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A Framework for Action: The Strategic Plan of the National Colorectal Cancer Roundtable

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B.A., The George Washington University, 2009

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A thesis submitted to the Faculty of the
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Abstract

A Framework for Action: The Strategic Plan of the National Colorectal Cancer Roundtable

By Ana Iturbides

Background: The National Colorectal Cancer Roundtable (NCCRT) is a national coalition established by the American Cancer Society and the CDC. It is committed to reducing colorectal cancer incidence and mortality through leadership, strategic planning, and advocacy. In 2002, the NCCRT published its first strategic plan to provide stakeholders with a blueprint for increasing the practice of screening for colorectal carcinoma (CRC). Currently, the Roundtable's strategic plan is in need of an update, as the CRC screening landscape has continued to change since the publication of the original plan. It is in the Roundtable's best interest to maintain relevant strategic goals that serve to guide its activities.

Objective: The objective of the special study project is to create a strategic plan for the National Colorectal Cancer Roundtable's Public Awareness and Professional Education and Practice Task Groups.

Methods: Two comprehensive literature reviews were conducted to establish current trends, challenges, and best practices in public awareness and professional education for colorectal cancer screening. SWOT analysis assessed internal strengths and weaknesses and external opportunities and threats. SWOT analysis and recommendations were the products of synthesizing results of the literature review with task group activities and the original recommendations and goals from the 2002 strategic plan.

Results: The Roundtable should continue to increase visibility of marketing symbols and involvement in creation and dissemination of community-based interventions. Awareness activities should focus on promoting evidence-based, tailored interventions that target high-risk groups. The NCCRT should also increase presence of outreach materials in social media. In addition, the Roundtable should adapt the Evidence-Based Clinicians' Guide in order to reach providers in high and low resource settings. Professional education strategies should emphasize an informed and shared decision making process between physicians and patients. The Roundtable must emphasize that all providers, regardless of specialty, are equal stakeholders in ensuring high quality screening and data reporting. There is also a need for continued monitoring on the effects of health reform on reimbursement policy.

Discussion: The findings from literature reviews and SWOT analysis will allow the Roundtable to continue to work towards their strategic goals while moving progress forward in emerging areas of research and screening practices.

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Chapter 1: Introduction

Colorectal cancer is a significant cause of morbidity and mortality in the United States (Gellad & Provenzale, 2010). Until 2006, the estimated mortality rate for colorectal cancer was 20.5 per 100,000 in men and 14.5 per 100,000 in women (National Cancer Institute, 2009). The mortality rate for CRC varies with age, as risk for the disease increases as a person ages.

Incidence and mortality rates of CRC are slowly decreasing in the United States. Recent research indicates that the mortality rate for American men declined 31.8% between 1990-2005. These results account for 17.1% of the total decrease in malignant cancers over the same period. Additionally, the mortality rate for women decreased by 28% between 1991 and 2005. The decline in women's mortality rates accounts for 23.9% of the decrease in total cancer mortality throughout the same period (Gellad & Provenzale, 2010).

The burden of colorectal cancer varies by geographic location, race, ethnicity, and socioeconomic status. Geographically, Louisiana's incidence rate for men and women of 64.6 per 100,000 ranks the highest among any state, while Utah reports an incidence rate of 40.3 per 100,000. Iowa's incidence rate for women is highest at 49.0 per 100,000 and Utah's incidence rates for women are lowest at 31.5 per 100,000 (National Cancer Institute, 2009).

There is substantial evidence in the cancer literature that indicates that incidence and mortality rates for colorectal cancer vary by race and ethnicity. Geographic location also plays a role in racial and ethnic disparities in CRC incidence and mortality. African Americans' incidence rate of 57.2 per 100,000 is the highest incidence rate for CRC of any group. This is followed by White (50.8 per 100,000), Asian/Pacific Islander (38.9 per 100,000), and American Indian/Alaskan Native (31.3 per 100,000) racial and ethnic groups (Rim, Seeff, Ahmed, King, & Coughlin, 2009). Similarly, mortality rates for African Americans are highest at 24.3 per 100,000 followed by Whites at 16.6 per 100,000, American Indian/Alaskan Natives at 14.5 per 100,000, and Asian/Pacific Islander at 11.0 per 100,000 (Wong, Ettner, Boscardin, & Shapiro, 2009). Rates for no-Hispanic groups are generally higher than those for Hispanics.

Trends in colorectal cancer incidence rates continue to reveal disparities among racial and ethnic groups. For example, the incidence rates for white, Asian/Pacific Islander, and non-Hispanic men and women decreased between 1995 and 2004, while incidence rates for black, Hispanic, and American Indian men and women remained constant. Researchers believe that the manifestation of differences among racial and ethnic groups is due to a variety of factors, including varying environmental exposures, inequalities in access to preventive health services, tumor biology, and differences in treatment outcomes (Polite, Dignam, & Olopade, 2006).

Risk Factors and Development of CRC

While the exact cause of colorectal cancer is unknown, the CRC community believes that a variety of risk factors contribute to an individual’s risk of developing the disease. Age is a primary risk factor for the development of colorectal cancer, as risk for developing this cancer increases with age. While colorectal cancer can occur at any age, the overwhelming majority of cases occur in those age 50 years or older. Family and personal history of CRC can also play a role in risk. Immediate relatives of a person who has had colorectal cancer are at somewhat increased risk of developing the disease themselves (National Cancer Institute). Additionally, if a person has already been diagnosed with colorectal cancer, they have an increased risk of developing the disease again in the future.

Generally, CRC is preceded by the presence of one or more adenomatous polyps. Polyps are abnormal growths that protrude from the inner wall of the colon or rectum. They are relatively common in people over 50 and most of them are noncancerous. Those that are cancerous are referred to as adenomas. Removing polyps and nonpolypoid lesions before they become cancerous can prevent colon cancer in individuals (Levin et al., 2008).

Inherited syndromes such as ulcerative colitis and Chron's disease, as well as personal history of inflammatory bowel syndrome (IBS) are also risk factors for colorectal cancer. Ulcerative colitis causes inflammation and sores in the lining of the colon. Chron's disease causes inflammation in the gastrointestinal tract, and most commonly in the small intestine (Mayo Clinic). People with these conditions may be more likely to develop colorectal cancer than those at normal risk. Lifestyle related risk factors including diet, obesity, smoking, and type II diabetes may also increase an individual's risk for CRC (Mayo Clinic). Public health and medical professionals continue to explore the role that these factors play in the development of colorectal cancer.

About the National Colorectal Cancer Roundtable

The National Colorectal Cancer Roundtable (NCCRT) is a national coalition of public, private, and voluntary organizations whose mission is to advance colorectal cancer efforts by improving communication, coordination, and collaboration among health agencies, medical-professional organizations, and the public. The NCCRT and its three workgroups include CRC survivors, recognized experts in primary care, gastroenterology, radiology, colorectal surgery, nursing, public policy, epidemiology, behavioral science, patient advocates, representatives of health plans and insurers, government representatives, and other organizations (National Colorectal Cancer Roundtable). The ultimate goal of the National Colorectal Cancer Roundtable is to increase the use of proven colorectal cancer screening test among the entire population for whom screening is appropriate. The Roundtable's collaborative efforts strive to:

- Strengthen the network of public and private organizations concerned with promoting colorectal cancer screening;
- Determine clinical and consumer barriers to screening through research;
- Assess current public awareness and interest in screening;
- Develop and disseminate health messages (National Colorectal Cancer Roundtable).

Partnership Activities

The NCCRT is a collaborative partnership with more than 60 members across the nation. NCCRT partners include state health departments, professional organizations, medical societies, federal agencies, consumers, cancer survivors, managed care organizations, private industry, health educators, and the medical media. Through the efforts of workgroups focused on provider education, public education, quality, health disparities, and health policy, the NCCRT identified the educational needs and health messages for both health care providers and consumers and explored health care system and policy issues related to colorectal cancer (National Colorectal Cancer Roundtable).

Each workgroup periodically develops a set of recommendations that are incorporated into a national colorectal cancer strategic plan (National Colorectal Cancer Roundtable).

The NCCRT Strategic Plan

In 2002, the NCCRT published its first strategic plan. The purpose of the strategic plan was to provide "health professionals, professional organizations, policymakers, and the general public with a practical blueprint for increasing the practice of screening for colorectal carcinoma (CRC) and adenomatous polyps over the next decade" (Levin et al., 2002). The Roundtable's methods for completing the strategic plan were to conduct a literature review of published and unpublished data and studies that dealt with CRC screening guidelines, compliance, barriers to adherence, and cost-effectiveness of several screening modalities (Levin et al., 2002). A drafting committee comprised of NCCRT leadership and task group chairs developed the plan by conducting a comparative analysis of findings from the literature with recommendations from workgroup reports and meetings. The plan was proposed to the entire NCCRT membership and was reviewed, amended, and approved for publication.

Throughout this document, recommendations from the 2002 strategic plan will be examined in the context of current literature and task group activities. Original recommendations from the 2002 strategic plan, as stated by Levin and colleagues, are as follows:

Public Awareness Task Group Recommendations

1. Lifestyle modification messages should be part of a broader cancer prevention awareness message.

2. The NCCRT and its member organizations will promote coordinated and targeted public education initiatives and their evaluation.
3. CRC screening in general should be promoted rather than a particular screening test.
4. Primary care and specialist physicians, nurses, physician assistants, and professional office staff should work together to implement a screening program. No one segment of the provider workforce can carry the burden of a national screening policy for colorectal cancer (Levin et al., 2002).

Public Awareness Task Group Goals

1. Encourage all health insurance plans to offer adequate reimbursement for the CRC screening strategies recommended in the guidelines.
    a. NCCRT will produce a formal report describing economic, legal, and practical implications for screening.
    b. NCCRT will identify and highlight successful CRC screening initiatives.
    c. NCCRT encourages NCQA to add a CDC screening measure to HEDIS.
    d. NCCRT will encourage health systems to incorporate tracking systems, reminder systems, and provider incentives to improve CRC screening utilization rates in members.
    e. NCCRT will promote CRC Roundtables at the state level, ideally as part of state cancer plans (Levin et al., 2002).

Professional Education and Practice Task Group Recommendations

1. Organizations for health professionals should require content regarding CRC screening as a prerequisite for accreditation of educational programs and in the certification and re-certification of health professionals.
2. All primary care physicians should adopt an appropriate CRC screening policy based on appropriate guidelines.
3. All primary care providers should use systems and educational materials that support accurate risk stratification, increase appropriate screening according to that stratification, and promote shared decision-making with patients (Levin et al., 2002).

Professional Education and Practice Task Group Goals

1. Work with educational and certifying organizations to remediate deficits in CRC screening education.
2. Monitor ongoing health promotion and education research.
3. Identify, publicize, and promote interventions that have been shown to increase CRC screening rates.
4. Promote the development and evaluation of new interventions designed to increase screening by health care professionals.
5. Support member organizations in endorsing CRC screening as an evidence-based recommended practice for all Americans age 50 and older and for younger individuals at increased risk.

6. Establish a clearinghouse for collecting and disseminating information regarding CRC screening, CRC screening policy, screening program implementation systems, and insurance reimbursement issues.
7. Identify gaps and inconsistencies in existing and new provider educational materials.
8. Encourage groups representing individuals with high-risk conditions to work with professional societies to disseminate and implement risk stratification tools to assist healthcare professionals in identifying patients requiring a more intensive screening schedule (Levin et al., 2002).

Problem Statement

While much progress has been made since the previous strategic plan was published, the Roundtable currently faces a number of challenges that point to a need for an updated strategic plan. First, nearly a decade has passed since the publication of the original strategic plan. Many strategic planning experts advocate for updating a strategic plan every three to five years (Allison & Kaye, 2005). Additionally, the American Cancer Society, the American College of Radiology, and the U.S. Multi-Society Task Force published updated CRC screening guidelines in 2008, which have undoubtedly had implications on clinical screening practices. Lastly, the passage of the Patient Protection and Affordable Care Act in addition to the dissemination of many of the Roundtable’s outreach materials has not been examined from a strategic planning perspective.

The NCCRT has documented the progress that the Roundtable’s task groups have made, but this progress has not been compared with findings from current literature in order to be developed into a cohesive framework for action. The CRC screening landscape has continued to change since the publication of the original strategic plan. As a leader in the CRC screening community, it is in the Roundtable’s best interests to maintain relevant strategic goals that serve to guide its activities.

Purpose Statement

The purpose of the special study project was to draft an updated strategic plan for the National Colorectal Cancer Roundtable’s Public Awareness Task Group and Professional Education and Practice Task Group. In order to achieve the purpose of the project, two systematic reviews of the literature were conducted to determine current best practices in the field. These reviews focused on education campaigns, evidence-based interventions, barriers, and facilitators for colorectal cancer screening within public awareness and professional education. The results from the literature reviews were evaluated along with the Roundtable’s task group-specific recommendations, goals, and activities. This information was synthesized to inform a SWOT analysis for each task group. The SWOT analysis identified internal strengths and weaknesses as well as external opportunities and threats. The SWOT analysis resulted in four recommendations for each task group, which indentified what the Roundtable must do or continue to do in order to continue to achieve its goals. The draft of the strategic plan that will be presented to the Roundtable for its consideration is included in the Appendix of this document.

