Hypothesis/Commentary

Colorectal Cancer Is an Ambulatory Care Sensitive Condition

Mona Sarfaty and Elaine Yuen

Thomas Jefferson University, Philadelphia, Pennsylvania

Abstract

Ambulatory Care Sensitive Conditions (ACSC) are conditions where the provision of ambulatory care may affect the probability of hospitalization or the severity of the disease at the time of hospitalization. Population-based measurement of ACSCs can focus attention on aspects of ambulatory care that merit strengthening to improve access, quality, or patient compliance to achieve better outcomes and reduce costs. If colorectal cancer was added to the list of ACSCs, it would highlight the continuum of care that starts in the ambulatory setting and includes risk assessment as well as access to colonoscopy, which is the only means of adenoma removal after a positive screen. Each link in the continuum of care can increase or reduce the rates of colorectal cancer incidence and mortality at the local and national levels. Employing colorectal cancer as an ACSC at the hospital level or state level can provoke policy makers and managers to examine these links for gaps and weaknesses that merit attention and may be addressed. (Cancer Epidemiol Biomarkers Prev 2008;17(10):2531–5)

Rates of hospitalization for Ambulatory Care Sensitive Conditions (ACSC) have been used to evaluate programs for adults and children. For instance, the effect of Medicaid-Managed Care in California was evaluated by comparing the rate of these conditions in Medicaid-Managed Care compared with fee-for-service programs, finding a 33% lower rate in the managed care group (1). Medicaid patients enrolled in federally qualified health centers, that provide a regular source of care, had significantly fewer inpatient and emergency room visits for Ambulatory Care Sensitive Conditions (2). The effect of the Child Health Insurance Program has been evaluated using ACSCs, demonstrating reductions in hospitalizations for children in California, saving an estimated $6.7 million over 6 years (3, 4).

Since the 1990s, ACSCs have been used as markers indicating quality of primary care in public and private insurance settings. Many studies have evaluated the relationships between ACSCs and income levels, insurance status, race, and ethnicity, often finding a relationship between rates of hospitalization for ACSCs and ethnicity, lower socioeconomic status, and/or compromised access to care (5-9). To evaluate quality in the Medicare population, rates of ACSCs have been used as an outcome measure to study individual demographic and geographic attributes that contribute to access to care, and the effect of physician supply (8, 10).

The Agency for Healthcare Research and Quality reported on national trends in preventable hospitalizations from 1997 to 2004, identifying areas where

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Requests for reprints: Mona Sarfaty, Thomas Jefferson University, 1015 Walnut Avenue, Curtis 115, Philadelphia, PA 19107. Phone: 215-955-2797; Fax: 215-923-7583.
E-mail: mona.sarfaty@jefferson.edu
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If CRC were included as an ACSC, it could stimulate investigation of local conditions that create or contribute to high incidence and mortality rates from CRC related to low screening rates. The insights gained could lead to the development of remedies that strengthen the continuum of ambulatory services. Cervical cancer and skin cancer are other cancers that offer the potential for primary prevention that could be candidates for consideration as an ACSC. However, annual rates of screening for cervical cancer with pap smears are 84% nationwide, whereas the rate of screening for CRC is under 60% (17). Substantial research on the natural history of CRC and the determinants of and barriers to screening make it the strongest choice for the list of ACSCs. This essay explores both the role of ACSCs in the analysis of health system characteristics and the steps in the continuum of care that influence the occurrence and outcome of CRC.

The natural history of CRC and the points of potential intervention that can reduce the toll of this cancer provide a useful framework for thought. Most colorectal cancers begin as an adenomatous polyp that is not malignant and take a period of 5 to 15 years to transform to cancer (18, 19). The long period of transformation gives clinicians an invaluable window of opportunity to help patients prevent the polyp from developing into cancer (20). A significant percentage of the population as they age develop adenomatous polyps, which are the precursor lesions. Cross-sectional study suggests that prevalence increases from under 15% in the age 50 years population to over 25% in the age 75 year old population (21, 22).

If individuals at average risk and increased risk are preventively screened with the appropriate modality at the appropriate time (age 40 if risk is increased), and a precursor lesion is identified, timely and appropriate management of the precursor can reduce incidence and mortality. The appropriate management is removal of the adenomatous polyp(s) via colonoscopy.

It is estimated that almost 50% of new CRCs could be prevented if the screening rate were to increase to 70% based on current screening trends (23). Early outcome findings of screening colonoscopy trials provide evidence that decreased mortality is the outcome of screening with colonoscopy (24). There is sufficient evidence that screening, which includes adenomatous polyp removal via colonoscopy, reduces mortality that four sets of national consensus guidelines are united in their recommendation for screening all individuals at average risk over age 50 years, with earlier screening for those who are at increased risk (25-28).

Incidence Reduction through Screening. Screening reduces incidence and mortality. Several factors influence screening rates. The screening process typically begins with risk assessment and a recommendation from a primary care physician. Physician recommendations have been documented extensively as a prime influence on CRC screening rates (29-31). Access to ambulatory care and health insurance are related predictors of screening rates (32, 33). Income and race/ethnicity have also been documented as factors associated with screening rates related to access and as independent factors (34, 35).

