National Institutes of Health Pathways to Prevention Workshop: Achieving Health Equity in Preventive Services June 19–20, 2019

Panel Report

Research Recommendations To Reduce Health Disparities in the Use of Effective Preventive Services: Shifting the Paradigm

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Introduction

Effective clinical preventive tests and interventions are now available for individuals at average risk for several health conditions, including some cancers, diabetes, and cardiovascular disease (Table 1). Expert groups such as the U.S. Preventive Services Task Force (USPSTF) have endorsed specific tests, intervals, and populations for testing in primary care. Guidance for community settings is issued through the Centers for Disease Control and Prevention's (CDC) The Community Guide.[1,2] Under the Affordable Care Act, preventive services with an A or B recommendation from the USPSTF can be obtained without incurring out-of-pocket cost to the individual, although these gains are not evenly distributed across U.S. states or in all current insurance plans. Despite guidelines and improved coverage, preventive services are still substantially under-utilized in the United States, resulting in delayed diagnoses and avoidable early mortality. Disparities in care utilization and outcomes have been documented for decades,[3] and disproportionately affect racial and ethnic minorities, residents of rural areas, and the poor. This is an issue of which we as a society should be ashamed and, more importantly, called to take action. On June 19 and 20, 2019, the National Institutes of Health (NIH) convened the Pathways to Prevention Workshop: Achieving Health Equity in Preventive Services to consider the status of research to reduce disparities in preventive services, areas in which these

methods could be improved, and research needs for advancing the field. The workshop was co-sponsored by the NIH Office of Disease Prevention; National Institute on Minority Health and Health Disparities; National Cancer Institute; National Institute of Diabetes and Digestive and Kidney Diseases; and National Heart, Lung, and Blood Institute. A multidisciplinary working group developed the agenda, and the Oregon Health & Science University Evidence-based Practice Center prepared a systematic evidence report that reviewed the literature and methods used for evaluating interventions to reduce disparities in the receipt of preventive services in at-risk populations.[4] During the workshop, there were presentations by experts, stakeholders, and the public; onsite and online participants asked questions and commented during open discussions. After considering the Evidence-based Practice Center (EPC) Report and the workshop proceedings, an independent panel prepared and revised a draft report after public comment.

The key questions guiding the workshop and the evidence review did not evaluate the extensive literature regarding the identification of disparities in use of preventive services. While we acknowledge that work, our focus was on improved research to address gaps in care and health.

The systematic evidence review identified a relatively modest literature meeting inclusion criteria regarding intervention studies to reduce disparities. Multiple studies demonstrated improvement in screening rates among at-risk populations, but it was often unknown whether the intervention reduced the disparity (gap) between the majority and minority groups. Studies to date have focused on a limited number of conditions and populations; in particular, many more studies have addressed ways to reduce colon cancer screening disparities than any other preventive service. More research is needed in other clinical areas, such as effective cardiovascular disease and diabetes prevention. We note that multiple studies are underway, funded by the NIH, Patient-Centered Outcomes Research Institute, and others, that address

appropriate screening in at-risk populations, such as the AHRQ EvidenceNOW program focused on cardiovascular disease prevention, or lung cancer screening and the activities of the NIH PROSPR consortium.[5,6]

This panel report summarizes the workshop, identifies research gaps, and provides recommendations for further enhancing the methodological rigor of research. The recommendations are organized around the workshop's five key questions: (1) barriers to preventive services attributable to providers, (2) barriers to populations adversely affected by disparities, (3) effectiveness of patient-provider interventions, (4) effectiveness of health information technology interventions, and (5) effectiveness of health system interventions. The panel also identified three cross-cutting themes: (1) community engagement and systems approaches, (2) integration of services and new delivery models, and (3) need for innovative methodologies. These themes are essential considerations for achieving the goal of generating useful evidence for decision making by providers, health systems, and the public health community. Recommendations related to the cross-cutting themes and the key questions are summarized in Table 2.

