

Report from an NCI Roundtable: Cancer Prevention in Primary Care



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ABSTRACT

The Division of Cancer Prevention in the NCI sponsored a Roundtable with primary care providers (PCP) to determine barriers for integrating cancer prevention within primary care and discuss potential opportunities to overcome these barriers. The goals were to: (i) assess the cancer risk assessment tools available to PCPs; (ii) gather information on use of cancer prevention resources; and (iii) understand the needs of PCPs to facilitate the implementation of cancer prevention interventions beyond routine screening and interventions. The Roundtable discussion focused on challenges and potential research opportunities related to: (i) cancer risk assessment and management of high-risk individuals; (ii) cancer prevention interventions for risk

reduction; (iii) electronic health records/electronic medical records; and (iv) patient engagement and information dissemination. Time constraints and inconsistent/evolving clinical guidelines are major barriers to effective implementation of cancer prevention within primary care. Social determinants of health are important factors that influence patients' adoption of recommended preventive interventions. Research is needed to determine the best means for implementation of cancer prevention across various communities and clinical settings. Additional studies are needed to develop tools that can help providers collect clinical data that can enable them to assess patients' cancer risk and implement appropriate preventive interventions.

In May 2021, the Division of Cancer Prevention (DCP) in the NCI sponsored a Roundtable with invited representatives of various primary care specialty societies (Table 1) to determine the barriers that exist for integrating cancer prevention within clinical care, and to discuss potential opportunities to overcome these barriers. DCP previously undertook focus groups of individuals at regular risk and high risk for various cancers, to better understand the factors that influence their willingness to use cancer preventive interventions (1). Our findings confirmed previous studies that found that acceptability and uptake of cancer preventive interventions is highly dependent on physician recommendation. To better understand primary care physician familiarity, perception and prescribing behaviors of cancer preventive interventions, we conducted a cross-sectional survey of U.S.-based primary care physicians [internal medicine, family medicine, and obstetrics/gynecology (OB/GYN)] (2, 3). The overall outcome from the survey, which was the basis for the Roundtable, was that cancer prevention

guidelines and risk assessment resources must be better integrated within the routine primary care workflow to be effectively applied by primary care practices.

The Roundtable had the following goals in mind: (i) assess the cancer risk assessment tools (*e.g.*, online risk calculators, etc.) currently available to primary care providers (PCP), (ii) gather information on access and use of cancer prevention resources, and (iii) understand the needs of PCPs to facilitate implementation of cancer prevention interventions (including oral chemoprevention, locally delivered chemopreventive agents, and risk-reducing surgery) that extend beyond routine screening and preventive interventions (such as smoking cessation, diet/exercise, etc.) into their clinical workflow. The Roundtable discussion focused on challenges and potential research opportunities within four themes, as described below.

Discussion Theme 1: Cancer Risk Assessment and Management of High-Risk Individuals

In 2019, the U.S. Preventive Services Task Forces (USPSTF) released their recommendation that PCPs provide risk assessment to women with a personal or family history of breast or ovarian cancer, or who have a high-risk ancestry (4). Previous literature has reported limited use of cancer risk assessment and clinically recommended course(s) of action by PCPs (2, 3, 5, 6). This discussion session focused on the challenges faced by PCPs in assessing cancer risk in their patient population, and how some of these challenges may be overcome.

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Table 1. List of roundtable participants.