Research Question

The overall research question is “What must the NCCRT do or continue to do to reduce incidence, mortality, disparity, and unnecessary costs associated with colorectal cancer screening?” In addition, the research question for the Public Awareness Task Group is “How has public knowledge about colorectal cancer changed, and to what extent does knowledge influence action?” The Professional Education and Practice chapter seeks to explore whether or not providers are recommending CRC screening in accordance with guidelines and determine what NCCRT must do to ensure that providers have the education, tools, and resources they need to recommend quality CRC screening to all age and risk appropriate patients.

Significance Statement

The knowledge delivered in the strategic plan will enable the Roundtable to continue to serve as a leader in public awareness and professional education issues related to colorectal cancer screening programs. It will allow the Roundtable to translate recent knowledge and task group recommendations into measurable goals and objectives that will continue to benefit stakeholders in the colorectal cancer screening community.

Chapter 2: Methods

Systematic Literature Review

The Roundtable's activities are grounded in current trends and best practices in the field. As a result, updated literature reviews are an important step in the strategic planning process that will help to inform the Roundtable's future priorities.

One literature review was written for each task group. The public awareness literature search was based on the research question for the task group, which is "How has public knowledge about colorectal cancer changed, and to what extent does knowledge influence action?" The Professional Education and Practice research question seeks to explore whether or not providers are recommending CRC screening in accordance with guidelines and determine what is currently being done to ensure that providers have the education, tools, and resources they need to recommend quality CRC screening to all age and risk appropriate patients.

In order to understand current trends in public awareness and professional education issues in colorectal cancer screening, PubMed's advanced search feature was used to search two or more MeSH terms simultaneously. Web of Science was used only when full text articles were not available in PubMed. The charts below provide details regarding the search terms that were entered, how many articles resulted from the search, and of those, how many were relevant for the reviews.

Search Terms	PubMed Results	Relevant Articles
“Colorectal cancer” AND “public awareness” AND “barriers”	24	9
“Colorectal cancer” AND “group” AND “education”	608; 207 full text articles were reviewed.	4
“Colorectal cancer” AND “mass media” AND “awareness”	14	2
“Colorectal cancer” AND “mass media materials”	24	1
“Colorectal cancer” AND “media attention”	19	2
“Colon cancer” AND “media response”	189; 65 full text articles were reviewed.	1
“Colorectal cancer” AND “educational intervention”	84	3
“Colorectal cancer” AND “educational intervention” AND “patients”	41	1

Results from the public awareness literature review were presented in terms of barriers, public education, mass media, and small media. An article was included in the literature review if it was based on CRC screening, if it contained a population-based sample, dealt with barriers to screening, focused on an underserved population, and involved direct participant exposure to the intervention. Qualitative, quantitative, and mixed methods studies were included in the review. Sample size was not taken into account. Articles that were published before 2002 were excluded, as well as articles that were written in languages other than English. Articles that were conducted outside of the United States were included only if they related to mass media interventions. Articles with racial/ethnic minority study populations living in the United States were also included in the review and were not restricted to mass media interventions.

The Public Education and Practice research question is whether or not providers are recommending CRC screening in accordance with guidelines to all age and risk appropriate patients. In order to understand the research question, PubMed's advanced search feature was used to search two or more MeSH terms simultaneously. The chart below provides details as to which search terms were entered, how many articles resulted from the search, and of those, how many were relevant for this review. Results from the professional education and practice literature review were presented in terms of barriers, provider recommendation, practice guidelines, in-office screening policy, and provider education.

Search Terms	**PubMed Results**	**Relevant Articles**
"Colorectal cancer screening" AND "provider" AND "barriers"	56	3
"Colorectal cancer" AND "group" AND "education"	608; 207 full text articles were reviewed.	1
"Colorectal cancer screening" AND "physician recommendation"	36	6
"Colorectal cancer screening" AND "guideline" AND "recommendation"	245	3
"Colorectal cancer screening" AND "cancer screening practices"	344	4

Inclusion criteria for the professional education and practice literature review included if it was based on CRC screening, if it contained a population-based sample, dealt with barriers and/or facilitators to recommendation for screening by providers, focused on an underserved population, and involved direct participant exposure to the intervention. Sample size was not taken into account. Exclusion criteria included articles that were published before 2002, as well as articles that were written in languages other than English. Articles that were conducted outside the United States were excluded because clinical guidelines are a cornerstone of professional education and practice issues and differ among countries, which may have implications for provider adherence.

Strategic Planning Methodology

Strategic planning remains a vital component of organizational success. This process generally aims to coordinate leaders' thinking about internal and external challenges, the organization's future, and the means for getting there (Ziegenfuss, 2006). It is a tool that allows an organization of any size to engage in strategy formation and the improvement of an internal planning process. Strategic planning also affords stakeholders the opportunity to learn more about the organization, share their opinions regarding its strengths and weaknesses, and to discuss critical issues that may be important to the organization in the future (Richardson, 2004).

A variety of theories, models, and methodologies exist for the development of a strategic plan. The strategic planning process may take a variety of forms depending on factors such as the nature and size of an organization, involvement of key internal players, scope of the plan, time frame, and costs (Ziegenfuss, 2006). However, regardless of these factors, a strategic plan should accomplish a number of objectives. First, a strategic plan serves to clearly define organizational goals and allows the establishment of strategies that are consistent with those goals. Second, strategic planning is a useful vehicle for communicating goals with constituents and ensuring that the organization is using its resources as effectively as possible while focusing on key priorities. In addition, strategic planning is a measurable way to document an organization's progress while uniting managers, employees, and constituents around a common vision for success (McNamara & Authenticity Consulting LLC). The strategic planning document, as well as the process required to produce it, will serve to perpetuate an organization's effectiveness and relevance in the field.

Information that is of use to strategic planners can come from a variety of sources. In this case, information will be gathered from the previous strategic plan, recommendations from task group meetings that have been held since the original plan's publication, task group-specific activities, and findings from the literature reviews. This step will also explore general and task group-specific research questions related to the strategic planning process.

SWOT Analysis

In this case, the SWOT analysis will be the product of synthesizing the results of the literature review with task group documents and the original recommendations and goals from the 2002 strategic plan. It will serve as a conceptual framework for the recommendations that will be made in this document.

The SWOT analysis is a broad overview of the most important internal strengths and weaknesses as well as the most important external opportunities and threats (Allison & Kaye, 2005). Given the nature of the Roundtable, the analysis will be done for each task group and will serve as the foundation for task group-specific recommendations. Consideration of internal strengths and weaknesses will be based on the progress achieved by each task group relative to the goals that were articulated in the original strategic plan and current task group recommendations. Evaluation of each task group's external opportunities and threats will be grounded in the progress achieved by each task group relative to conclusions made by the current literature.

The SWOT analysis will be presented in grid form and will be accompanied by a description of recommendations for each category as well as justification for the recommendations that will be made.

Strengths	**Weaknesses**
Opportunities	**Threats**

The implementation process as well as the monitoring and evaluation of the plan's progress are imperative to the plan's success in guiding the organization. However, these steps will not be discussed in depth in this report. These are steps that will be taken by Roundtable leadership and general members after the strategic plan is has been submitted and reviewed by staff. Because strategic planning is a continuous process, the plan, literature, and SWOT analysis should be updated when necessary to ensure that the organization's goals are relevant and realistic.

The strategic plan is intended to serve as a management tool. In this capacity, the expected outcomes produced will include task group-specific content including literature reviews, documentation of progress, and a summary of recommendations. The author was not required to submit an application for IRB approval, as this special study project did not involve human subjects research.

Chapter 3: Results

Public Awareness Task Group

The Roundtable’s public awareness efforts are based on supporting the colorectal cancer community’s short and long-term goals around cancer screening awareness. The Public Awareness Task Group has been charged with assessing successful and unsuccessful evidence-based strategies. The Task Group seeks to know which strategies are effective and why they work. A primary concern of the Task Group is the modification of different awareness techniques to reach a diverse audience (National Colorectal Cancer Roundtable).

This chapter will be based on recent public awareness findings as they relate to mass media, small media, group education, and awareness campaigns. It will compare the recommendations and goals set forth in the previous strategic plan and Task Group meetings to current best practices in the literature. The extent to which the Roundtable has achieved its public awareness goals will be discussed and recommendations for future action will be made.

Review of the Literature: Public Awareness

Scope of the problem

The most commonly mentioned barriers to public awareness in recent studies include lack of communication with providers about screening, as well as lack of knowledge about the risk of colorectal cancer. These barriers are consistent with those found in the 2002 literature search. Three patient- focused studies concluded that, while interventions outside of the doctor's office exist and have achieved varying levels of success, physician recommendation is the most consistent predictor of raising public awareness of CRC screening (Beydoun & Beydoun, 2008; Holt et al., 2009; Yepes-Rios, Reimann, Talavera, Ruiz de Esparza, & Talavera, 2006).

At the same time, a study that measured medical residents' perceptions of barriers to CRC screening among African Americans concluded that residents reported a need for an increase in education, public awareness, and simpler office practices as facilitators to an increase in screening rates (Ward et al., 2010). General barriers to colorectal cancer screening include lack of awareness of CRC as a health problem, lack of time for bowel preparation, inconvenience, anxiety about the test's invasiveness, cost, and lack of insurance coverage (Austin et al., 2009; Cai, Zhang, Zhu, & Zheng, 2009; Ward et al., 2010).

Two studies focused on the unique barriers that face racial and ethnic minorities. Among these are language difficulties, failure to meet religious sensitivities, culturally influenced health beliefs, and low socioeconomic status leading to few interactions with the healthcare system (Austin et al., 2009; McAlearney et al., 2008).

Mass Media

Colorectal cancer gained media attention as a result of CDC’s Screen for Life campaign, which began in 1999, as well as National Colorectal Cancer Awareness Month starting in March 2000. Efforts by stakeholders in the colorectal cancer community to educate the public about CRC as a preventable, treatable, and beatable disease have been measured in a variety of ways. Schroy and colleagues published a study in 2008 that sought to assess the extent to which the Screen for Life and National Colorectal Cancer Awareness Month campaigns educated the public about CRC screening. Authors collected data from 356 unscreened adults in an urban primary care setting using a questionnaire containing 12 true/false questions based on key messages from the National Colorectal Cancer Roundtable that had been adapted for media campaigns.

This study found that around 67% of respondents were aware of risk categories, age to initiate screening, goals of screening, and benefits (Schroy et al., 2008). Fewer than half of respondents (46%) were aware that removing adenomas prevents CRC and that symptoms may not be present in adults with the disease. Authors found that knowledge was generally lower among people with a high school diploma or less, as well as among African American patients. The authors explain that their study contradicts many of those in the public awareness literature in that its focus is on general awareness of screening, rather than awareness of specific screening tests.

Study limitations include selection bias, which was due to the fact that participants had already elected to take part in a clinical trial testing an interactive screening decision aid. Additionally, it is difficult to establish causation between increased awareness and adherence to screening guidelines (Schroy et al., 2008). This study suggests that the surge in media attention as a result of CDC's Screen for Life Campaign as well as National Colorectal Cancer Awareness Month have increased the public's awareness of the importance of CRC screening.

Vanderpool and colleagues conducted 13 semi-structured telephone interviews to qualitatively assess local distribution of media materials from the Screen for Life campaign by the Appalachia Cancer Network. The network consists of organizations serving Appalachian residents; the interviews sought to assess participants' perceived acceptability of the Screen for Life program and their distribution of materials to constituents. The study found that regional cancer control programs were more active in promoting Screen for Life, despite the fact that state health departments are the intended primary route for the distribution of these materials. State health departments distributed materials to a much lesser extent. Local interview respondents reported unfamiliarity with the campaign materials but showed interest in the program.

The study sought only to determine the breadth of distribution of Screen for Life materials, rather than studying the effectiveness of distributed materials themselves. This study's limitations are primarily concerned with its small sample size. The authors do not suggest that their findings be generalized to other state and community-level organizations that conduct Screen for Life activities.

A multi-component approach consisting of market research, advertising, an awareness campaign, and a telephone survey was found to accomplish the goal increasing knowledge about the importance of screening for both colorectal cancer and skin cancer. This study was conducted in 2003 as a result of a multi-pronged approach for public awareness that was created by the Utah Cancer Action Network, which established both colon cancer and skin cancer as first priorities for public awareness efforts. The multi-component study also aimed to assess the extent to which adults were moving towards obtaining screening from their healthcare providers.

Telephone interviews were done in January 2003 and again in May 2003. Study results show that the percentage of respondents who reported seeing, reading or hearing announcements about early colorectal cancer prevention rose from 36% to 79% (Broadwater, Heins, Hoelscher, Mangone, & Rozanas, 2004). This study provides evidence that dissemination of early detection messages through written and spoken media channels can raise awareness of the importance of screening.

A 2006 study examined the relationship that older Japanese Americans have with media messaging for colorectal cancer-related risk appraisals. This study consisted of structural equation modeling that was created for the purpose of demonstrating the ways in which personal attributes combined with media messaging relate to CRC risk appraisal. The model also sought to identify portions of this population that should be targeted for educational interventions. The authors found that misconception is not related to an individual’s attention to the media, but rather, by personal factors (Honda & Kreps, 2006). They found that beliefs about dietary and genetic influences on CRC are a function of levels of media attention on a population level. These findings underscore the role that media plays in raising awareness of risk factors for CRC.

