Person-Centered Preventive Healthcare: Engaging in Challenging Conversations about Screening

Agency for Healthcare Research and Quality

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Engaging in Challenging Conversations about Screening

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Contents

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Public Availability Notice

List of Acronyms

AHRQ	Agency for Healthcare Research and Quality
AWV	annual wellness visit
CBO	community-based organization
CHW	community health worker
CPS	clinical preventive services
EHR	electronic health record
KII	key informant interview
PCP	primary care provider
PCPHC	Person-Centered Preventive Healthcare
TEP	technical expert panel
USPSTF	U.S. Preventive Services Task Force

Executive Summary

Executive Summary

Background

Clinical preventive services (CPS) strive to improve the quality and length of life through disease prevention or early-stage detection. In the United States, the U.S. Preventive Services Task Force (USPSTF) issues evidence-based CPS recommendations for primary care providers (PCPs).[1] Services with a grade A or B recommendation from the USPSTF are those PCPs should offer to patients who meet the age, sex, or risk factor criteria because evidence suggests that benefits of the service outweigh the harms. However, personalizing these population-based recommendations is difficult for individuals who may not benefit from them, such as those with poor health status or limited life expectancy These individuals may have competing health risks and may not benefit from some preventive services. Further, conversations about stopping screening for those who have aged out of a recommendation can be difficult.

Given this context, the Agency for Healthcare Research and Quality (AHRQ) commissioned this report as part of a larger Person-Centered Preventive Healthcare (PCPHC) project to explore strategies to address challenging conversations about stopping screening in individuals who may not benefit from screening because of competing health priorities or because they have aged out of the screening window. An environmental scan served as a launching pad for discussion with a diverse array of experts to enrich our knowledge of ongoing work and suggestions for future research in this area.

Methods

We conducted an environmental scan, facilitated a technical expert panel (TEP) meeting, and conducted key informant interviews (KIIs). The virtual TEP was recruited considering diversity with respect to discipline, race/ethnicity, geography, and organization type and was composed of eight clinician researchers, three health system representatives, and three patients/consumer representatives. We provided the TEP with the environmental scan to offer background. For the scan, we gathered information relevant to our specified guiding questions and synthesized the major findings into themes with examples. We also conducted four KIIs after the TEP meeting. The goal of this work was to synthesize data from across three sources (i.e., environmental scan results, TEP meeting transcript, and KII notes). To do so, we applied an iterative, inductive approach to identify patterns and overarching themes in the data.

Results

The delivery of person-centered screening to individuals who may not benefit, even from generally recommended services, faces challenges such as a strong pro-screening bias, distrust of providers and healthcare systems that introduce the idea of stopping screening. Experts identified strategies to support difficult conversations about stopping screening at the patient-provider and system level and offered potential approaches outside of the healthcare system. Experts recommended further work on strengthening the patient-provider relationship though empowering individuals to advocate for themselves and supplying communication supports like scripts to providers. Experts made clear that patient-provider communication does not occur in a vacuum and that changes are needed outside of a clinic visit to support difficult

person-centered discussions about screening. Modifying quality measures, aligning healthcare institution priorities, incentives, and messaging toward person-centered discussions of screening were common suggestions from experts. Although little evidence exists on interventions outside of the healthcare systems, experts emphasized the critical role that guideline developers, communities, and public health entities can play in supporting patient-provider communication about difficult topics like screening.

Discussion

Across a range of experts and findings from our literature scan, we identified several strategies that could be used at the patient-provider level, health system-related changes, and efforts outside of the healthcare environment. Prominent examples include development of communication skills to support shared decision making, leveraging the EHR to promote person-centered discussions, adapting quality measures to incentivize person-centered discussions, and engaging guideline developers to build a stronger scaffold to support difficult conversations about stopping screening. Evidence for many of these strategies, particularly at the system level and beyond, is limited but presents opportunities for further work to support person-centered discussions about stopping screening.