Name	Affiliated organization
Amy Mullins, MD	AAFP
Eva Chalas, MD	ACOG
Diana Ramos, MD	ACOG
Carrie Horwitch, MD, MPH	ACP
Gerald E. Harmon, MD	AMA
Nereida Correa, MD	NHMA
Syeachia Dennis, MD, MPH	NMA
Archana Radhakrishnan, MD	SGIM
Lisa-Kay Chism, DNP	AANP
Marva Price, DrPH, RN, FNP-BC	AANP
Sue Friedman, DVM	FORCE
Carol Mangione, MD, MSPH	USPSTF
Michael Barry, MD	USPSTF
Chyke Doubeni, MBBS, MPH	USPSTF
Cynthia Vinson, PhD, MPA	NCI, DCCPS
Erica Breslau, PhD, MPH	NCI, DCCPS
Paul Han, MD, MPH	NCI, DCCPS
Emily Tonorezos, MD, MPH	NCI, DCCPS
Donna Hopkins, BA	NCI, DCCPS
Michelle Mollica, PhD, MPH, RN	NCI, DCCPS
Crystal Reed, BA	NCI, DCCPS
Bernard Parker, MD	NCI, DCP
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Abbreviations: AAFP, American Association of Family Physicians; ACOG, American College of Obstetricians and Gynecologists; ACP, American College of Physicians; AMA, American Medical Association; DCCPS, Division of Cancer Control and Population Sciences; DCP, Division of Cancer Prevention; NCI, National Cancer Institute; NHMA, National Hispanic Medical Association; NMA, National Medical Association; SGIM, Society of General Internal Medicine; AANP, American Association of Nurse Practitioners; FORCE, Facing Our Risk of Cancer Empowered.

Challenges

Tools for risk assessment and inefficient delivery/communication of risk information were identified as challenges. While an abundance of risk assessment tools are available to identify patients at high risk for cancer (e.g., genetic testing, family history modeling, risk prediction models, etc.; ref. 7), there are limitations to these tools including a lack of standardization, inability to identify high risk individuals in real time by most tools, limitations in the types of cancers that are assessed, and lack of validation in minority populations. Risk calculators such as BOADICEA and Tyer–Cuzick have become more complicated over time, including incorporation of Polygenic Risk Score (PRS), thereby requiring time commitment for accurate risk calculations (8). In addition, many patients may not have a full or accurate recollection of their family and medical history, which may limit the effectiveness of risk assessment tools. There are also challenges related to inconsistent risk management guidelines, and lack of dissemination of these guidelines in primary care practices. Finally, with an increase in direct-to-

consumer health data (e.g., 23andMe, etc.), there is a need to harness the resulting information more effectively into actionable outcomes. One of the overarching challenges that emerged from all discussion sessions was the need to apply more specialized approaches to engage minority and underserved populations, thereby improving risk assessment in these populations.

Potential research opportunities

Potential research questions that emerged were related to ways to improve existing risk assessment tools and/or develop and implement new prediction tools that can identify high-risk patients in real time (i.e., without complicated calculations), be applicable to minority populations, incorporate actionable direct-to-consumer data (that can be updated as new associations are discovered), and include patient-facing options. Another research opportunity in this space is to determine whether artificial intelligence could be used to effectively identify high-risk individuals (9).

The discussion also included determination of best approaches for dissemination of risk information and education of the public, including participation of community-based and faith-based organizations to develop materials at a range of literacy levels or specifically geared to minority populations. Potential collaborative partners that could contribute to education on cancer risk and prevention and implementation of risk management guidelines, include cancer centers, community outreach offices, and PCP research networks. This discussion also expanded the topic of education and information dissemination to the PCPs themselves, to determine how they receive guidelines and recommendations for cancer prevention. The USPSTF recently developed discussion companion guides to support implementation of some of their clinical recommendations, to facilitate discussions between healthcare providers and their patients (10, 11).

The Roundtable participants also considered the need to incorporate an implementation science context into potential research opportunities, to perform investigations not limited to potential approaches, but also addressing acceptability (by all stakeholders), potential barriers and how to overcome them, and ways to maximize efficiency and effectiveness.

Discussion Session 2: Cancer Prevention Interventions for Risk Reduction

Beyond surgical interventions, there are several cancer prevention interventions for breast cancer risk reduction currently in clinical use, including estrogen receptor modulators (SERM) and aromatase inhibitors (12–14). Uptake of these interventions has been limited, in part due to low acceptability and adherence among candidates (15–17). Because uptake of interventions is associated with physician recommendation (15, 18, 19), this discussion session focused

on the role of PCPs in understanding and recommending cancer prevention interventions to high-risk patients.