Like many studies that focus on a particular racial or ethnic group, the generalizability of findings in this case is unclear. The authors do not explain the extent to which findings in a population of older Japanese Americans can be generalized to elderly people in other racial and ethnic groups. Additionally, the study was based on cross-sectional data, which does not allow for an examination of the interaction between exposure to media and cognitive processes over time and thereby cannot establish causality. Honda and Kreps state that the barriers faced by older members of this group may result in varying levels of interpretation and cognitive processes. Lastly, cultural factors that may influence media attention, and interpersonal health communication prior to the study may have influenced results as well.

Media messaging aiming to raise awareness of colorectal cancer screenings have been conducted internationally as well as domestically. A 2010 study conducted by Wang-Buholzer and colleagues analyzed newspaper articles that were published between 2005 and 2007 during a “Self-Care” campaign in the German, Italian, and French regions of Switzerland. The authors sought to gain a better understanding of how printed media reports on national campaigns against colon cancer. This understanding, according to the authors, can inform future public health interventions, both domestically and abroad. Swiss-German papers reported more about colon cancer; reporting was more prominent in regional papers and featured both qualitative and quantitative reporting methods (Wang-Buholzer, Lomazzi, & Borisch, 2010). The press covered colon cancer only during regional campaigns, where the authors describe coverage as prominent. Wang-Buholzer and colleagues propose that future public health interventions consider regional press, as it was an important vehicle of health information in this study.

A primary limitation of the Wang-Buholzer study calls into question the decreasing relevance of newspaper articles. It is arguable that the increasing presence of social media could affect the relevance of written media. Social media has altered the public information environment such that it has become a nearly unavoidable presence in the lives of adults around the world. Additionally, the study measured how often messages appeared in popular regional media rather than the extent to which the public's knowledge about colon cancer increased as a result of the media messaging.

Small Media

Small media interventions that were featured in the literature include patient reminders, videos, and in-office brochures and educational pamphlets. A mailed education reminder was found to significantly increase compliance with FOBT for CRC screening. A blinded, randomized controlled trial was conducted among a group of 775 patients age 50 years or older who were referred by their primary care physician for FOBT. This article is one of few that were found with a focus on public awareness for FOBT-specific screening, as opposed to a general message about the importance of screening regardless of method used. Lee and colleagues found that, at 6 months after reminder card distribution, 64.6% of patients in the intervention group returned FOBT cards compared to 48.4% in the control group (Lee et al., 2009). They also found that patients who received a mailed reminder or who have a previous history of returning the FOBT cards were more likely to return the FOBT cards in this study.

Lee and colleagues note several limitations in this study. The authors randomized a group of U.S. Veteran patients from San Diego, California who have access to health services. Like several studies mentioned here, group-specific barriers in the study may restrict generalizability of findings. Additionally, the study did not exclude veterans over 75, which contradicts the most recent USPSTF recommendations (Lee et al., 2009). The degree to which compliance was influenced by the reminder itself, rather than by educational facts and patient knowledge remains unclear.

A mailed video was shown to have no effect on the overall rates of CRC screening by sigmoidoscopy among a group of patients ages 50-74 who were scheduled for an upcoming physician exam, had no personal history of CRC, and who were eligible for lower endoscopy screening. The authors sought to determine whether or not an educational video mailed to patients' homes before a physical exam would result in completion of sigmoidoscopy. A 938-subject randomized controlled trial conducted baseline and 6-month telephone assessments; a dependent variable classified screening at baseline as a.) sigmoidoscopy, with out without other tests, b.) another test or test combination, or c.) no test (Zapka et al., 2004).

Incident rates for colorectal cancer screening were 55% in the intervention and control groups. As a result, the authors concluded that the mailed video had no effect on the rate of sigmoidoscopy and only modestly increased sigmoidoscopy screening rates among patients in primary care practices. Limitations of this study include limited generalizability due to the middle class, White population used in the study because this group's screening rates tend to be higher than people in other groups. The direct-mail strategy used to disseminate the video results in an inability to ensure exposure to the information. The study by Zapka and colleagues shows that a mailed video must be accompanied by another intervention, such as reminder telephone calls or physician endorsement, in order to increase CRC screening rates in a target population.

Gimeno-Garcia and colleagues' 2009 study shows that a video-based CRC intervention significantly reduced barriers to screening and improved participant awareness and compliance with FOBT screening. They randomized 158 adult subjects age 50-79 to either watch a non-medical video or to watch a CRC educational video.

Before and after watching the video, both groups completed a questionnaire to assess knowledge about various aspects of CRC as well as risk perception (Gimeno-Garcia, Quintero, Nicolas-Perez, Parra-Blanco, & Jimenez-Sosa, 2009). Participants in the CRC video group showed significant improvement in knowledge of CRC and decreased barrier scores. This group's return rate for FOBT kits was 69.6%, compared to 54.4% in the control group. The authors concluded that the video-based intervention significantly reduced barriers to screening and improved awareness of the need for CRC screening among this group.

This study, unlike the video-based intervention study conducted by Zapka and colleagues, showed that an increase in awareness and return of FOBT kits is possible with an educational video. The authors suggest that the Internet may be an effective way to distribute educational videos in the future, given its increasing importance in disseminating information to the public. The findings of this study are limited in the sense that the study design was not double blind, and thus may have influenced results. Additionally, the group of participants in the study is described by the authors as "highly motivated", meaning that the same kinds of results may not be possible in groups that may be deemed less motivated (Gimeno-Garcia et al., 2009).

Culturally tailored interventions have been shown to bring about increases in CRC screening. A 2010 study published by Walsh and colleagues focused on a combined small media and one-on-one education intervention called *Healthy Colon, Healthy Life.* The study randomized 1,358 Latino and Vietnamese American patients into one of three groups: a.) Culturally tailored brochure plus FOBT kit, b.) Enhanced intervention: brochure, FOBT kit, and telephone counseling, or c.) Usual care. Participants were primary care patients in a large public hospital. The authors found that self-reported FOBT screening rates increased by 7.8% in the control group, 15.1% in the brochure group, and 25.1% in the enhanced intervention group (Walsh et al., 2010). For any CRC screening, rates increased by 4.1% in the usual care group, 11.9% in the FOBT and brochure group, and 21.4% in the enhanced intervention group (Walsh et al., 2010). It is clear that culturally tailored brochures and telephone counseling increase CRC screening in Latinos and Vietnamese Americans. Brochures and telephone counseling had the greatest combined impact.

This study has the ability to help inform culturally tailored interventions for these and other high-risk groups that have traditionally had low screening rates. Future studies should aim to replicate and disseminate this model and incorporate tailored interventions that are acceptable to target groups. At the same time, FOBT was the screening test in question. This test may not be available in resource poor settings, which is something investigators must consider. The two groups studied here are increasing in number in the United States, and there is diversity within each group. This suggests broad applicability of results for the model. The validity of self-reported findings, according to the authors, has been strong for FOBT screenings.

Screening outcome data was only collected for participants who completed both baseline and follow-up surveys, which means that the data may not reflect completion of screening without having completed both surveys. This study provides strong evidence for the effectiveness of combined one-on-one education and small media interventions to increase CRC screening rates.

A similar study focused on an educational pamphlet. Shaikh and colleagues randomized 121 prospectively enrolled patients who were having their first colonoscopy into two groups. Patients were both average risk and high risk. One group received standard prep instructions, and the other group received the American Gastroenterological Association's colonoscopy educational pamphlet along with standard prep instructions. Information was sent to both groups approximately three weeks before the procedure. Investigators measured participants' anxiety using the State Trait Anxiety Index. This index measures the temporary condition of "state anxiety" versus the more long-term quality of "trait anxiety" (Shaikh, Hussain, Rahn, & Desilets, 2010).

Investigators found that average State Anxiety scores in the control group were 45.18 compared to a score of 40.54 in the intervention group (Shaikh et al., 2010). The intervention group fasted longer, drank more of the prep more often, and was more likely to have a complete colonoscopy. The authors concluded that providing American Gastroenterological Association educational pamphlets prior to colonoscopy lowers overall anxiety about the procedure, leads to a decrease in sedative use, and leads to better preparation for the procedure.

This study uses a randomized controlled trial design, which is similar to several other studies reviewed here. This seems to be the preferred design among investigators looking to test the efficacy of mass and small media interventions. Findings from this study lend support to the evidence that educational pamphlets increase patient knowledge, lower overall anxiety level, and lead to positive colonoscopy outcomes.

Group Education

A computer-based, culturally sensitive intervention was found to be a successful strategy for increasing awareness of screening rates within the African American community. A 2008 study by Menon and colleagues used mixed methods to conduct focus groups and subsequent randomized controlled trial design. The purpose of the study was to measure the efficacy of an interactive computer program aimed at raising awareness of screening practices in a primary care setting. A total of 80% of the intervention group reported that the culturally sensitive intervention helped them decide to be screened for colorectal cancer; 49% stated that it helped them overcome personal barriers to screening. Almost every participant stated that doctors should utilize the culturally sensitive program more frequently (Menon et al., 2008).

Another randomized control trial studied the effects of an educational multimedia computer program compared to individual nurse counseling for FOBT screening. The study found that both approaches were equally effective in influencing patients to complete a FOBT kit and increasing knowledge about CRC (Miller, Kimberly, Case, & Wofford, 2005). The authors found that completion of FOBT kits was 62% in the computer program group, compared to 63% in the nurse-counseling group. A trend toward increased knowledge of CRC was noted in the group that used the computer program (Miller et al., 2005).

Stokamer and colleagues’ findings about nurse counseling are similar to those in the Miller study. The Stokamer study concluded that intensive patient education by way of one-on-one education sessions with primary care nurses increased the rates at which patients returned FOBT kits, as well as shortened the length of time patients took to return the kits. In both studies, those who received direct counseling from a health professional were less likely to have questions about the procedure and reported knowing more about the need for CRC screening than those who did not receive intensive educational support (Stokamer, Tenner, Chaudhuri, Vazquez, & Bini, 2005). This has important implications for the education that providers receive and disseminate related to CRC screening and will be discussed in a later chapter.

Community-Based Interventions

A community based participatory research (CBPR) program that was implemented an underserved community in the Lower Mississippi River Delta sought to provide infrastructure that would lead to an increase CRC screening through FOBT testing. The *Empowering Communities for Life* (ECL) program is an intervention designed to increase CRC screening rates via FOBT among adults and is based on social cognitive diffusion theories. Methods included building infrastructure, conducting research, designing materials that were acceptable to the community, recruiting and training lay health advisors, and developing an assessment instrument. (Yeary et al., 2011). The authors describe project outcomes as strengthened community-academic partnerships, certification of community partners in conducting human subjects research, development of a randomized controlled trial design to test the intervention’s efficacy, creation of an interactive PowerPoint presentation and an informational pamphlet, the certification of 6 lay health advisors and 22 community role models to provide intervention, and an assessment tool using an audience response system (Yeary et al., 2011).

A primary characteristic of the CBPR study conducted by Yeary and colleagues is that its focus is on the development of the CBPR intervention, rather than its implementation. While CBPR is an emerging area of research, more information is needed on the theory-based model's impact on public awareness of CRC screening.

Zittleman and colleagues evaluated a CBPR intervention that was implemented in Colorado by performing a random digit dial survey in which they collected data from 460 residents throughout three communities that received a CBPR program. The High Plains research network developed a community-based awareness and educational intervention to increase CRC screening rates in rural northern Colorado. The study sought to determine whether the target population was exposed to the intervention, the reach of the intervention's components, and the effect on participants' screening intentions. Community members who had to been screened in five or more years noted that as exposure to one or more aspects of the intervention increased, their intentions to speak with a provider about CRC screening also increased.

Exposure to at least one intervention component was reported by 68%. The authors noted that as the levels of exposure increased. The intention to speak with a doctor about CRC screening also increased significantly more in respondents who had not been tested in the 5 years prior to the study. Intentions to get screened increased significantly in both groups at the same rate as level of exposure increased. This article lends evidence to the argument for models that view community members as stakeholders in the implementation of the model. The CBPR model, in this case, allowed program materials and messages to reach the majority of the population and increased CRC screening intentions.

The authors did not analyze the effects of individual components of the CBPR strategy, but instead, focused random digit dial surveys on the overall intervention. Future research may aim to isolate individual outreach strategies to determine how each translates into an increase in overall awareness of CRC screening.

Conclusions

The public awareness literature provides a diverse array of interventions that yield a variety of outcomes for increasing public awareness efforts. These results generate a variety of questions for how best to continue to reach the public with timely and accurate information about the importance of colorectal cancer screening. While there is evidence that there has been a gain in knowledge in the field of public awareness, investigators should pay close attention to the ways in which they frame research questions and design studies. Additionally, researchers and program managers may want to focus their attention on the ways in which awareness continues to lead to marked increases in screening that are in line with professional guidelines.