1. Cross-Cutting Themes and Recommendations

The importance of attention to social determinants of health was emphasized in the systematic evidence review and by workshop speakers, as was the need for innovative methods to enhance practice and future research applied to multiple conditions that are candidates for preventive services. While approaches regarding individual services provide insight into outcomes for identified populations, the system issues tied to social determinants of health that underlie disparities in preventive service use must be more fully addressed if health equity is to be achieved.[7] While the effects of social determinants are readily apparent to practitioners, most clinical care systems are not currently configured to address them. Health equity, when "everyone has a fair and just opportunity to be as healthy as possible...requires removing

obstacles to health such as poverty, discrimination, and their consequences, including powerlessness and lack of access to good jobs with fair pay, quality education and housing, safe environments, and health care."[8] Changing these underlying social determinants of health will require sustained, cross-sector collaborations. The panel identified three cross-cutting themes that can enhance future research across multiple areas addressed by the workshop.

1.1. Theme 1: Community Engagement and Systems Approaches

Promoting health equity in the delivery of clinical preventive services cannot be separated from the community in which it takes place. High quality clinical care may have the power to reduce some disparities in health outcomes, but is unlikely to eliminate them due to the tremendous impact of the social determinants of health that exist outside of clinical care settings.[9] The panel notes that even "free" preventive services can be disproportionately costly to those who are low income or isolated due to transportation and child care costs, lack of sick leave, lost earnings, etc., and thereby perpetuate disparities. Addressing social determinants of health requires collaborative partnerships with entities outside of the clinical care sector.

Co-creation of evidence-based strategies should be encouraged via partnerships with stakeholders, to promote research and practice aimed at improving access to and utilization of preventive services in underserved communities. Providers at the usual points of care (including Federally Qualified Health Centers, free and charitable clinics, and Indian Health Service) can leverage community assets that include the active engagement of researchers, primary care providers, community health workers, businesses, schools, and other local stakeholders and community members.[10]

Recommendations:

1.1.1. Conduct studies that describe community contexts in which interventions take place, characterize the at-risk population that is the subject of the intervention, indicate

the types of stakeholder engagement in the intervention, and utilize standard descriptions.

1.1.2. Collaborate with community organizations that address social determinants of health and local preferences, and document so as to aid replication.

1.1.3. Identify mechanisms for addressing cross-cutting, underlying social determinants of health that contribute to unequal access to and delivery of services, especially upstream social determinants.

1.1.4. Seek out cross-sector collaborations when designing interventions to address disparities that incorporate the clinical care system, public health, and community-based organizations.

1.2. Theme 2: Integration of Services and New Delivery Models

The systematic evidence review primarily identified single-component interventions aimed at a single preventive service. While such studies are useful for initial testing of interventions, multi-component interventions (reminders, technology tools, financial incentives, training, etc.) may provide more benefit. Several workshop presentations included examples of bundled services or practice models that permit implementation across a range of preventive services. Studies and strategies that address interventions for multiple conditions are needed in order to promote value in resource use. However, some types of preventive services are more continuous (blood pressure monitoring) and others are quite discrete (periodic cancer screening); research is needed to determine ways of "bundling" across diverse interventions**.** Evidence from the systematic evidence review and workshop speakers supports the effectiveness of utilizing non-clinician individuals to facilitate the ordering, completion, and follow-up of preventive services in collaboration with clinicians. A variety of labels were used for these individuals (care assistants, community health workers, navigators), and a variety of employers were noted, including clinical care systems and community-based organizations.

More research is needed to document the workers' training and work processes, so that successful interventions can be adapted and replicated. Health services research should test financially sustainable models to support these activities.

Recommendations:

1.2.1. Utilize process evaluations of navigation and community health worker services to increase understanding of the most effective and efficient components of navigation services.