Risk assessment leads to earlier screening for individuals who are at increased or high risk. Increased risk circumstances can elevate an individual’s risk to two to four times baseline. High risk circumstances can create a virtual certainty that an individual will develop adenomatous polyps and cancer. Risk assessment is needed to assure that screening begins at the most advantageous time with the most appropriate screening test. Guidelines recommend that individuals at increased risk should begin screening before age 50 years at age 40 or 10 years earlier than the youngest relative with a test that examines the entire colon (colonoscopy or computed tomography colonography). Those at increased risk constitute from 10% to 33% of the population (36, 37).

Risk Assessment. Many clinicians may not perceive the extent of increased risk or the situations in which risk factors are present. A first degree relative with a CRC diagnosed under the age of 50 years is a red flag, which should raise a question in the mind of the physician about the possibility of hereditary nonpolyposis colorectal cancer. A pair of first-degree relatives with CRC should sound a trumpet call about that possibility. Only 1% of the population in the very large Utah Data Base of individuals of all ages had CRC; however, twice as many of their first-degree relatives had CRC (37). The risk for relatives was 1.9%. Individuals with a family member with a cancer linked to hereditary nonpolyposis colorectal cancer had a risk that was several times larger (3.4%). Systematic risk assessment as part of the standard intake can bring these important facts to light in primary care settings.

Timely risk assessment requires well-organized and effective primary care services under the direction of well-informed clinicians. There is evidence that risk assessment in the form of the recorded family history is neglected in primary care practice. In one recent study that compared chart review to patient survey, over half of the individuals at increased risk for breast or CRC based on their family history did not have documentation of this risk within their medical record (43). Electronic medical records offer no assurance that family history will be recorded. In another study, over half the patients with an electronic record had no family history recorded (44). Although electronic tools are under development that may make it easier to collect and organize family history information, the importance of collecting this information must be understood (45).

Many physicians may be surprised by data that reflect the number of younger individuals diagnosed with CRC. Six and a half percent of all individuals with CRC listed in the comprehensive Utah Population Data Base, 1966 to 2000, were diagnosed when they were under the age of 50 years. The screening process typically begins with risk assessment and a recommendation from a primary care physician. Physician recommendations have been documented extensively as a prime influence on CRC screening rates (29, 30).
age of 50 years (46). Sixteen percent of incident cases were diagnosed when the individuals were age 54 years or less according to the national SEER database, 2001 to 2005 (47, 48). Twenty percent of the total cases of CRC diagnosed in the Pennsylvania in 2003 were found in people when they were under age 60 years (49). Because CRC typically takes 10 to 15 years to develop from an adenoma, the younger cancer victims may have cancers or adenomatous polyps that could be detected earlier with screening.

Among those who present with CRC at younger ages in Pennsylvania, hospitalization for late stage cancer is more common. In fact, in a recent year, 88% of the individuals diagnosed under age 60 years had late-stage disease at the time of diagnosis compared with 55% in the over 60 age group (49). This finding drives home the concern about timely screening and highlights the importance of ambulatory care that includes risk assessment and a recommendation for screening with the appropriate test at the appropriate time. The skewed late-stage presentation of CRCs in younger patients in Pennsylvania suggests that improved risk assessment might be particularly valuable to younger patients.

Severity and Stage of Presentation. CRC fits into the pattern of ACSCs where lack of timely and appropriate outpatient care is more likely to lead to more costly care and less favorable outcomes. Colorectal cancer has a markedly different hospitalization pattern and prognosis depending on whether it is discovered at early versus late stages. Five-year survival is over 90% for persons who are diagnosed with localized disease, and decreases to 44% to 66% for those at intermediate stages but decreases to 10% for those with distant metastases (49, 50). Data (1998-2004) from the National Cancer Data Base, a joint effort of the American Cancer Society and the American College of Surgeons that collects data from hospital registries, indicate that people who have no insurance or Medicaid coverage have a greater risk of diagnosis with more advanced stage cancer compared with privately insured patients (51). This suggests that the access barrier is a factor in the lack of screening and advanced disease. Many opportunities for early diagnosis are missed. Nationwide, only 40% of CRCs are diagnosed at the earliest stage.

Cross-sectional data from the 2002 Nationwide Inpatient Sample may provide perspective on the association of cancer stage and the ambulatory care continuum. A 20% sample of 8 million individuals who were hospitalized at 995 community hospitals in 35 states was the data source for information on 2,753 (10%) of 26,269 people who underwent emergency resection of the colon or rectum in 2002 and who had diagnoses reflecting their emergency surgery (52, 53). The associated diagnoses were bowel perforation, intestinal obstruction, or peritonitis. The length of stay for this group was 4 days longer; they were thrice more likely to die in the hospital; and hospital charges were on average $19,073 higher. Similar findings about these three features of their hospitalization were documented in prior studies. The characteristics significantly associated with emergency resection were older age, lack of insurance, Medicaid coverage, lower income, African American race, and diagnosis of metastatic cancer. However, if metastatic cancer and emergency surgery have the same associated factors (lack of insurance, lower income, Medicaid, and race) as lower screening rates, they may be indicators of situations in which careful examination is needed of the continuum of care. Other sources assert that 15% to 30% of individuals with a diagnosed CRC have their initial presentation with an emergency CRC resection (53). Although the cross-sectional study could not differentiate between emergency presentation due to failure to screen, or cancer recurrence, emergency surgery has generally been depicted as a failure of the screening process (54).