Generalizability remains an issue in much of the research. Future mass media research should focus on tailored interventions. These showed the largest gains in group-specific public awareness in the literature compared to general mass media campaigns that did not target particular groups. Underserved groups, such as racial and ethnic minorities, those in resource poor settings, and those with lower educational levels have the most to gain from tailored interventions.

In-office, video-based educational strategies have shown potential in yielding gains in patient knowledge about CRC risk and screening options. While some of the research does combine these small media interventions with provider recommendation, medical providers should be encouraged to become stakeholders in the patient education process. It is clear that provider recommendation is the most consistent indicator for screening. Healthcare professionals and research networks should pursue partnerships and other opportunities for collaboration with physicians in order to disseminate patient education materials and ensure their acceptability and use among patients.

Community based participatory research (CBPR) was identified in two studies as an effective way to increase public awareness by educating communities about colorectal cancer screening. Community based participatory research is defined as “a collaborative research design that is designed to ensure and establish structures for participation by the communities affected by the issues being studied, representatives of organizations, and researchers in all aspects of the research process to improve health and well-being through taking action, including social change” (Blumenthal, 2011). CBPR allows health promoters to work collaboratively with individuals, community partners, and educators. As a research method, CBPR has empowered communities by strengthening community-academic partnerships and certified community partners in conducting human subjects research to test CBPR’s efficacy in the community. More research is needed to determine the impact of comprehensive CBPR interventions in rural and urban communities, as well as among various racial and ethnic groups.

Recommendations for the Public Awareness Task Group

Strengths	**Weaknesses**
• Continued increase of visibility of marketing symbol has lead to wider dissemination of prevention messaging among target groups.	• Lack of emphasis on tailored interventions as a central component to outreach activities.
Opportunities	**Threats**
• Widening scope of involvement in community-based interventions by exploring benefits of community-based participatory research (CBPR) and its effect on intent to be screened.	• Increasing presence of social media in the lives of American adults indicates a shift in avenues for disseminating timely prevention information.

1. The Roundtable should secure partners in communication, government, and the private sector to assist in prioritizing the creation of yearly benchmarks that will reflect the progress made on the continued dissemination of the Blue Star and other marketing tools.
2. The Roundtable's outreach efforts should emphasize tailored interventions that reach the uninsured, racial and ethnic minorities, and other at-risk groups.
3. The Roundtable should track efforts that target communities via a community-based participatory research model and partner with organizations who have achieved success in increasing community-wide screening rates for cancer by using this approach.
4. The Roundtable should continue to monitor online conversations about colorectal cancer and determine the most feasible way to establish itself as a facilitator and participant in the conversations that are taking place online.

Strengths

The Blue Star marketing campaign has continued to achieve recognition among stakeholders in the colorectal cancer community, including companies, non-profits and patient groups. This symbol has gained increasing exposure among Olympus, the Minnesota Colon and Rectal Foundation, and the United Ostomy Association of America, among other groups. These steps are a positive reflection on the task group's goal that the Blue Star eventually transforms into a widespread symbol for the fight against colon cancer.

The NCCRT must prioritize the creation of yearly assessments that reflect on the Blue Star's dissemination. Additionally, the task group should focus on securing partners in various fields to expedite the Blue Star's brand recognition and message. This will allow the NCCRT to explore strategies that may be used to tailor the marketing of the Blue Star to various groups. In keeping with the NCCRT's mission to unite organizations in the advancement of CRC screening efforts, it is important to continue to strengthen partnerships on various levels.

Weaknesses

The recommendations made by the Public Awareness Task Group as a result of having conducted media and television audits indicate a need for focusing on tailored interventions to reach a variety of groups with specific communication needs. Considerations for future research efforts that were taken into account as a result of the audit called for a "focus on information needs by target population and region" (Levine & Bloodgood).

The rural messaging campaign kit emphasized the importance of recognizing the diversity of a target audience within and across communities. Tailoring interventions to reach the uninsured, racial and ethnic minorities, and other at risk groups have potential for success in increasing public awareness about the risk for colorectal cancer, as well as motivating adults to speak with medical professionals about appropriate screening tests. This will work in concert with the Public Awareness Task Group's five-year goal to widen the dissemination of the "get screened" message within and among groups. Tailoring is important both in mass media and small media campaigns. Future investigation should emphasize the ways in which diverse groups receive information and target group-specific communication tools.

Opportunities

The Roundtable should track efforts that target communities via a community-based participatory research model. These interventions emphasize an equal partnership between trained health experts and community members. CBPR incorporates research, reflection, and action into a process that allows for community members to have significant influence over the improvement of programs and processes that directly affect them (Yeary et al., 2011).

The Roundtable can continue to pursue its mission to reduce the incidence and mortality from CRC in the United States through coordinated leadership, strategic planning, and advocacy by engaging with organizations who have achieved success in increasing community-wide screening rates for cancer through a participatory research approach. There is potential for the Roundtable to engage with stakeholders in the CBPR community in order to share best practices about how best to reach groups that are most at risk for CRC. Additionally, advocating for the use of CBPR to tailor interventions aimed at increasing participation of low income and other vulnerable populations would empower communities and increase community demand for screening.

There have already been significant investments in researching proven CRC screening methods. The link between these methods and an increase in screening rates is a vehicle through which screening messages can reach target groups. Reaching these groups via CBPR based interventions not only increases awareness, but also allows the transformation of awareness into action regarding patients' intent to be screened. Combined with lessons learned from the Blue Star and other mass media campaigns, engaging in the CBPR process can become a powerful tool that sheds light on the ways in which the Roundtable's constituents can empower healthcare providers and patients to continue to integrate timely and appropriate CRC screening into a general preventive care model.

Threats

A recent audit of online conversations related to colorectal cancer found that messaging about colon cancer occupies a smaller online space than conversations related to other types of common cancers. Additionally, there has been very little presence of the Blue Star on websites, blogs, and other posts (National Colorectal Cancer Roundtable). Social media has become a powerful influence in the lives of many Americans. While the upcoming "family PLZ" campaign described on the Roundtable's website aims to target younger audiences in a way that is sure to utilize social media to some extent, the Roundtable may want to give public awareness efforts an increasing presence in the sphere of social media.

Findings from the increase CRC-related postings on Facebook, Twitter, and blogs indicate that there is an active online community talking about colorectal cancer. In order to maintain relevance of public awareness materials and reputation as a clearinghouse of timely information, the Roundtable needs to continue to monitor online conversations about colorectal cancer and determine the most feasible way to establish itself as a facilitator and participant in the conversations that are taking place online.

Chapter 4: Results
Professional Education and Practice Task Group

The Professional Education and Practice task group’s primary goal is to develop and disseminate evidence-based tools and resources that can improve physician practices around colorectal cancer screening. Professional education and practice issues revolve around provider-based barriers and facilitators to CRC screening, understanding and adherence to clinical practice guidelines, physician communication with patients, and in-office screening policies that target both providers and patients.

This chapter will be based on recent professional education and practice findings as they relate to provider education, clinical guidelines, provider recommendation, and in-office screening policy. It will compare the recommendations and goals set forth in the previous strategic plan and task group meetings to current literature. The extent to which the Roundtable has achieved its professional education and practice goals will be discussed and recommendations for future action will be made.

Review of the Literature: Professional Education and Practice

Scope of the problem

Given that a number of influences have been cited as predictors for adherence to screening for both patients and providers, it is important for the medical community to be aware of these influences in order to communicate appropriately with adult patients, as well as to present patients with screening options that are consistent with evidence-based practice in clinical guidelines. Physician recommendation is often the strongest predictor of colorectal cancer screening, according to several surveys in the literature. The content of screening messages and the extent to which providers communicate with screening are multi-dimensional issues and depend on the extent to which providers' practices are consistent with guidelines, in-office reminder and patient management systems, and providers' knowledge about screening. While the guidelines indicate the screening tests that are considered appropriate for adults aged 50 and over, CRC screening rates have historically been low particularly among the uninsured, low income, and racial/ethnic minority groups. Young patients as well as adults whose parents or siblings have been diagnosed with CRC are groups that also must be screened, but that often go unscreened due to lack of outreach (Taouqi, Ingrand, Beauchant, Migeot, & Ingrand, 2010).

Provider education

Primary care providers play a critical role in CRC screening; barriers and facilitators of provider knowledge about CRC in managed care settings are poorly understood. A random sample of 1,340 primary care providers in an HMO network in California was surveyed in 2002. Researchers were interested in allowing providers to describe their CRC screening practices and to explore determinants of test use by primary care providers in this particular HMO network. The overall survey response rate was 67%. Providers indicated that 79% of their average-risk patients were screened for CRC (Dulai et al., 2004). The majority of providers reported that they recommended specific screening tests. Specifically, 90% reported having recommended FOBT and 70% recommended flexible sigmoidoscopy (Dulai et al., 2004). The results of the survey indicated that perceived barriers to the use of FOBT and flexible sigmoidoscopy included patients' education level. Provider-related barriers including failure to recall that patients were due for testing also posed challenges. Providers said that the primary facilitators of the use of FOBT and flexible sigmoidoscopy were interventions that improved reimbursement policies and interventions that targeted provision of evidence for a screening test's effectiveness.

Like many studies that assess perceived barriers and facilitators to screening, Dulai and colleagues present evidence that suggests that screening tests are underutilized by patients. This study was conducted before evidence regarding the efficacy of screening colonoscopy, as well as Medicare's reimbursement of the procedure (Dulai et al., 2004). Screening colonoscopy was not a method that was discussed in the survey, however, it has become a common recommendation by healthcare providers since evidence of its effectiveness was published and supported by national guidelines.

The validity of the providers' self-reported screening rates was not established in the study (Dulai et al., 2004). The authors stated that while the magnitude of error is not known, similar studies that have validated providers' responses by using medical records have concluded that there were significant discrepancies between self-reported screening administration rates and medical reports. Additionally, the survey explored the rates at which providers recommend screening. Providers stated that rates of compliance for FOBT were 70% and were 50% for flexible sigmoidoscopy (Dulai et al., 2004). Future interventions should aim to maintain high rates of recommendation while striving to improve compliance rates among patients.

The extent to which Indian Health Service providers recommend appropriate CRC screening modalities to American Indian and Alaskan Native (AI/AN) patients is limited. Increasing understanding of provider education and awareness around colorectal cancer screening is important among this group of providers because of the heterogeneity of the AI/AN population in various parts of the United States. For example, the incidence of colorectal cancer among AI/AN groups in Alaska is nearly five times larger than that of AI/AN groups in the Southwest (Espey et al., 2007).

A web-based questionnaire for Indian Health Service and tribal health providers was distributed via email and assessed knowledge and attitudes about CRC screening options and national guidelines, screening practices, perceived barriers to screening, patient education and provider training, and provider and practice demographics (Haverkamp, Perdue, Espey, & Cobb, 2011). It was based on questions from previous national and regional provider surveys. While most respondents (77%) recommended that average-risk patients begin screening for CRC at age 50, the screening intervals recommended by providers were not consistent with guidelines. Of the providers recommending FOBT, 23% use a single, in-office FOBT card as their only FOBT method, which is also inconsistent with guidelines. Practitioners in this setting also reported that barriers to CRC screening included underutilized reminder systems and inadequate educational resources.

The results of the survey are limited in that the authors could not determine how many providers received the survey, and as a result, they did not know the response rate. If the response rate was low, results may not be representative of the target provider population. Lastly, self-report data may reflect an overestimate of actual screening recommendation and compliance rates. It is clear that while providers know when to begin screening, education about the appropriate use and frequency of CRC screening tests needs to be improved in this population.

An assessment of first year medical students' clinical skills revealed that medical students' understanding of screening services must be improved if they are to help patients understand the benefits and risks associated with screening tests. A study at Northwestern University's Feinberg School of Medicine videotaped interactions between first year medical students and standardized patients (Makoul & Altman, 2002). The purpose of the study was to provide first year medical students with an opportunity to build on strengths and address weaknesses before beginning their second year of medical school.

Students were asked to examine the evidence regarding preventive screenings and review recommendations before interacting with patients. Investigators found that students were eager to develop the skills necessary to engage patients in informed decision-making. However, for this to happen, students need to deepen their understanding of preventive services (Makoul & Altman, 2002). Future interventions that target medical students and emphasize educating future providers about the importance of screening may be a valuable tool in allowing providers to engage patients in meaningful conversations about the range of appropriate CRC screenings that are available.

Practice guidelines

Consensus guidelines were released by the American Cancer Society, the U.S. Multi-Society Task force, and the American College of Radiology were released in 2008. That same year, the U.S. Preventive Services Task Force (USPSTF) updated its guidelines for appropriate colorectal cancer screening. While there are subtle differences between the sets of guidelines, the general message remains the same. Both sets of guidelines assert that colorectal cancer screening is a cost-effective way to reduce morbidity and mortality associated with colorectal cancer. The guidelines advocate for appropriate screening for men and women beginning at age 50 for average-risk adults (American Cancer Society, 2008). Generally, colonoscopy is recommended for average risk adults every ten years and FOBT and FIT tests have been deemed acceptable for annual use by both sets of guidelines. The guidelines differ in preference for screening protocol for high-risk adults, sDNA, DCBE, and CT colonography as an acceptable form of screening, and age at which to stop screening for CRC. Colorectal cancer screening guidelines are critical in that they provide a frame of reference for clinical practice (Imperiale & Ransohoff, 2010). They also inform payers' reimbursement practices. It is important that guidelines provide the tools with which providers can improve patient outcomes and integrate colorectal cancer screening into routine preventive care.