1.2.2. Develop and test navigation that is not test- or disease-specific for bundled preventive services across several conditions or tests.

1.3. Theme 3: Need for Innovative Methods

Research should be directed toward identifying cross-cutting principles that can then inform preventive services to reduce disparities and promote health equity more broadly. In addition to randomized controlled trials conducted at the level of the individual, research methods appropriate for understanding complex clinical and social systems and processes should be encouraged. Preventive services to reduce disparities and promote health equity can be enhanced by a variety of methods including systems science, pragmatic trial designs such as step-wedge methods, implementation research, modeling (concept mapping, systems dynamics, etc.), economics, community-based participatory research (CBPR), and quality improvement. The use of these methods will require development of new metrics to assess disparities, barriers, and health equity.

Recommendations:

1.3.1. Conduct studies in settings where at-risk populations are commonly treated, utilizing pragmatic trial and implementation science designs.

1.3.1.1. Build financial and staffing sustainability considerations into these studies.

1.3.2. Develop and utilize efficient process measures of the quality of patient-provider interaction and communication, informed decision making, and decision quality to inform provider-patient discussions of preventive services.

2. Key Questions and Recommendations

2.1. Key Question 1: What is the effect of impediments and barriers on the part of providers to the adoption, promotion, and implementation of evidence-based preventive services that contribute to disparities in preventive services? Which of them are most common?

The systematic evidence review found no published literature meeting the inclusion criteria to address this question. Workshop speakers described multiple provider-specific variables important in determining if specific preventive services are offered to an individual and completed. Some of these variables include provider age, gender, communication and practice style, profession (physician assistant, nurse practitioner, physician), specialty, knowledge about and attitudes toward preventive services, cultural competency, cultural humility, effective use of language translation services, and familiarity with the community. Workshop speakers discussed team approaches to care as well as systems that are built to facilitate the use of preventive services. These include electronic health records that produce patient and provider reminders and provide provider feedback. How providers respond to performance feedback, financial and other incentives are potentially important provider-specific variables that may affect outcomes.

Evidence exists to support some of the interventions designed to increase use of the preventive services discussed at the workshop. For example, the Community Preventive Services Task Force (CPSTF) recommends the following effective interventions for improved use of cancer screening tests: providing clinicians with assessment and feedback, creating

provider reminders, providing clinicians with performance incentives, and promoting informed decision making.[11]

Recommendations:

2.1.1. Develop standard definitions and metrics of "provider barriers and impediments" and research to assess their impact on the adoption and promotion of evidence-based preventive services specific to at-risk population groups.

2.1.2. Conduct research investigating the effect of investing in new health workforce training approaches for reducing bias related to patient interactions around preventive services, and the effect of such interventions on health disparities.

2.2. Key Question 2: What is the effect of impediments and barriers on the part of populations adversely affected by disparities to the adoption, promotion, and implementation of evidence-based preventive services that contribute to disparities in preventive services? Which of them are most common?

Framed by its inclusion criteria, the evidence review included a narrow range of studies, and these showed income, insurance coverage, and country of origin as having effects on screening disparities. However, the results were mixed in terms of directionality, likely a function of the high heterogeneity of the studies, their settings, and the different outcomes reported. Research on the role of insurance was described as mixed, although reviewed studies did not compare insurance with no insurance. The panel recognizes that insurance coverage of effective preventive services is essential to their appropriate utilization. A number of issues were raised that could enhance understanding of impediments and barriers. For example, smoking use patterns can vary by population group (for example, higher use of e-cigarettes among sexual and gender minorities than among immigrants), suggesting that interventions should be tailored to specific risk behaviors. In addition, responses to interventions can vary based on a community's history, such as a lack of trust in medical care systems. In addition, intersectionality was noted as an important consideration, as different and overlapping aspects

of discrimination are experienced on the basis of membership in multiple marginalized populations. Interventions often need to be tailored to be effective among sub-populations.