Access to Colonoscopy. For patients who begin screening with a test other than colonoscopy, access to colonoscopy is essential when the screening test is positive. The same access barriers that interfere with CRC screening tests in general can compromise access to colonoscopy. Geographic access factors interfere as well. The committee that authored the 2000 Institute of Medicine report on the health care safety net expressed concern years later in 2006 about increased numbers of uninsured and underinsured people who find it difficult to get access to specialty care (55). Community health center patients who are uninsured or who have Medicaid coverage find it difficult to gain access to specialty care (56). Patients who receive care at federally qualified health centers also face difficulties in gaining access to colonoscopy (57). Qualitative research has revealed that providers avoid referral to colonoscopy out of concern about cost and insurance payments (58). A pilot study conducted in a federally qualified health center, which incorporated support for CRC screening that included deep discounts for colonoscopy, was able to improve screening rates for the medically underserved (59). A screening process that is otherwise intact may stall or breakdown due to lack of referral for or access to colonoscopy.

Cost Reduction. Late stage presentation not only is associated with emergency resection and screening failure, it also has cost implications. The toll and the cost of late diagnosis is high in human lives lost and health care dollars spent (60). One recent economic analysis that modeled screening strategies found that expenditures for medical care for CRC cases could decrease by $1.5 to $4.4 billion per year with a 75% rate of screening uptake (61). Costs have also been reported as lower for patients with CRC detected through screening compared with cancer detected through work-up related to symptoms caused by more advanced lesions (62).

In addition to measuring the quality of ambulatory care, CRC stage has implications for the costs of hospitalization. The state of Pennsylvania provides an example. An analysis of hospital discharge data for the year 2005 produced instructive results. Administrative data may be used to reveal stages of disease severity including cancer stage at the time of hospital admission (63). A validated methodology, Disease Staging (64), which classifies patients into stages of CRC, was used with administrative hospital discharge data to identify hospital admissions where CRC was a primary or secondary diagnosis, with graded higher (stage 3) and lower (stage 1 and stage 2) severities (65-67).
In 2005, there were 9,287 hospital admissions with CRC as the primary diagnosis in Pennsylvania; of these admissions, 1% (n = 134) were low severity stage 1, 54% were stage 2 (n = 5,004), and 45% were stage 3 and expired (n = 4,149). Average treatment costs per person increased in accordance with disease stage: stage 1 ($36,395), stage 2 ($54,938), stage 3, and expired ($62,845). Treatment charges related to these admissions totaled $540,533,844. In addition, there were 5,327 admissions in which CRC was the secondary diagnosis. Although the extent of the contribution of the CRC to those hospitalizations is unspecified, average treatment costs increased in accordance with CRC disease stage: stage 1 and reported history of CRC ($28,400), stage 2 ($40,248), and stage 3 and expired ($43,944).

A recent look at the cost to Medicare of CRC indicates that it is substantial (68). The higher health care cost associated with increased stage of cancer has been noted from analysis of Medicare data. A study in the early 1990s found that Medicare claims were higher for patients who had a CRC that presented at a higher stage of cancer diagnosis (69).

Conclusion. A dramatic drop in the numbers of new CRCs and a significant decrease in mortality could be one of the medical successes of the next decade (70). The incidence in the general population or groups that currently suffer disparities could drop. The population that is at increased risk because of a family history of adenomatous polyp or CRC or hereditary syndrome could be protected from that risk. This potential for progress will be fully realized only if high quality ambulatory care that includes risk assessment, a recommendation for screening, and access to colonoscopy is available to the public. Using hospital data to view CRC as an ACSC would contribute to these objectives. Inclusion of CRC as an ACSC would help to identify entire populations and geographic areas where screening and access to colonoscopy could be improved. The identification of regions where screening rates are low or access to colonoscopy is inadequate provides a basis for intervention. Efforts to address barriers to CRC screening and increase screening rates are under way in several states including New York, New Jersey, Delaware, and Maryland. Campaigns to improve screening recommendation rates that emanate from primary care practices are currently spearheaded by the American Cancer Society and the National Colorectal Cancer Roundtable (founded by the American Cancer Society and the Centers for Disease Control). The Centers for Disease Control is supporting demonstration programs in five states that are each designed to address the continuum of screening for low income populations based on local conditions. Legislation has been introduced into Congress to make such programs available throughout the country. Classification of CRC as an ACSC would focus attention in more regions of the country on the effective application of this high priority preventive service and the barriers that must be overcome to disseminate it (71).

Disclosure of Potential Conflicts of Interest

No potential conflicts of interest were disclosed.

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