Little is known about whether patients' screening test use for CRC is consistent with guidelines in terms of age at initiation. Kadiyala and colleagues conducted a secondary analysis of BRFSS data from 2006 and National Health Interview Survey (NHIS) data from 2003 to determine the extent to which screening tests for breast, colorectal, and prostate cancers are consistent with recommended age at initiation. The results of this study were adjusted for age, sex, education, income, and education status and suggest large increases in screening initiation at the ages recommended by the guidelines. Adherence to CRC screening increased from 18% for adults age 49, 19% at age 50, and 34% for those age 51 (Kadiyala, 2009). The authors state that their results show that initiation of screening is consistent with the age prescribed by the guidelines.

The CRC screening results from the analysis were useful in that BRFSS and NHIS data distinguish between asymptomatic screening and diagnostic testing. The authors cite an improvement in screening test and adherence rates by approximately 100% at the breast and colorectal cancer guideline recommended ages (Kadiyala, 2009). However, despite the increase, rates are still very low. Given the variation in guidelines across countries, the generalizability of the study is limited to the United States but can be useful for cross-country comparisons of screening rates. The BRFSS and NHIS data used in the analysis were self-report data, which are susceptible to bias. This study, like many others, highlights the need for an increase in screening rates for adults aged 50 and over.

CRC screening guidelines suggest that screening colonoscopy should be conducted once every ten years. However, little is know about the extent to which gastroenterologists perform screening colonoscopy every ten years with interim FOBT tests. Rossi and colleagues conducted a study in which a multiple choice survey was given to a group of 72 gastroenterologists in New Haven, CT by Rossi and colleagues; survey questions were designed to assess screening colonoscopy and FOBT utilization patterns through brief clinical scenarios. Three quarters of respondents returned the survey; 80% of practitioners reported recommending a 10-year screening interval for average risk patients after normal colonoscopy (Rossi, Sosa, & Aslanian, 2008). Just over one half (52%) of respondents recommended annual FOBT beginning 1 to 5 years after a normal screening colonoscopy. Evaluation with further colonoscopy would be done by 59% of providers if initial screening was positive (Rossi et al., 2008). Results stated that repeat colonoscopy in a patient with a family history of colon cancer in a first degree relative at age 64 was recommended in 3 years (9%,) 5 years (67%), and 7-10 years (24%). Repeat colonoscopy in an average risk patient with a suboptimal bowel prep was recommended at the next available appointment by 17%, at 1 year by 20%, at 3 years by 28% and in 5 to 7 years by 35% of providers (Rossi et al., 2008).

Survey results show that most gastroenterologists adhere to screening guidelines, particularly when performing repeat evaluation on average-risk patients. Additionally, most gastroenterologists reported that they use interim FOBT and evaluate positive results with additional endoscopic procedures that increase the frequency of surveillance examinations (Rossi et al., 2008).

Limitations exist in that the survey consisted of self-report data that was collected from specialists in one geographic area. It is possible that a wide variation of responses could be collected if the survey were conducted on a national level. It is also possible that self-reporting as a result of prompting through clinical scenarios may not be an accurate reflection of everyday practice. Future studies may focus on the discrepancies between practice patterns and self-report survey data.

In two studies, self-administered surveys were distributed to gastroenterologists, obstetrician/gynecologists (OB/GYN), and nurse practitioners (NPs) to assess the extent to which they recommend CRC screening tests. While gastroenterologists were surveyed on the extent to which they recommend FOBT and screening colonoscopy, OB/GYNs and NPs were asked to discuss how often they perform any type of CRC screening. Results for these studies were similar and add to the debate on the validity of self-report data.

Gynecologists and nurse practitioners (NPs) are often the only primary care providers for women, and therefore, it would be wise to include preventive screenings into everyday practice in these settings. A self-administered survey by Menees and colleagues was given to 1,130 OB/GYNs and NPs to assess provider demographics, CRC screening practices, and familiarity with national CRC screening guidelines. A total of 360 providers (29.7%) returned the survey. Just over half (54%) of respondents were OB/GYN and the remaining respondents were NPs. A total of 75% of providers reported having performed routine CRC screening, compared to 95% of providers reporting screening for breast and cervical cancer (Menees, Patel, & Dalton, 2009). However, only 59% of respondents reported routine screening following recommended guidelines. CRC screening was much more common among OB/GYNs than among nurse practitioners, with 87.2% of OB/GYNs reporting having performed routine CRC screening compared to 61.7% of nurse practitioners (Menees et al., 2009).

Only half of providers in each group identified the recommended age to begin CRC screening; it is clear that there is a lack in knowledge of basic CRC screening guidelines among this group. Given the important role of OB/GYN and NPs in providing the preventive care that adult women need, resources should be invested in continuing to educate these specialists regarding CRC screening modalities.

While study responses were in line with those from similar studies, the low response rate of this survey limits the generalizability of results. The authors assume that survey respondents' CRC screening practices are better than those of non-responders. This leads them to believe that the results most likely do not underestimate knowledge and practice issues related to CRC in this study population. This assertion, however, is inconsistent with the validity concerns brought up by investigators who have conducted similar studies because of the nature of self-report data.

Provider recommendation

Gilbert and Kanarek performed a secondary analysis on cancer survey data and found that a provider's recommendation for CRC screening has been found to be the strongest predictor of screening rates for adults in Maryland. The authors analyzed data from the 2002 Maryland Cancer Survey to explore predictors of individual screening for 2,994 respondents. CRC screening outcomes were defined as having had FOBT within the past year, sigmoidoscopy within the last five years, or colonoscopy within the last 10 years (Gilbert & Kanarek, 2005). Clinician recommendation was shown to have a significant impact for people aged 50-65, as well as for people over age 65. The results of the analysis showed that physician recommendation increased odds of use by a factor of at least 8 for any of the three screening test outcomes (Gilbert & Kanarek, 2005). The study concluded that there is an urgent need for an increase in screening rates among adults in Maryland. Physician recommendation is clearly a strong influence in a patient's choice to obtain screening.

The data collected by the authors was telephone survey data that was collected from an English-speaking population, all of whom owned a landline. This is a limitation of the study. Additionally, the data was self-report data which is subject to recall and information bias (Gilbert & Kanarek, 2005). Low income and minority groups may be underrepresented in this sample, and screening rates may have been overestimated as a result. This has important implications for physician communication with non-English speaking and low-income groups, since the authors report that race is a predictor for use of some CRC screening tests. The most compelling finding from this study can be generalized to other states and emphasize that medical personnel should take increased responsibility for discussing the importance of CRC screening with adult patients.

Like the studies the focused on guidelines, three studies in the literature review analyzed data from mailed, cross-sectional surveys that sought to assess the ways that providers and their patients conceptualize and deliver CRC screening recommendation to their patients. While both providers and patients recognize and espouse the importance of CRC recommendations, important discrepancies surfaced between content and rates of recommendations reported by providers versus those reported by their patients.

Ageism has been suggested as a possible barrier to CRC screening. Sewitch and colleagues conducted a cross sectional study in 2007 to examine whether or not physician recommendation for CRC varies among younger versus older groups. Data was analyzed among a group of 43 physicians and 618 of their patients between ages 50 and 80. Results showed that of the 285 screen-eligible patients, 45% received a recommendation (Sewitch et al., 2007). The authors conducted a multivariate analysis on the results, which revealed that older patients with depression were less likely to receive FOBT and colonoscopy recommendation compared to younger, non-depressed patients. Patient comorbidity and marital status were positively associated with FOBT and colonoscopy recommendation. Sewitch and colleagues conclude that a patient's age as well as other characteristics influenced whether or not the patient received a recommendation for CRC from their doctor. Age-related disparity seemed to be the strongest predictor of screening recommendations in screen-eligible, average risk individuals (Sewitch et al., 2007).

This study's evidence is not based on the nature of the medical visit, which is important because research demonstrates that primary care physicians are more likely to discuss CRC screening during visits for routine physicals rather than during follow-up visits. This may have impacted the results in that older patients with co-morbidities are more likely to visit their doctor for follow up, and subsequently, are less likely to receive recommendation for CRC screening. Another limitation that was found in the study is that eligibility for screening was based on self-report data. These data are susceptible to information and recall bias, since patients may misunderstand what makes them eligible for screening, and as a result, may report results incorrectly. This evidence argues for a focus on the prevention of age and comorbidity-related disparity and its influence on the likelihood of obtaining CRC screening.

Shokar and colleagues administered a survey among a diverse population of patients with the goal of describing patient and physician factors associated with a physician's recommendation for CRC screening. This cross sectional survey was conducted in a primary care population and sought to determine association between self-reported physician recommendation and patient's sociodemographic, health, and behavioral characteristics. The survey also measured patient-physician gender and racial/ethnic congruence (Shokar, Nguyen-Oghalai, & Wu, 2009). The study population consisted of adults ages 50-80 who were White, African American, and Hispanic. Shokar and colleagues found that 61% of patients reported having received a recommendation for CRC from their physician. A higher likelihood of receiving a recommendation was found to be associated with having a female physician, being a male patient, having gastrointestinal disease, and having better overall health status (Shokar et al., 2009).

These findings, while gathered from a diverse group of patients, reflect patients that attended an academic health center. Therefore, results may not be generalizable to patients in community health clinics or those without access to primary health care. This data, like data from previous studies, was self-report data, which is prone to bias. In this study, patient medical records were said to be consistent with the data reported by patients. The authors call for future exploration of cultural influences on physician recommendation for CRC screening.

The act of communicating with patients about the importance of CRC screening is important. Thus, the content of messages regarding colorectal cancer screening is worth analyzing. A qualitative study by Wackerbarth and colleagues examined the content of physician recommendations for colorectal cancer screening using a framework of informed decision making. Informed decision making is generally the meaningful exchange of information between provider and patient (Braddock, Edwards, Hasenberg, Laidley, & Levinson, 1999). The authors conducted semi-structured interviews with 65 primary care physicians and analyzed responses for one question that was designed to elicit the ways in which physicians typically communicate their recommendations to patients. Braddock and colleagues proposed a definition of informed decision making that featured seven criteria. Almost all physicians in the Wackerbarth study (98.5%) addressed a “nature of decision element” in conversations with patients. Roughly two thirds (67.7%) addressed “uncertainties associated with the decision”. The “patient’s role in decision making” was covered by 33.8% and “risks and benefits” was covered by 16.9%. “Alternatives” (10.8%), “assessment of patient understanding” (6.2%) and “exploration of patient preferences” (1.5%) was also discussed (Wackerbarth, Tarasenko, Joyce, & Haist, 2007). The study yielded mixed results. Several deficiencies in provider communication were identified and are opportunities to future improvement.

This study provides further evidence for the importance of physician recommendation for CRC screening. Few providers inquired as to whether patients had questions about screening, which is a missed opportunity for physicians to explore patients’ health and cultural beliefs. These beliefs strongly influence health decisions (Wackerbarth et al., 2007). Physicians need continued education and guidance about the content of colorectal cancer screening recommendation messages.

The ways that physicians communicate with patients regarding CRC may be a result of how they perceive screening procedures and their importance. A study by Wolf and colleagues investigated how primary care physicians perceive colorectal cancer screening communication tasks. It also explored the form and content of actual screening discussions between providers and patients. Data were collected from 270 primary care physicians who completed a mailed questionnaire, as well as from a separate observational study in which 18 patient-physician encounters were captured by a video camera.

Physicians were selected from urban and suburban locations. The mean age of physicians was 44 and 61.8% of physicians were male. About 51.1% of physicians had received training on CRC messaging in the past. A total of 57.9% of physicians responded to the mailed questionnaire, which focused on perceived importance and accomplishment of communication tasks surrounding CRC screening (Wolf, Baker, & Makoul, 2007). Physicians who responded to the survey rated colonoscopy as the most important screening option to discuss over FOBT, flexible sigmoidoscopy, and CT imaging. They also reported that explaining benefits and risks, describing test procedure, and eliciting patient preferences were very important to them. However, self-reported accomplishment of these tasks was significantly higher than those in the interactions that were videotaped in the separate observational study.

Study limitations include a small sample size for the observational study. Additionally, the physicians who were videotaped were not the same physicians who completed the mailed survey. This limits the generalizability of the results of each arm of the study; responses from those who completed the mailed survey are not necessarily the same as those who were videotaped and vice versa. While physicians recognized the importance of discussing CRC screening with patients, they placed only moderate value on discussing more than one screening option. This can lead to underutilization of screening, since patient preference becomes an important determinant of which test should be used (Wolf et al., 2007). Offering a variety of options to patients will ultimately allow them to choose the option that is most acceptable to them. Future research needs to explore the implementation of tools designed to provide patients with clear and consistent information while highlighting the various options available to them.

In-office screening policy

Systematic reminders for patients and providers can increase utilization of screening tests and encourage provider follow-up for patients whose screening results require further investigation. A randomized control trial was conducted by Sequist and colleagues to examine the effects of patient and physician reminders in 11 ambulatory health care centers. Participants included 21,860 patients between ages 50 and 80 who were overdue for CRC screening, as well as 110 primary care physicians.