While the individual studies described in the systematic evidence review and by workshop speakers provided insight into risk factors and outcomes for identified populations, larger system issues are as yet not well understood, especially as they might impact disparities in preventive services. The role of intersectionality, for example, is poorly understood, undermining efforts to identify specific actionable social determinants of health.

Recommendations:

2.2.1. Conduct broadly implemented intervention studies that are sufficiently large to allow heterogeneity of treatment effect analyses for individuals at risk for under-use of preventive services, and that allow for assessments of the combined associations of the above factors (intersectionality).

2.2.2. Conduct research to improve delivery of preventive services in populations with low health literacy, especially populations that have not been previously reported in the literature.

2.2.3. Identify social barriers to preventive services in care systems and broad community characteristics that facilitate or hamper utilization of services.

2.3. Key Question 3: What is the effectiveness of different approaches and strategies between providers and patients that connect and integrate evidence-based preventive practices for reducing disparities in preventive services?

As previously noted, most of the reviewed trials and cohort studies addressed cancer screening as opposed to preventive services for cardiovascular disease or diabetes. In most cases, some form of navigation or personal support to individuals increased screening rates in populations facing disparities. Research also examined printed and/or mailed reminder

materials, but these interventions had mixed results for the populations studied. Workshop speakers highlighted strategies they had found effective in reducing screening disparities, including use of shared decision-support and proactive use of checklists.

The systematic evidence review and workshop presentations described relatively "high touch" interventions. Navigators, community health workers, and lay health advisors were characterized as important to bridge the gaps in care for marginalized populations. It was not clear how these staff and their roles are unique from one another, how they might be most effectively used to promote health equity, and whether one person can bridge the gap across multiple health needs for an individual patient.

Recommendations:

2.3.1. Conduct research to test organizational and management interventions that may enable clinician leaders and practice managers to effectively implement disparity-reducing interventions.

2.3.2. Conduct research to support clinicians and systems in prioritizing preventive services for each individual. This could include EHR support or use of shared decision-making tools based on potential health benefits and value that can be tailored to specific clinical settings as well as for individuals.

2.3.3. Develop portable and adaptable decision-making tools to engage patients in preventive services across settings and conditions. Identify which types of tools are appropriate for which types of services. Determine if these tools can be used by allied health professionals or trained community health workers.

2.3.4. Conduct methods research to identify the outcome measures that are most appropriate for assessing bundled approaches to preventive services. These could include decisional quality, health literacy, patient adherence, and patient-provider communication.

2.3.5. Develop and evaluate the impact of patient education and shared decision-making tools on disparities; this work can be conducted in collaboration with third party vendors and then integrated into clinical workflows, capitalizing on EHR data.

2.4. Key Question 4: What is the effectiveness of health information technologies and digital enterprises to improve the adoption, implementation, and dissemination of evidence-based preventive services in settings that serve populations adversely affected by disparities?

The panel noted the intense interest in utilization of health information technologies (HIT) to remedy disparities in preventive services use. The systematic evidence review revealed a paucity of studies that have specifically addressed use of HIT to improve disparities, although many system-level interventions had a component of information technology such as providing reminders and patient educational materials. Several workshop speakers noted that the potential benefits are great, but also cautioned about the need for substantial upfront investment, the importance of collaboration with the intended users, and the risk of unintended harms from indiscriminate deployment of technology without adequate testing.

While the existing literature on the effects of HIT interventions on disparities is mixed, workshop speakers felt this rapidly developing area has substantial promise. Concerns regarding a "digital divide" in which at-risk populations lack access to information technologies have been attenuated due to widespread use of smartphones and messaging. Clinical care systems have not caught up with the public, though, and need to modify their communication practices to better engage patients. Workshop speakers emphasized the importance of the "human touch" in successful HIT programs. HIT interventions should not be viewed in isolation, but rather as one component of systems interventions to enhance utilization of preventive services.

