated healthcare systems offer extraordinary opportunities to relate patterns of care to the outcomes that such care is designed to influence. The Cancer Research Network,⁷ a consortium of 12 such integrated healthcare systems, each possessing comprehensive electronic medical records, includes more than ten million members whose medical records can be linked anonymously through a “virtual data warehouse” to address questions that can never be feasibly dealt with in randomized clinical trials. These records can link all diagnoses, procedures, referrals, and physical measurements included in the medical record to outcomes of care. Where alternative patterns exist, the relationship of those alternatives to outcomes can be compared with appropriate covariate adjustments and matching techniques. The large numbers of people who belong to integrated healthcare systems permit new approaches to old questions. There is, however, a growing need for research on innovative methodologies to use and apply these new sources of information, to clarify their strengths and weaknesses and to optimize the collection of data so that it supports the research derived from it—research that helps us deliver services that are most likely to benefit patients both in terms of their health and in terms of their pocketbooks.

Inappropriate screening is extremely expensive.⁸ The development and ongoing modification of guidelines to identify optimal screening patterns are critical parts of high-quality preventive care. Electronic records can determine the relationship of guidelines adherence to outcomes of care in real-world populations where issues of multiple tests, co-pays, and patient acceptance all influence both cost and benefit. They give us a set of tools for improving care and reducing costs, for moving beyond identifying screening deficits to doing something about them. Tools, though, must be used in order to have an impact. Thus, the prevention community has much at stake in the ongoing efforts to develop comprehensive electronic medical records and to find new ways to integrate data from these sources with other public health data so that true population health can be attained.

Acknowledgements

No financial disclosures were reported by the author of this paper.

References

1. Trivers KF, Shaw KM, Sabatino SA, Shapiro JA, Coates RJ. Trends in colorectal cancer screening disparities in people aged 50–64 years, 2000–2005. *Am J Prev Med* 2008;35(3):XXX–XXX.
2. Fenton JJ, Cai Y, Green P, Beckett LA, Franks P, Baldwin LM. Trends in colorectal cancer testing among Medicare subpopulations. *Am J Prev Med* 2008;35(3):XXX–XXX.
3. Levi Z, Rozen P, Hazazi R, et al. A quantitative immunochemical fecal occult blood test for colorectal neoplasia. *Ann Intern Med* 2007;146:244–255. [PubMed: 17310048]

4. Morikawa T, Kato J, Yamaji Y, et al. Sensitivity of immunochemical fecal occult blood test to small colorectal adenomas. *Am J Gastroenterol* 2007;102:2259–2264. [PubMed: 17617203]
5. Wagner EH, Greene SM, Hart G. Building a research consortium of large health systems: the Cancer Research Network. *J Nat Can Inst Monogr* 2005;35:3–11.
6. Pignone M, Saha S, Hoerger T, Mandelblatt J. Cost-effectiveness analyses of colorectal cancer screening. *Ann Intern Med* 2002;137:96–104. [PubMed: 12118964]
7. McMahon PM, Bosch JL, Gleason S, Hapern EF, Lester JS, Gazelle S. Cost-effectiveness of colorectal cancer screening. *Radiology* 2001;219:44–50. [PubMed: 11274533]
8. Vogt TM, Jollis JF, Lichtenstein E, Stevens VJ, Glasgow R, Whitlock E. The medical care system and prevention: the need for a new paradigm. *HMO Practice* 1998;12:5–13. [PubMed: 10178378]