Patients were randomized to receive a mailed pamphlet, FOBT kit, and instructions for scheduling either a sigmoidoscopy or colonoscopy. Mailed reminders were shown to be the most effective intervention aimed at encouraging screening for CRC; they had an especially significant effect on patients ages 60-69 (Sequist, Zaslavsky, Marshall, Fletcher, & Ayanian, 2009). Screening rates were similar among patients or physicians receiving electronic reminders and the control group. Electronic reminders tended to lead to an increase in screening rates in patients with three or more primary care visits that fell within the study period. They did not have an effect in patients who did not visit their primary care provider within the 15-month period. Detection of adenomas was shown to increase with patient mailings and physician reminders.

While these reminders that were disseminated through an electronic medical record-based system were the most effective tool in the promotion of CRC screening in these health centers, their efficacy may not be applicable to low resource settings. The limited effectiveness of electronic reminders for some patients may also reflect the fact that physicians face many competing demands during limited appointment times with patients. Patient baseline screening rates in this population were 63%, compared to much lower rates of screening in similar studies (Sequist et al., 2009). Additionally, the high baseline-screening rate in this population was due to informed decision-making and patient-centered communication between patients and providers. This provides additional evidence for the argument that physician and patient reminders are most successful in a patient-focused setting.

Ling and colleagues conducted a randomized controlled trial in 10 primary care practices with 599 screen-eligible patients that examined the efficacy of enhanced office and patient management on compliance with recommended screenings for colorectal cancer. The trial measured the effectiveness of a tailored vs. non-tailored physician recommendation letter and an enhanced vs. non-enhanced patient management and physician office intervention. The enhanced and tailored interventions relied on external resources that allowed physicians and office staff to develop systematic screening protocol within each medical office.

During the one year trial, 53.3% of patients who received the tailored letter and enhanced patient management received lower endoscopy screening, compared to 54.2% who received the non-tailored reminder and enhanced management, 43.6% in the group that received the tailored letter and the non-enhanced management, and 37.9% in the group that received the non-tailored letter and non-enhanced management (Ling et al., 2009).

The authors concluded that enhanced office management and tailored reminder systems were responsible for the comparatively higher screening rates in groups that received tailored and enhanced interventions. A low patient participation rate, as well as a lack of patient choice in screening modality, may limit generalizability of results. The results of this intervention strengthen the evidence base for tailored reminder systems that target patients as well as providers.

In 2007, the National Cancer Institute and the Agency for Healthcare Research and Quality jointly sponsored a review of the strategies that primary care providers use to implement CRC screening into routine practice. In practices where CRC screening rates were improved, the authors found that the strategies fall under the goals of the New Model of Primary Care Delivery (Klabunde et al., 2007). The most successful strategies were based on a team approach, structured information systems, patient involvement, monitoring practice-wide screening rates, payer reimbursement, and provider training opportunities.

Unlike many other preventive screenings, there are several options for CRC screenings that require discussion with patients. CRC screening is also unique in that it requires much more effort from patients in order to successfully complete screening. Challenges to implementing systematic and evidence-based strategies for the improvement in CRC screening rates lie in part with national and state health policy. Specifically, the tests that are reimbursable are likely to be the tests that are used most often; patients' choice of screening test could be limited in places where a select number of screening tests are reimbursable (Klabunde et al., 2007). Federal and state policymakers, professional organizations, and medical providers should be actively engaged in conversation regarding the future direction of provider-based strategies aimed at increasing CRC screening rates.

Conclusions

The results of this review show that increasing screening rates within the medical practice begins with providers and their staff. They must be trained in cultural competence, communication, and screening protocols that are consistent with established guidelines. Providers are primarily responsible for the implementation of office management systems so that the priorities of providers and their staff are more transparent and consistent. Protocols for structured office and patient management systems are needed to integrate CRC screening into routine preventive care. The New Model of Primary Care provides a useful paradigm in which primary care practices can implement evidence-based strategies to improve rates of CRC screening in patients. Lastly, the practice must play an active role in supporting and engaging patients in conversations with providers about screening.

There are obvious discrepancies between guidelines for timely and appropriate CRC screening and what providers' self-report data suggests. There is a continued need to conduct outreach with providers, particularly gastroenterologists, primary care providers, OB/GYNs, and nurse practitioners. Additionally, the validity of patients' and providers' self-report data on screening recommendation and compliance rates has been called into question. Future studies may choose to validate self-report data with medical records when available.

Recommendations for the Professional Education and Practice Task Group

Strengths	Weaknesses
• Continuing to disseminate the Evidence-Based Clinicians' Guide has led to increasing provider knowledge and access to strategies that can be used to implement effective screening programs.	• Too little emphasis on the fact that all providers, regardless of specialty, are equal stakeholders in ensuring that CRC screenings are held to high quality standards.
Opportunities	**Threats**
• Emphasizing communication strategies that elicit an informed and shared decision making process between physicians and patients may lead to an increase in CRC screening in practices where rates are low.	• A need to monitor the extent to which the preventive service provisions under PPACA and reimbursement policy influence utilization of specific CRC screening tests.

1. The NCCRT should prioritize the continued dissemination of the *Evidence-Based Clinicians' Toolbox and Guide* and adapt the strategies in the Guide for providers in low-resource settings who face unique barriers to increasing screening rates.
2. The Roundtable should include primary care providers, endoscopists, gastroenterologists, OB/GYNs, and nurse practitioners in meaningful dialogue that is focused on a shared responsibility among all providers to ensure standardized quality measures and data reporting for CRC screening.
3. The Roundtable should monitor and promote interventions that target frameworks for informed decision-making.
4. The Roundtable should continue to monitor providers' adherence to guidelines. The Roundtable should also monitor the changes in reimbursement policy on the federal and state levels as a result of healthcare reform.

Strengths

The CRC Evidence-Based Toolbox and Guide has continued to be used by NCCRT member groups in a variety of settings. As described in the Roundtable's plan for the dissemination of the Guide, the routes through which the Roundtable has disseminated the Guide are traditional Continuing Medical Education (CME), web-based educational approaches, and strategies that target payors, health plans, public, and non-profit entities. The dissemination of the Guide is a positive step in continuing to achieve the Roundtable's goal of "identifying, publicizing, and promoting interventions that have been shown to increase CRC screening rates" (Levin et al., 2002).

The NCCRT should prioritize the continued dissemination of the Guide. Additionally, the Action Plan and the version of the Guide for community health centers are important steps in ensuring that the strategies in the Guide are reaching a diverse group of providers. In the future, it may be wise for the Roundtable to adapt the strategies in the Guide for providers in low-resource settings who often have low screening rates due to insurance status, culture, and language proficiency, as these are strong determinants of screening. Reaching out to this group of providers is important, as overcoming these barriers is vital to a comprehensive office-wide screening policy that is evidence-based and effectively targets screen-eligible adults.

Weaknesses

The Quality Assurance Task Group has worked hard to achieve the development of a standardized colonoscopy reporting system (CO-RADS) and quality indicators for primary care physicians. However, the Quality Assurance Task Group as well as the Roundtable at large must emphasize that while primary care providers are an invaluable gateway to screening, they are not the only type of provider that should need to ensure that patients are receiving a high quality colonoscopy and that the data collected is accurate and complete. The Roundtable should engage primary care providers, as well as endoscopists, gastroenterologists, OB/GYNs, and nurse practitioners in meaningful dialogue that is focused on a shared responsibility among all providers.

Along those lines, the Professional Education and Practice Task Group should create a goal that emphasizes the results from the CO-RADS study in calling for standardization of procedures and data reporting. The Roundtable can strive to endorse these systems by including data reporting in widely distributed publications like the Evidence-Based Clinicians' Guide.

Opportunities

The Roundtable should monitor and promote interventions that target frameworks for informed decision-making. These interventions focus on an exchange of information between physician and patient that serves as an opportunity for physicians to explore patients' knowledge and history of CRC screening, as well as address individual concerns. The literature shows that, while physicians do address some aspects of the nature of screening procedures with patients, many do not tailor their messages about CRC screening around an informed decision making approach. Allowing patients to assume a central role in the decision-making process will facilitate discussion and education about the importance of screening.

In the coming years, the Roundtable is encouraged to conduct outreach to member organizations and primary care providers with messages regarding informed decision making as an approach to aid them in recommending CRC screening to patients.

Informed decision making is currently lacking in providers' educational materials. The Roundtable can continue to "work with educational and certifying organizations to remediate deficits in CRC screening education" by adding this approach to current educational outreach (Levin et al., 2002).

Threats

According to the literature, providers say that a barrier to recommending colorectal cancer screening to patients is reimbursement policy for colonoscopy and other screening tests. The passage of the Patient Protection and Affordable Care Act (PPACA) eliminated co-pays, co-insurance, and deductibles for proven preventive services for those in employer-sponsored plans, individual plans, and traditional fee-for-service Medicare on or after September 23, 2010, or January 2011 for those in Medicare (American Cancer Society, 2010). Screening tests that have received an A or B rating by the U.S. Preventive Services Task Force are covered under the new law. This category includes FOBT, sigmoidoscopy, and colonoscopy.

While this provision in the law is important in that it may lead to increased utilization of preventive services for individuals enrolled in new plans, there are several important caveats that pose a threat to other adults who are eligible for CRC screening. First, grandfathered plans that already existed on the day that the PPACA was signed into law may not be eligible for screenings that are free of cost sharing. Second, the USPSTF did not give less invasive tests such as CT colonography, DCBE, FIT and fecal DNA testing an A or B rating. This limits the choices available to patients whose plans qualify for preventive services that are free of cost sharing. Lastly, if a test is performed to biopsy and remove adenomas rather than to screen for CRC or cancer, the test is not free of cost sharing under the new law.

Regardless of the provisions in the health reform law, many providers may choose to follow the consensus guidelines published by the American Cancer Society, the U.S. Multi-Society Task Force, and the American College of Radiology rather than those published by USPSTF. They may also choose to follow guidelines from any number of professional societies. Ultimately, the tests that are most likely to be reimbursed in an adequate and timely manner are the tests that are most likely to be used by practitioners, regardless of what a particular set of guidelines may suggest. The Roundtable can continue to pursue its goal of supporting professional societies and member organizations in their endorsement of CRC screening as a cost-effective, evidence based practice by monitoring providers’ adherence to guidelines. The Roundtable should also monitor the changes in reimbursement policy on the federal and state levels as a result of healthcare reform.

Chapter 5. Discussion

The primary objective of the special study project was to draft a strategic plan for the National Colorectal Cancer Roundtable's Public Awareness Task Group and Professional Education and Practice Task Group. A multi-step process was undertaken to achieve this goal. Current literature was reviewed and previous recommendations, goals and activities were evaluated, Lastly, a SWOT analysis synthesized these results and served as a vehicle through which recommendations were made.

The overall research question was "What must the NCCRT do or continue to do to reduce incidence, mortality, disparity, and unnecessary costs associated with colorectal cancer screening?" In addition, the research question for the Public Awareness Task Group was "How has public knowledge about colorectal cancer changed, and to what extent does knowledge influence action?" The Professional Education and Practice chapter sought to determine whether or not providers are recommending CRC screening in accordance with guidelines.

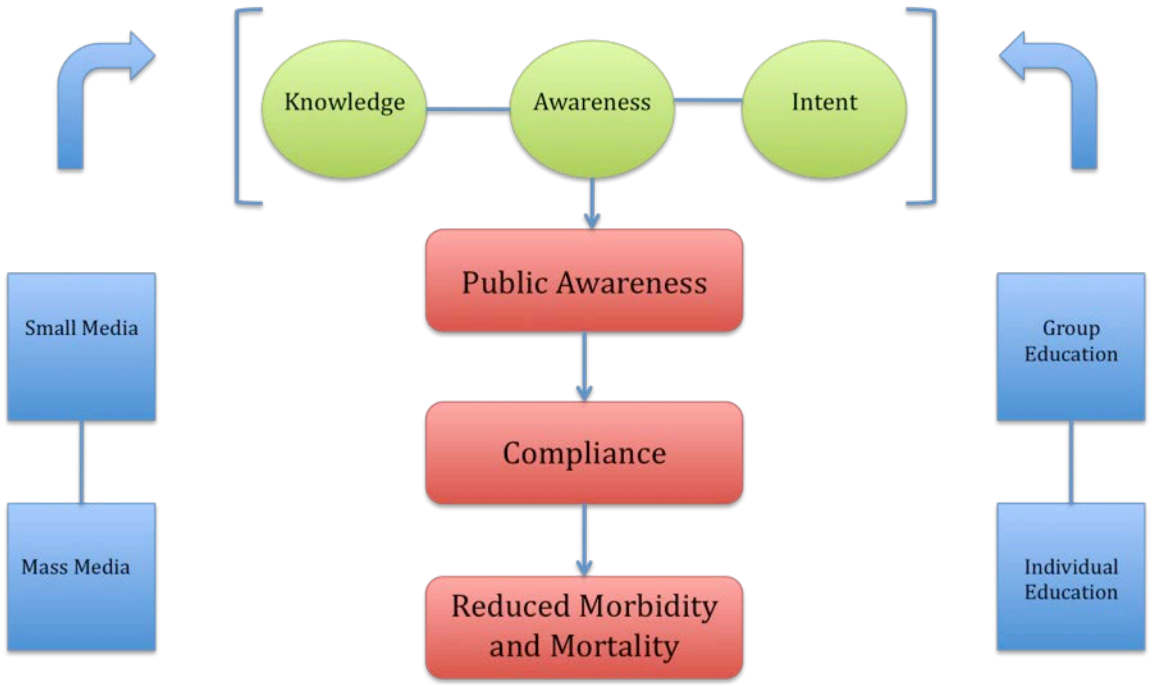
The Strategic Planning Process

The recommendations made as a result of the strategic planning process are important because they provide a snapshot of the current landscape of public awareness and provider education in CRC screening. Additionally, while the document is based on the Roundtable's original goals, the new recommendations provide a foundation upon which the Roundtable can continue to work towards their current goals and establish a presence in emerging areas of research and screening practice.