Many studies on the use of HIT in addressing health disparities are derived from interventions targeting single conditions, often at a single site. We know less regarding the most appropriate role of HIT in multi-condition interventions. While initial enthusiasm for HIT focused on prompts and reminders embedded in the EHR, concerns were raised about reduced efficacy of such prompts as they proliferate ("prompt fatigue"), indicating the need to consider how to better utilize HIT within the health care ecosystem. EHRs are now adding social determinants of health information, which should be standardized when appropriate. Communication of test results to patients is becoming common, but interpretation should be accompanied by clear explanations and proper context. Additional research can assist in identifying best practices in closing the information loop between patients and providers.

Recommendations:

2.4.1. Fully embed HIT studies in the health care system. Ensure that their relationship to other components of systems interventions, such as provider education or patient navigation, is sufficiently described so as to allow replication. Testing intervention effectiveness may involve alternatives to traditional randomized trials.

2.4.2. Document the process of fielding HIT interventions, as it is critical for the clinical community to understand the time, personnel, and infrastructure required for implementation. Interventions should be informed by engagement with stakeholders documenting the mode of communication (email, portal, smartphone, text, etc.) as well as the frequency of contact, language used, and other factors.

2.4.3. Develop methods for assuring that HIT technologies used outside the EHR have capacity to transfer information back to EHR systems, including interoperability across health systems. Early phase studies may not need to close this information loop, but full implementation should include this step.

2.4.4. In current and future HIT-related research, conduct analysis of large EHR-derived and other databases in order to more accurately identify individuals in need of intensive outreach and navigation. Artificial intelligence (AI) techniques may be particularly useful in this context. Such interventions should be well-documented and monitored for unintended consequences of worsening disparities through misclassification of patients or bias included in such models, as well as the potential for creating distrust among stakeholders.

2.5. Key Question 5: What is the effectiveness of interventions that health care organizations and systems implement to reduce disparities in preventive services use?

The systematic evidence review identified a relatively extensive body of studies on patient navigation, education, reminders, and checklists implemented at the clinical care system level, particularly for cancer screening. Most, but not all, studies addressed not only the completion of the screening test, but the critical follow-on diagnostic testing or care to treat disease. The review found most of these interventions to be effective. No studies of organizational structure and function were identified. Workshop speakers augmented the review by describing how integrated systems of care are well-positioned to efficiently deliver clinical preventive services, prioritize and organize activities, and build performance management systems. By bundling the payment for services and use of navigators or community health workers, health care teams or systems can more efficiently deliver services to those most in need. Clinical care systems can address individuals' social needs (and inequities) by incorporating social data into health records and then use this information to guide care, including referring patients to needed community-based social services.

Many of the critically important system-level needs for reducing health disparities on a population level are discussed in the sections above regarding over-arching needs and will not be repeated here. Health systems need to move from a primarily disease- and individual-

oriented framework to one that focuses on health improvement, healthy living conditions, and care for populations living with multiple chronic diseases within a geographic area or with common characteristics and needs.

Recommendations:

2.5.1. Conduct research to test methods for identifying and reaching out to people seeking care (for example, at urgent care clinics) who are in need of clinical preventive services but have not been engaged in a system of care, ensuring access to care for everyone.

2.5.2. Conduct research to determine if the success in improving utilization of preventive services for cancer in at-risk populations can be replicated for other conditions.

2.5.3. Conduct studies on how to sustain inter-institutional partnerships focused on increasing the use of preventive services across primary care and integrated delivery systems, including sharing of information, educational initiatives, and the inclusion of non-traditional providers.