Challenges

The Roundtable participants discussed many systems-level challenges (healthcare and societal factors) that affect both providers and patients with respect to uptake of cancer prevention interventions, such as the barrier associated with patient reluctance and adherence. In addition, many patients, even those at high risk, do not see their PCPs until they have an urgent need or an emergency. Together with the fact that some screening guidelines are changing to become less frequent (e.g., cervical cancer screening; <https://www.cancer.gov/news-events/cancer-currents-blog/2020/cervical-cancer-screening-hpv-test-guideline>), there are missed opportunities for PCPs to provide assessments and recommendations related to cancer prevention interventions. It is also imperative to consider the social determinants of health that pose a barrier for patients to regularly visit their PCPs. Finally, participants in the Roundtable acknowledged that there are varying degrees of comfort and knowledge related to cancer prevention interventions among providers, which provides a challenge for incorporating cancer prevention interventions beyond screening as part of primary care.

Potential research opportunities

Similar to the opportunities that emerged during Discussion Session #1 above, research opportunities that were discussed focused on approaches to improve education and dissemination of health information to the general population as well as to individual communities. One predominant challenge that needs to be continuously addressed to overcome barriers relates to understanding the social determinants of health, including access and other disparities (20). NCI has funded grants that study community interventions related to cancer screening and improving physical activity in settings such as barbershops and churches. These studies could be evaluated and expanded to include intervention education on a larger scale. Another potential research focus could include the use of social media to educate and engage high-risk individuals to seek out cancer prevention options from their PCPs.

The discussion also included determining what mode(s) of information dissemination would be most effective for providers, and how this information could be best incorporated into the PCP workflow. There was also discussion of shared decision-making approaches, which promote informed decision-making based on patient values, with respect to cancer screening and prevention intervention. Shared decision-making to get patients engaged in their management has been shown to improve adherence in some diseases such as asthma (21), while in cancer treatment the results have been variable (22–24). There is an ongoing study to determine shared decision-making tools can improve delivery of cancer prevention (25). These types of

studies provide a unique opportunity to investigate the kind (s) of decision approaches that would best improve cancer prevention delivery in primary care.

Discussion Session 3: Electronic Health Records/Electronic Medical Records

An electronic health record (EHR) is a digital system that records and maintains a patient's coordinated health information, allowing it to be updated in real time and shared with other providers. Clinics that use EHR systems benefit from more efficient coordinated care including pharmaceutical prescriptions, greater ability to diagnose diseases and improved patient safety and outcomes (26). EHR systems provide different functions, including decision support, patient education, automation of key functions like risk assessment, etc. While EHRs provide an opportunity to implement cancer prevention practices within primary care, incorporation of cancer prevention beyond routine screening, vaccinations, and smoking cessation has been limited despite indications that EHR data could be useful in patients with risk factors for certain cancer types (27).

Challenges

Roundtable participants described the value of existing algorithms/modules within their EHR systems; however, a major challenge remains in that most EHR modules are not standardized and are not necessarily made available to all users. While healthcare systems may develop specific functions to be used by their own providers, these modules cannot be shared or transferred between organizations. Furthermore, navigating through EHR data and becoming proficient in the various modules requires training which, added to the other demands and expectations of providers, leads to provider fatigue and potential burnout (28, 29).

Potential research opportunities

Discussion related to EHR was categorized into ways to improve EHR integration, improve provider/practice use of EHR for cancer prevention, and improve access/data input into EHR by patients. Potential research studies that were identified included a better understanding of how EHR modules are used in different types of healthcare settings and how effective these modules are at integrating healthcare management into primary care workflow. In addition, it would be valuable to determine what modules exist that relate to cancer prevention and how effective they have been. As previously described, shared decision-making could be valuable to improve delivery of cancer prevention approaches (25); another potential research opportunity could be to study of how EHR supports key functions of shared decision-making, such as providing standardized ways of conveying information about the benefits and risks of preventive interventions, and assessing patient preferences/values.