An important theoretical question that the Roundtable may want to consider is whether the findings and recommendations contained in the strategic plan are generalizable only to the Roundtable, or if they serve to benefit stakeholders in the CRC community on a national level. Generally speaking, the main messages behind the NCCRT's public awareness and professional education efforts are messages that every advocacy, leadership, and professional organization or provider acting as a proponent of colorectal cancer screening may want to incorporate. The strategies proposed by the plan, however, may only be appropriate action steps for the Roundtable. This is due to the Roundtable's unique role in bringing experts together across clinical practice, education, policy, research, and advocacy.

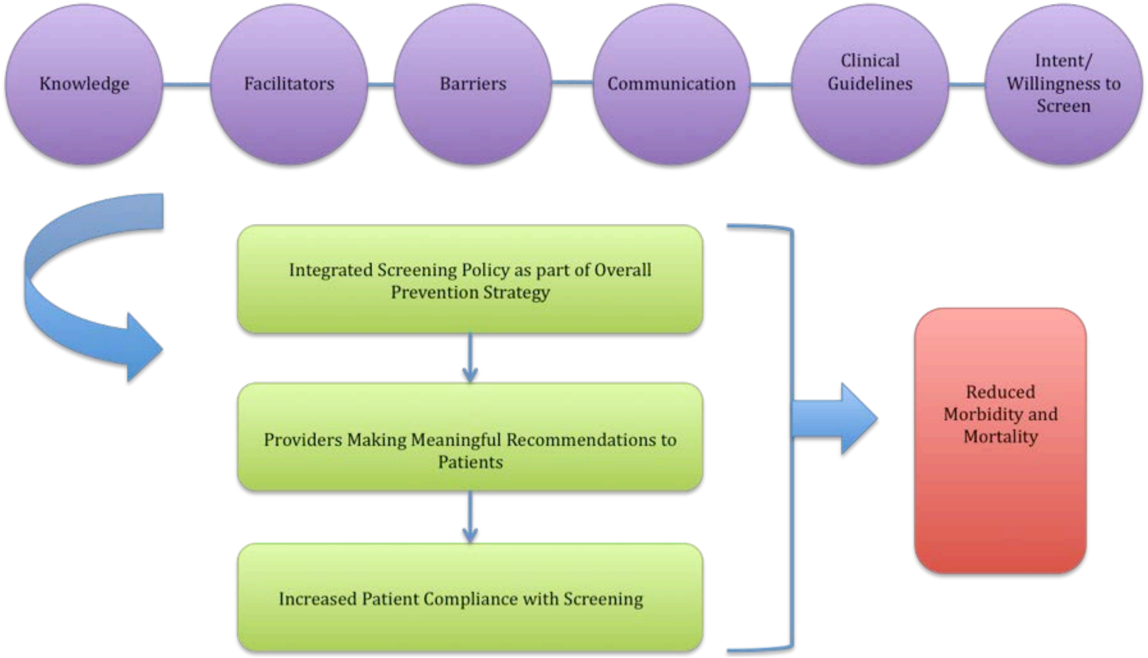
Figures 1 and 2 provide a context through which Roundtable leadership and constituents can envision the Roundtable's role in the field.

Figure 1. Public Awareness of Colorectal Cancer Screening



The Roundtable's role in raising public awareness of the importance of CRC screening is based on outreach activities that have been conducted in the areas of mass media, small media, group education, and individual education. In the future, the NCCRT can be uniquely positioned to create and disseminate marketing brands and evidence-based interventions. Obtaining partners in communication, federal government, state government, and the private sector can assist the Roundtable in these efforts. This type of outreach will ultimately foster knowledge about screening, awareness of its importance, and may lead to action in the form of patients' intent to be screened. In the end, these factors will directly contribute to an overall increase in public awareness, increased compliance, and reduced morbidity and mortality from colorectal cancer. The NCCRT's public awareness efforts can benefit from setting measurable goals, monitoring progress, and evaluation.

Figure 2. Educating Providers on the Importance of Recommending CRC Screening



The Roundtable is uniquely positioned to enhance current professional education and clinical practice protocols because of its activities in the fields of quality, health disparities, clinical guidelines, and continuing medical education. In the future, the NCCRT can prioritize provider-focused interventions that target knowledge of screening, barriers, facilitators, communication strategies, and adherence to guidelines. These types of tailored interventions can result in the integration of a standardized screening policy in primary care practice. This integration, in turn, will lead to an increase in recommendation for screening and may result in an increase in patient compliance with screening recommendation. Future NCCRT efforts can also focus on promoting the inclusion of standardized data reporting and screening quality measures in professional guidelines. The Roundtable can capitalize on its role as a leader in advocacy by researching advances in data reporting and the design of interventions that can be implemented in primary care practices. Professional education and practice efforts, like those for public awareness, can benefit from setting measurable goals, monitoring progress, and evaluating efforts.

Challenges to Strategic Planning

The strategic plan is a document that, if implemented, has significant implications for the Roundtable’s priorities and leadership for the next five years. SWOT analysis is a common managerial tool that has been used to inform the recommendations for the Roundtable’s strategic plan with the purpose of analyzing the organization’s internal strength and weaknesses, using these as a foundation on which to approach external opportunities and threats. Organizations are encouraged to conduct or update SWOT analysis as frequently as once per year in order to evaluate shifts in internal and external circumstances and their impact on organizational performance.

However, in many settings, SWOT analysis has been used as a flat, bureaucratic instrument (van Wijngaarden, Scholten, & van Wijk, 2010). In these cases, SWOT analysis can isolate constituents from organizational leadership and stakeholders and will produce results that are not a completely accurate representation of the organization at large.

Recently, critics have pointed out that while the SWOT analysis strategy is an important aspect of organizational management, it cannot accomplish much as a stand-alone activity (Grandy & Mills, 2004). SWOT analysis must be present at all levels of decision-making and must be used interdependently with structure in order to provide a framework in which participants in every level of the organization can begin to carry out specific operating activities that contribute to their strategic goals. SWOT analysis can be carried out for the Roundtable as an organization, or for each specific task group. The issues presented in the SWOT analysis can and should be revisited frequently to ensure that they are still relevant and that progress is being made to capitalize on strengths and opportunities, amend weaknesses, and lessen organizational threats.

Implications and Future Directions

Operating plans are vital to the implementation and monitoring of the strategic plan and should be created on an annual basis. The purpose of an operating plan is to translate the goals stated in the strategic plan into action steps in order for the strategic plan to be implemented in a coordinated and effective way (Allison & Kaye, 2005). The operating plan should provide details for organizational activities for the upcoming year and should include objectives, benchmarks, timelines, and delegation of responsibilities. Essentially, an operating plan seeks to determine what the goal will be, what types of action are necessary to complete the goals, and will indentify the people responsible for achieving those goals. Ideally, an operating plan is accompanied by an annual budget that provides details relative to annual revenue and expenses (Allison & Kaye, 2005). These plans can be created via a collaborative process that engages organizational leadership and general membership. The NCCRT's Annual Meeting is the ideal time to engage members in discussing and creating a concrete operating plan.

Conclusion

The National Colorectal Cancer Roundtable is dedicated to serving as a clearinghouse of information for stakeholders in the colorectal cancer community. The Roundtable's role in fostering education and collaboration within the colorectal cancer community has brought about the need for an updated strategic plan that is consistent with the organization's mission, goals, and objectives.

The Roundtable has achieved measurable success since the publication of the previous strategic plan. SWOT analysis can serve as a valuable tool to assist the Roundtable in conducting a situational assessment, both internally and externally. This methodology, combined with the Roundtable's organizational strengths, has the potential to ensure that the Roundtable continues to reach its goals.

Appendices

Appendix 1: Screening Tests for the Detection of Adenomatous Polyps and Colorectal Cancer

Tests capable of detecting colorectal polyps and colorectal cancer		
Screening test	**Process**	**Preparation**
Flexible Sigmoidoscopy	A doctor will examine the lower part of the colon, called the sigmoid colon, with a sigmoidoscope. This is a flexible, lighted tube with a small video camera on its end. It is inserted through the rectum and into the lower part of the colon. Images are viewed on a display monitor. This method can be used to detect and remove any abnormality.	Patients must perform a bowel preparation as prescribed by a doctor in order to clean the lower colon.
Optical Colonoscopy	The entire length of the colon is examined with a colonoscope, which is a longer version of a sigmoidoscope. This device has a camera attached to its end as well. It is inserted through the rectum and into the colon. The colonoscope facilitates the passage of instruments that can remove any abnormalities if needed.	This is an outpatient procedure. It requires bowel preparation in advance.
Double Contrast Barium Enema (DCBE)	This is a type of x-ray test. Barium sulfate and air are used to outline the inner part of the colon. This highlights abnormalities on the x-ray device. If abnormalities are detected, a colonoscopy is needed to observe and remove polyps.	The colon and rectum must be prepared before the procedure, as prescribed by a medical professional.
Computerized Tomographic (CT) Colonography	The procedure is an advanced CAT scan of the colon and rectum. This scan is an x-ray test that produces detailed, cross-sectional images and rotates around the patient while the patient lies on a table. The computer creates 2-dimensional and 3-dimensional pictures. This test	While this test is less invasive, it requires the same bowel preparation as every other screening test.

	is useful for patients who are uncomfortable with more invasive screening methods. If abnormalities are detected, a colonoscopy is needed for biopsy purposes.	
Tests capable of detecting colorectal cancer		
Screening test	**Process**	**Preparation**
Fecal Occult Blood Test (FOBT)	This test is used to identify blood in a person's stool that is not visible to the naked eye. Blood is detected via a chemical reaction; however, the test cannot distinguish the source of the blood from any part of the digestive tract. As a result, it is possible that bleeding may not be associated with colorectal cancer. If blood is found, a colonoscopy is needed to investigate the cause of bleeding.	Certain medications and foods must be avoided before the test. This test is done with an at-home kit that allows patients to test stool samples. It is recommended that this test be repeated annually. Patients will receive detailed instructions from their doctor. Medical professionals recommend that patients test several stool samples.
Fecal Immunochemical Test (FIT)	This test is similar to the FOBT in that it also detects blood in the stool. The test reacts to the human hemoglobin protein, which is found in red blood cells. This test is unlikely to react to bleeding from other parts of the digestive system. If abnormalities are detected, a colonoscopy may be recommended.	This is an at-home test. The FIT test does not require that patients restrict medications or foods. Medical professionals recommend that patients test several stool samples. This test should be repeated annually.
Stool DNA (sDNA) Test	This test identifies sections of DNA from cancer or polyps, rather than excess bleeding. Like blood, these cancer cells often appear in stool samples. If abnormalities are detected, a colonoscopy may be required for follow-up.	This is an at-home test. The FIT test does not require that patients restrict medications or foods.

Source: American Cancer Society, "Can colorectal polyps and cancer be found early?" http://www.cancer.org/Cancer/ColonandRectumCancer/DetailedGuide/colorectal-cancer-detection

Appendix 2: NCCRT Public Awareness Activities

Enhancing media campaigns to promote CRC screening

To date, the Roundtable's involvement in media messaging has focused largely on the marketing of the Blue Star as a universal symbol representing the fight against colorectal cancer. The Blue Star was introduced in 2004 and was created by Addison Whitney. It has since been the focus of a marketing kit, presentation materials, a Blue Star website, and various other marketing materials (American Cancer Society & Medical University of South Carolina). The Roundtable provides Blue Star resources to organizations that are interested in promoting the message that colorectal cancer is preventable, treatable, and beatable as part of their own public awareness efforts.

Since its introduction into the Public Awareness task group's efforts, the Blue Star has brought about the creation of a marketing kit. This kit is distributed by the NCCRT and is available to all colorectal cancer-related organizations. In 2008, the Roundtable collaborated with Edelman Public Relations to re-energize the message behind the Blue Star and create awareness online by creating a website and social networking groups (American Cancer Society & Medical University of South Carolina).