Conclusions

While progress has occurred in some areas, disparities in preventable health conditions in the United States have often been resistant to simple interventions. Lessons learned from the systematic evidence review and workshop proceedings reinforce the recognition that progress will require inclusion of interventions that are multi-component and engage stakeholders both within and outside of the clinical care system: administrators, payers, the public health system, community-based organizations, and the public. The panel is heartened by advances in research methods including implementation science, the increasing availability of interoperable data, and better approaches to engaging stakeholders. Enhancing these research tools, with the

support of partnerships as well as funder initiatives, must occur in a concerted and sustained fashion in order to make progress in eliminating disparities in preventable conditions for our nation.

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Table 1. Preventive Services Included in the NIH Pathways to Prevention Workshop

Preventive Service	U.S. Preventive Services Task Force Grade	Year of Most Recent Recommendation
Abnormal blood glucose and type 2 diabetes mellitus screening in adults aged 40 to 70 years who are overweight or obese	B	2015
Aspirin use to prevent cardiovascular disease (CVD) and colorectal cancer in adults aged 50 to 59 years with a ≥10% 10-year CVD risk: preventive medication	B	2016
Breast cancer screening in women aged 40 to 49 years* and 50 to 74 years**	C* / B**	2016
Cervical cancer screening in women aged 21 to 65 years	A	2018
Colorectal cancer screening in adults aged 50 to 75 years	A	2016
Healthful diet and physical activity for cardiovascular disease (CVD) prevention in adults who are overweight or obese and have additional CVD risk factors: behavioral counseling	B	2014
High blood pressure screening in adults aged 18 years or older	A	2015
Lung cancer screening in adults aged 55 to 80 years with a history of smoking	B	2013
Tobacco smoking cessation in adults: behavioral and pharmacotherapy interventions	A	2015
Obesity in adults: screening and management. Clinicians should screen all adults for obesity, and offer or refer patients with a body mass index of >30 kg/m^2 to intensive, multicomponent behavioral interventions.	B	2012

Table 2. Summary of Workshop Panel Recommendations for Future Research to Reduce Disparities in Preventive Services Utilization

Themes/Key Questions	Recommendations
1.1. Cross-Cutting Theme 1: Community Engagement and Systems Approaches	**1.1.1.** Conduct studies that describe community contexts in which interventions take place, characterize the at-risk population that is the subject of the intervention, indicate the types of stakeholder engagement in the intervention, and utilize standard descriptions. **1.1.2.** Collaborate with community organizations that address social determinants of health and local preferences, and document so as to aid replication. **1.1.3.** Identify mechanisms for addressing cross-cutting, underlying social determinants of health that contribute to unequal access to and delivery of services, especially upstream social determinants. **1.1.4.** Seek out cross-sector collaborations when designing interventions to address disparities that incorporate the clinical care system, public health, and community-based organizations.
1.2. Cross-Cutting Theme 2: Integration of Services and New Delivery Models	**1.2.1.** Utilize process evaluations of navigation and community health worker services to increase understanding of the most effective and efficient components of navigation services. **1.2.2.** Develop and test navigation that is not test- or disease-specific for bundled preventive services across several conditions or tests.
1.3. Cross-Cutting Theme 3: Need for Innovative Methods	**1.3.1.** Conduct studies in settings where at-risk populations are commonly treated, utilizing pragmatic trial and implementation science designs. **1.3.1.1.** Build financial and staffing sustainability considerations into these studies. **1.3.2.** Develop and utilize efficient process measures of the quality of patient-provider interaction and communication, informed decision making, and decision quality to inform provider-patient discussions of preventive services.
2.1. Key Question 1: What is the effect of impediments and barriers on the part of providers to the adoption, promotion, and implementation of evidence-based preventive services that contribute to disparities in preventive services? Which of them are most common?	**2.1.1.** Develop standard definitions and metrics of "provider barriers and impediments" and research to assess their impact on the adoption and promotion of evidence-based preventive services specific to at-risk population groups. **2.1.2.** Conduct research investigating the effect of investing in new health workforce training approaches for reducing bias related to patient interactions around preventive services, and the effect of such interventions on health disparities.