It is important to better understand what methods (e.g., incentives, automated programs, etc.) improve provider completion of key clinical tasks and how well providers are completing health maintenance questionnaires within the EHR system. Furthermore, research studies could examine the most effective methods for training providers/practices to incorporate EHR into their workflow, particularly as EHR modules and information are updated regularly. It would also be of value to determine the differences in cancer prevention outcomes between practices based on degree and methodology of EHR use. For these research questions, potential collaborative partners could include Centers for Medicare & Medicaid Services (CMS), as well as NCI- and NIH-supported programs such as NCI-Designated Cancer Centers (<https://www.cancer.gov/research/infrastructure/cancer-centers>) or the All of Us Research Program (<https://allofus.nih.gov/>), which could potentially provide data from a large number of healthcare systems.

The effectiveness of EHR also relies on patient portals, which enable patients to provide their own health information and thereby provide alternative means of engaging and educating patients in their health management. Potential research questions related to patient use of EHR include determining the accuracy of patient recording of personal and family medical history, as well as lifestyle behaviors, and how this information affects risk assessment and patient care. In addition, it would be interesting to study patient reminders and incentives related to EHR and whether they are effective at improving cancer screening and prevention. Similarly, would designating a confidential user for a patient's EHR (e.g., a spouse or other family member) improve patient adherence to screening reminders? This last potential research question also speaks to the importance of improving access to EHR among different patient populations—how can EHRs be made more accessible to older patients, lower income populations, or non-English speakers? Finally, it is important to better understand where patients gather health- and medical-related information, and the best approaches to get evidence-based information highlighted/prioritized in online search results.

Discussion Session 4: Patient Engagement and Information Dissemination

One of the main factors influencing uptake of cancer preventive approaches is the degree and accuracy with which a patient is informed of their risk and their preventive options. With essentially unlimited access to evidence-supported information as well as misinformation, providers have greater expectations to engage their patients and provide appropriate resources and recommendations.

Challenges

Systems-level challenges related to patient engagement include reimbursement guidelines (including time-based reim-

bursement), as well as the already existing time constraints felt by PCPs, which only seem to increase as further expectations fall within their workflow (30, 31). While shared decision-making may be an effective approach for incorporation of cancer prevention (23), providers require training in all aspects of shared decision-making to implement the approach into their practice. Furthermore, shared-decision making is time-consuming, and difficult to implement in routine clinical care. One way in which primary care has been made more efficient for both providers and more accessible for patients was through telehealth visits, which became the norm during the COVID-19 pandemic and demonstrated high degrees of acceptability by both providers and patients (32). However, as more clinics open to in-person visits, restrictions on telehealth visits, including requirements that the provider and patient be located within the same state, have been reimplemented.

One major challenge that has emerged more recently involves patients' access to misinformation on social media. Informed patients play an active role in their cancer prevention options, particularly through shared decision-making with their providers. Misinformation may affect patient adherence/compliance with clinical guidelines/recommendations for health management, which has already been shown to carry limitations (33, 34).

Potential research opportunities

This discussion session centered on a variety of potential research directions related to a better understanding of how to engage patients and providers in cancer prevention practices. It would be valuable to determine best practices for communicating cancer prevention information to both providers and to patients. For example, could cancer prevention information and recommendations be disseminated to healthcare providers via organizations such as the American Cancer Society, NCI, or the USPSTF through a centralized portal?