The Blue Star has appeared on Olympus U.S. Open sponsorship materials and the company has advertised the Blue Star on a banner outside their corporate headquarters in New York. Additionally, Olympus distributed Blue Star lapel pins to staff as part of efforts during National Colon Cancer Awareness Month in March. The Minnesota Colon and Rectal Foundation has incorporated the Blue Star into its logo and the United Ostomy Association of America's Cancer Walk poster. NCCRT activities surrounding the Blue star are consistent with best practices identified in the literature. Blue Star activities are also in line with the five-year goals set forth by the Public Awareness Task Group's breakout recommendations in September 2010 in that it is a symbol for colon cancer and is gaining recognition among key stakeholders in CRC screening (Levin et al., 2002).

Additionally, a media and television audit was performed for the Roundtable to analyze mass messaging about colorectal cancer. The research questions described in the audit focused on how messaging about CRC has changed over time, as well as how messaging varies between National Colorectal Cancer Awareness Month in March and non-campaign months (Academy for Educational Development, 2007). The authors found that there was an increase in messaging that recommended colonoscopy as a screening method. There was greater visibility of CRC-focused non-profit organizations as experts in the field, and there has been increasing involvement by celebrities. Generally, there was a larger volume of messaging during National Colorectal Cancer Awareness month. This audit is consistent with one particular strategy that were recommended by the Public Awareness Task group as part of the overall goal to continue to adapt and change CRC messaging to suit community-specific needs (Levin et al., 2002). The audit is an inventory of messaging that has already taken place; the media audit published the Roundtable's findings about what is known and what has yet to be determined about how to best reach target audiences.

Increasing public education through community-based interventions

The Roundtable's public awareness efforts also include a rural messaging kit. This kit was developed in partnership with The Center for Colon Cancer Research (CCCR) at the University of South Carolina, the South Carolina Cancer Alliance, the Colon Cancer Alliance, and the American Cancer Society. The rural messaging kit is a multi-state colorectal cancer awareness campaign with the goal of providing numerous tools focused on messaging for rural communities that will allow them to increase public awareness about CRC as a preventable disease (University of South Carolina, 2008). The five-year goals developed by the Public Awareness Task Group in September 2010 echo the message to “get screened” that was present in the rural messaging campaign. In this particular campaign, messaging was tailored to adults in rural communities, which is consistent with the task group’s five-year goals. Many of the lessons learned from small media and mass media campaigns are lessons that can strengthen promotion of community-based interventions to increase awareness and utilization of CRC screening (University of South Carolina, 2008).

A Public Awareness White Paper was written by leaders within the Roundtable to identify education initiatives designed to increase screening utilization, analyze implications of new research, and assess how key social marketing principles can be used to target at-risk groups (Mercer et al., 2008). The white paper made various conclusions. Regarding media analysis, findings suggest that National Colorectal Cancer Awareness Month should be scaled up to include more personal stories, celebrity endorsements, and an emphasis on specific screening recommendations and prevention messaging. Member education research focused on several mass media, group education, and multi-component interventions and included that these designs show promise in achieving stated objectives (Mercer et al., 2008). Additionally, tailoring and evaluating programs was proposed and seems to show promise in determining program effectiveness. The conclusions from the public awareness white paper echo two goals that were set forth by the 2002 strategic plan. First, it emphasizes that lifestyle modification should be part of a broader cancer prevention message that is to be disseminated to target groups. Second, it advocates for specific recommendations to be made about the need to get timely screening, rather than promoting one particular screening test (Levin et al., 2002).

Emphasizing in-office educational interventions for patients

NCCRT public awareness activities do not emphasize in-office educational interventions for patients. The literature states that interventions such as tailored multimedia interventions increase patient knowledge about the importance of screening and alleviate apprehension about undergoing screening tests.

In 2002, the task group agreed that CRC screening should be promoted overall, rather than emphasizing specific tests. Additionally, it was decided that primary care and specialist physicians, nurses, physician assistants, and professional office staff should work together to implement a screening program because no one segment of the provider workforce can carry the burden of a national screening policy for CRC (Levin et al., 2002).

Appendix 3: NCCRT Provider Education and Practice Activities

Implementing CRC screening policy

The Primary Care Physician's Evidence-Based Toolbox and Guide has been an important accomplishment of the Professional Education and Practice task group since the publication of the last strategic plan. In 2006, the NCCRT published the toolkit with the intention of reaching primary care practices and providing them with strategies to increase screening rates among eligible patients. Medical practice and cancer screenings are patient-driven; this has prompted a need for resources like the Evidence-Based Toolbox. Additionally, the literature shows that physicians face many competing demands and that few practices have a system in place that guarantees that every screen-eligible patient gets a recommendation for screening (American Cancer Society & National Colorectal Cancer Roundtable, 2009). The goals of the Evidence-Based Toolbox are described as the following:

- To inform clinicians and their office managers who deliver primary care about their opportunity to prevent colorectal cancer with appropriate screening;
- To encourage primary care providers to decrease the mortality and morbidity of colorectal cancer (CRC) and other cancers through appropriate screening;
- To facilitate efforts of office-based clinicians to reduce disparities by applying screening guidelines on a universal basis to the age-appropriate population;
- To improve preventive care in primary practices through use of the strategies and tools presented in the guide (Sarfaty, 2008).

The toolkit has been distributed to professional societies, NCCRT member organizations, state and local public health organizations, and health plans. There is also an online, interactive version of the toolkit meant to serve as a “walk-through” for providers in order for them to become familiar with the guide’s features. There has also been a journal article published in CA that is based on the toolkit’s strategies for increasing screening rates in practice (American Cancer Society & National Colorectal Cancer Roundtable, 2009). A speaker’s bureau has been trained to give presentations on the CRC guide as well. A short action plan and a version of the toolkit for community health centers will be released in the coming months. In addition, a brochure, dissemination plan, and opportunities for CME credit and Maintenance of Certification have been made available.

The Roundtable’s activities that focus on the Toolkit are in line with the recommendations from the Roundtable’s original strategic plan in that it provides content regarding CRC screening as part of the re-certification process of health professionals. Additionally, the evidence-based toolkit provides resources for primary care providers to adopt an appropriate CRC screening policy based on appropriate guidelines (Levin et al., 2002).

Promoting quality CRC screening

A report published by the National Colorectal Cancer Roundtable called “Developing a Quality Screening Colonoscopy Referral System in Primary Care Practice” was published in 2010. The report makes recommendations for ways that primary care providers can develop a quality colonoscopy referral system in their practices. It describes the elements of a quality screening colonoscopy referral program, and includes information for ways to establish an optimal scheduling and referral system, appropriate patient preparation information, consistent reporting and follow-up systems, and a detailed approach for dealing with high-risk individuals (Sifri et al., 2010). The Roundtable found that successfully referring patients for screening colonoscopy involves a coordinated effort between primary care physicians and endoscopists.

This report highlights a need for the inclusion of goals that relate to the establishment of standardized CRC screening reporting systems into primary care practice. A goal set forth by the Roundtable in 2002 highlights the need to "support member organizations and providers in endorsing screening as an evidence-based recommended practice for all Americans age 50 and over and for younger individuals at increased risk" (Levin et al., 2002). However, this goal does not capture "action steps" that primary care providers can take to establish a quality screening protocol for every screen-eligible patient. The Roundtable should aim for the establishment of a goal that clearly delineates an action step that focuses on the foundation for the establishment of quality screening and accurate data collection.

The Quality Assurance Task Group published a consensus statement titled "The Quality of Colonoscopy Services—Responsibilities of Referring Clinicians" in the Journal of General Internal Medicine. The statement discusses at set of indicators developed by the Quality Assurance Task Group that may be used by primary care physicians to assess the quality of colonoscopy services performed by endoscopists (Fletcher et al., 2010). The quality measures discussed in the paper are technical competence, a complete report, and a safe setting for the colonoscopy. The report also provides criteria that physicians can use when choosing a provider.

The consensus statement emphasizes that primary care providers should bear the responsibility of ensuring that patients' colonoscopies are up to par with a set of quality indicators. While these findings are important, the statement implies that endoscopists do not bear as much responsibility when it comes to ensuring that their practices be held to such high standards (Fletcher et al., 2010). This inconsistency sheds light on a gap that currently exists in the Roundtable’s goals for professional education and practice. Future recommendations should emphasize that primary care providers, endoscopists, gastroenterologists, and other providers who perform colonoscopy and other CRC screenings be held equally accountable for adhering to the quality indicators emphasized in the statement.

A systematic review of quality indicators recommended by the Multi-Society Task Force on Colorectal Cancer was conducted by the Quality Assurance Task Group. This review sought to develop consensus-based terminology for reporting and data systems for colonoscopy based on continuous quality improvement indicators (Lieberman et al., 2007). This review was conducted as part of a larger project that sought to develop a standardized colonoscopy reporting and data system (CO-RADS). The task group focused on terminology and elements of reporting with the goal of standardizing the language used as a way to measure quality within and across practices. The report also discussed ways that data can be used from reports to generate indicators for continuous quality improvement (CQI).

The review is consistent with the Roundtable’s goal of “establishing a clearinghouse for collecting and disseminating information regarding screening program implementation systems” (Levin et al., 2002). The inclusion of an argument for rigorous data collection and interpretation would serve to strengthen this goal.

Appendix 4: Strategic Plan Draft

Draft
A Framework for Action: The Strategic Plan of the National Colorectal Cancer Roundtable

The National Colorectal Cancer Roundtable

The National Colorectal Cancer Roundtable (NCCRT) is a national coalition that is committed to reducing colorectal cancer incidence and mortality through coordinated leadership, strategic planning, and advocacy. It consists of public, private, and voluntary organizations. The NCCRT and its three workgroups include CRC survivors, recognized experts in primary care, gastroenterology, radiology, colorectal surgery, nursing, public policy, epidemiology, behavioral science, patient advocates, representatives of health plans and insurers, government representatives, and other organizations (National Colorectal Cancer Roundtable).

Mission

To advance colorectal cancer efforts by improving communication, coordination, and collaboration among health agencies, medical-professional organizations, and the public (National Colorectal Cancer Roundtable).

Goal

To increase the use of proven colorectal cancer screening test among the entire population for whom screening is appropriate. The Roundtable's collaborative efforts strive to:

- Strengthen the network of public and private organizations concerned with promoting colorectal cancer screening;
- Determine clinical and consumer barriers to screening through research;
- Assess current public awareness and interest in screening;
- Develop and disseminate health messages (National Colorectal Cancer Roundtable).

Methods

The Roundtable's activities are grounded in current trends and best practices in the field. As a result, an update to the literature review was an important step in the strategic planning process that helped to inform the Roundtable's future priorities. One literature review was written for each task group. In order to understand current trends in public awareness and professional education issues in colorectal cancer screening, PubMed's advanced search feature was used to search two or more MeSH terms simultaneously. Web of Science was used only when full text articles were not available in PubMed.

A SWOT analysis was the product of synthesizing the results of the literature review with task group documents and the original recommendations and goals from the 2002 strategic plan. It served as a conceptual framework for current recommendations.

Results

Public Awareness SWOT Analysis

***Internal Strengths*:** Emphasis on the continued visibility of the Blue Star as a marketing symbol for colorectal cancer awareness.

***Internal Weaknesses*:** Lack of emphasis on tailored interventions as a central component to outreach activities.

***External Opportunities*:** Widening the scope of involvement in community-based interventions by exploring benefits of community-based participatory research (CBPR) and its effect on patients' intent to be screened.

***External Threats*:** Increasing the presence of social media in the lives of American adults indicates a shift in avenues for disseminating timely prevention information.

Professional Education and Practice SWOT Analysis

***Internal Strengths*:** Continuing to disseminate the Evidence-Based Clinicians' Guide has led to increasing provider knowledge and access to strategies.

***Internal Weaknesses*:** Too little emphasis on the fact that all providers, regardless of specialty, are equal stakeholders in ensuring that CRC screening tests are held to high quality standards.

***External Opportunities*:** Emphasizing communication strategies that elicit an informed and shared decision-making process between physicians and patients.

***External Threats*:** A need to monitor the extent to which the preventive service provisions under PPACA and reimbursement policy influence utilization of specific CRC screening tests.

Strategic Goals

1. The Roundtable should secure partners in communication, government, and the private sector to assist in prioritizing the creation of yearly benchmarks that will reflect the progress made on the continued dissemination of the Blue Star and other marketing tools.

2. The Roundtable's outreach efforts should emphasize tailored interventions that reach the uninsured, racial and ethnic minorities, and other at-risk groups.

3. The Roundtable should track efforts that target communities via a community-based participatory research model and partner with organizations who have achieved success in increasing community-wide screening rates for cancer by using this approach.

4. The Roundtable should continue to monitor online conversations about colorectal cancer and determine the most feasible way to establish itself as a facilitator and participant in the conversations that are taking place online.

5. The NCCRT should prioritize the continued dissemination of the *Evidence-Based Clinicians' Toolbox and Guide* and adapt the strategies in the Guide for providers in low-resource settings who face unique barriers to increasing screening rates.

6. The Roundtable should include primary care providers, endoscopists, gastroenterologists, OB/GYNs, and nurse practitioners in meaningful dialogue that is focused on a shared responsibility among all providers to ensure standardized quality measures and data reporting for CRC screening.

7. The Roundtable should monitor and promote interventions that target frameworks for informed decision-making.

8. The Roundtable should continue to monitor providers' adherence to guidelines. The Roundtable should also monitor the changes in reimbursement policy on the federal and state levels as a result of healthcare reform.

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