Themes/Key Questions	Recommendations
2.2. Key Question 2: What is the effect of impediments and barriers on the part of populations adversely affected by disparities to the adoption, promotion, and implementation of evidence-based preventive services that contribute to disparities in preventive services? Which of them are most common?	**2.2.1.** Conduct broadly implemented intervention studies that are sufficiently large to allow heterogeneity of treatment effect analyses for individuals at risk for under-use of preventive services, and that allow for assessments of the combined associations of the above factors (intersectionality). **2.2.2.** Conduct research to improve delivery of preventive services in populations with low health literacy, especially populations that have not been previously reported in the literature. **2.2.3.** Identify social barriers to preventive services in care systems and broad community characteristics that facilitate or hamper utilization of services.
2.3. Key Question 3: What is the effectiveness of different approaches and strategies between providers and patients that connect and integrate evidence-based preventive practices for reducing disparities in preventive services?	**2.3.1.** Conduct research to test organizational and management interventions that may enable clinician leaders and practice managers to effectively implement disparity-reducing interventions. **2.3.2.** Conduct research to support clinicians and systems in prioritizing preventive services for each individual. This could include EHR support or use of shared decision-making tools based on potential health benefits and value that can be tailored to specific clinical settings as well as for individuals. **2.3.3.** Develop portable and adaptable decision-making tools to engage patients in preventive services across settings and conditions. Identify which types of tools are appropriate for which types of services. Determine if these tools should be used by allied health professionals or trained community health workers. **2.3.4.** Conduct methods research to identify the outcome measures that are most appropriate for assessing bundled approaches to preventive services. These could include decisional quality, health literacy, patient adherence, and patient-provider communication. **2.3.5.** Develop and evaluate the impact of patient education and shared decision-making tools on disparities; this work can be conducted in collaboration with third party vendors and then integrated into clinical workflows, capitalizing on EHR data.

Themes/Key Questions	Recommendations
2.4. Key Question 4: What is the effectiveness of health information technologies and digital enterprises to improve the adoption, implementation, and dissemination of evidence-based preventive services in settings that serve populations adversely affected by disparities?	**2.4.1.** Fully embed HIT studies in the health care system. Ensure that their relationship to other components of systems interventions, such as provider education or patient navigation, is sufficiently described so as to allow replication. Testing intervention effectiveness may involve alternatives to traditional randomized trials. **2.4.2.** Document the process of fielding HIT interventions, as it is critical for the clinical community to understand the time, personnel, and infrastructure required for implementation. Interventions should be informed by engagement with stakeholders documenting the mode of communication (email, portal, smartphone, text, etc.) as well as the frequency of contact, language used, and other factors. **2.4.3.** Develop methods for assuring that HIT technologies used outside the EHR have capacity to transfer information back to EHR systems, including interoperability across health systems. Early phase studies may not need to close this information loop, but full implementation should include this step. **2.4.4.** In current and future HIT-related research, conduct analysis of large EHR-derived and other databases in order to more accurately identify individuals in need of intensive outreach and navigation. Artificial intelligence (AI) techniques may be particularly useful in this context. Such interventions should be well-documented and monitored for unintended consequences of worsening disparities through misclassification of patients or bias included in such models, as well as the potential for creating distrust among stakeholders.
2.5. Key Question 5: What is the effectiveness of interventions that health care organizations and systems implement to reduce disparities in preventive services use?	**2.5.1.** Conduct research to test methods for identifying and reaching out to people seeking care (for example, at urgent care clinics) who are in need of clinical preventive services but have not been engaged in a system of care, ensuring access to care for everyone. **2.5.2.** Conduct research to determine if the success in improving utilization of preventive services for cancer in at-risk populations can be replicated for other conditions. **2.5.3.** Conduct studies on how to sustain inter-institutional partnerships focused on increasing the use of preventive services across primary care and integrated delivery systems, including sharing of information, educational initiatives, and the inclusion of non-traditional providers.

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