For providers and healthcare clinics, potential research questions could study the effectiveness of team-based healthcare management. Because community outreach is an important aspect of patient engagement, this could include the involvement of patient navigators and community health advocates as part of the healthcare team. Could this type of team-based healthcare improve patient adherence to cancer prevention approaches? The discussion also centered around evaluation of provider training and education; for example, does attending continuing medical education (CME) courses related to cancer prevention improve a provider's understanding and improve integration of cancer prevention into their workflow? In addition, similar to the other discussion sessions, the topic of shared decision-making was discussed related to whether providers are adequately trained to engage in shared decision-making for cancer prevention, and whether shared decision-making would be valuable for incorporation of cancer prevention in the primary workflow. Of note, NCI has funded grants to study the use of decision support tools by primary care providers and women at high risk for breast cancer to assess

and choose the most appropriate chemoprevention options (<https://clinicaltrials.gov/ct2/show/study/NCT04496739>).

In terms of engaging patients, research questions could focus on the best incentives for patients to comply or follow-up with recommendations/referrals from their providers. Studies have shown that race or ethnicity concordance between a patient and a provider is associated with seeking healthcare and better outcomes (35); does this association also exist for cancer preventive care? The Roundtable participants also discussed the importance, and challenges, of engaging minority and understudied populations not just in their own health management, but also in the research studies that result in preventive recommendations in order to ensure that the data accurately reflect the health landscape within these populations.

Summary and Future Directions

The overall goal of this Primary Care Roundtable was to identify and explore barriers to, and research opportunities for, implementation of cancer prevention within primary care. The discussion focused on issues related to cancer risk assessment/management in high-risk individuals, cancer prevention interventions, EHRs, and patient engagement/information dissemination. The Roundtable participants discussed system-level challenges, including the healthcare system as well as societal factors. Inconsistent and ever-changing clinical guidelines, coupled with time constraints and nonstandardized information, represent a major barrier to effective delivery and implementation of cancer prevention within the primary care workflow. Social determinants of health, particularly in minority and underserved populations, are important factors that influence patients' knowledge, attitudes, and adoption of recommended preventive interventions. Shared decision-making is an essential clinical service that can also ensure that cancer prevention interventions are implemented in a manner that respects patient autonomy. Research studies are still needed to determine the best means for implementing some of the topics discussed in this Roundtable across various communities and clinical settings. Additional studies are needed to develop tools that can help providers collect clinical data that can enable them to assess patients' cancer risk, and to implement appropriate preventive interventions. Improved implementation of cancer prevention in primary care would also contribute towards the objectives of the Health People 2030 initiative, including increasing the

proportion of people who discuss interventions to prevent cancer with their providers, increasing the proportion of females at increased risk who get genetic counseling for breast and/or ovarian cancer and increasing the proportion of people with colorectal cancer who get tested for Lynch syndrome (<https://health.gov/healthypeople>).

These discussions reveal the importance of engagement between cancer prevention researchers and PCPs to advance the field. The NCI Community Oncology Research Program (NCORP) recently published a report on the establishment of The Primary Care Alliance in Research Trials Involving NCORP Sites (PARTNRS), to work towards improving participant accrual to NCORP-supported cancer prevention trials (36). In response to the needs identified in this Roundtable, the NCI Division of Cancer Control and Population Sciences (DCCPS) and DCP have formed a Primary Care Working Group to address the challenges within the field. The goal is to develop and facilitate appropriate opportunities that are within the scope of the NCI, such as research and collaborations to address and overcome at least some of these barriers. As this initiative continues, NIH funding opportunities (<https://grants.nih.gov/funding/searchguide/index.html#/>) and funded grants (<https://reporter.nih.gov/>) can be searched to determine research opportunities that are being supported by NIH towards the goal of improving implementation of cancer prevention within primary care.

Authors' Disclosures

J. Douglas reports other support from ICF during the conduct of the study. No disclosures were reported by the other authors.

Disclaimer

Opinions expressed by the authors are their own and this material should not be interpreted as representing the official viewpoint of the U.S. Department of Health and Human Services, the NIH, or the NCI.

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