Section 1: Introduction

1. Introduction

Clinical preventive services (CPS) strive to improve the quality and length of life through disease prevention or early-stage detection. In the United States, the U.S. Preventive Services Task Force (USPSTF) issues evidence-based CPS recommendations for primary care providers (PCPs).[1] A grade A or B recommendation from the USPSTF suggests that PCPs should offer the service to individuals who meet the age, sex, or risk factor criteria. PCPs are then responsible for personalizing the USPSTF recommendations for the individual.

However, even for recommendations where the benefits outweigh the harms based on evidence, as is the case for USPSTF grade A or B recommendations, personalizing recommendations is difficult for some individuals. For example, an individual with poor health status may have increased short-term risks of colon cancer screening due to complications arising from the screening procedure or downstream invasive diagnostic testing.[2, 3] These individuals may not realize the net benefit of screening. Screening may also increase burden by adding procedure visits to the active management of multiple other health conditions in such patients.[4]

Older adults are another example of a population group who may not benefit from certain screening recommendations. Clinical practice guidelines recommend against routine cancer and non-cancer screenings in older adults for whom potential life expectancy may be shorter than the time to benefit for the specific screening.[5] Clinical considerations in screening recommendations are often presented in terms of life expectancy, such as those for colon cancer,[6] breast cancer,[7] and lung cancer[8] (see **Appendix A**). For example, older adults need a minimum of 5- to 10-year life expectancy to experience survival benefits from colorectal cancer screening or breast cancer screening.[9] As such, an individual with an estimated life expectancy of 1 year is less likely to benefit from these screenings and should discuss the balance of benefits and harms with their PCP.

Despite potential risk without benefit, rates of age-discordant or inappropriate screening remain high. According to the 2019 National Health Interview Survey, 54.2 percent of women older than 75 years are still screened for breast cancer with mammography. Excess screenings for older adults also present a cost burden. For example, since 1996, the USPSTF has recommended against cervical cancer screening for women older than 65 years who had adequate prior screening and are not otherwise at risk. However, in 2019, the expenditures on cervical cancer screening for the age group older than 65 years were more than $83 million, including more than $7 million for women older than 80 years.[10]

In this report commissioned by the Agency for Healthcare Quality and Research (AHRQ), we explore strategies that address challenging conversations about stopping screening as part of a larger project on Person-Centered Preventive Healthcare (PCPHC). We first conducted an environmental scan to provide an overview of the implementation strategies that can address challenges to discussing screening in individuals who may not benefit. The scan served as the basis for a meeting of a technical expert panel (TEP) to enrich our knowledge of ongoing work and expert opinion and provide suggestions for future research.

Section 2: Methods

2. Methods

In this section, we briefly describe the methods used to conduct this project. We provide a detailed description in the **Methods Appendix**.

2.1 Environmental Scan

The goal of the environmental scan was to provide the TEP members with the background to launch the TEP discussion. The scan was not a full systematic review; rather, it provided a broad overview of the existing literature to identify salient questions for the TEP. The scan involved the development of a scope with guidance from the USPSTF. We then formulated a guiding question to focus the search strategy. We searched three bibliographic databases from 2012 along with focused grey literature and website searches. Search terms included those related to stopping screening and USPSTF grade A and B preventive screening services. Thirty-three full-text articles were prioritized for selection and summary. We gathered information relevant to the guiding question and synthesized the major findings into themes with examples, highlighting evidence gaps. Bibliographic databases, specific search strategies, and a summary of the topic's scan findings are detailed in the **Methods Appendix**.

2.2 Technical Expert Panels and Key Informants

We formulated discussion questions for the TEP meeting based on the environmental scan, focusing on challenges and strategies aimed at patient, provider, and system levels, as well as suggestions for future work. We convened a TEP composed of eight research clinicians, three health system representatives, and three patient/consumer representatives, considering diversity with respect to discipline, race/ethnicity, geography, and organization type. The TEP met virtually for 3 hours using Zoom. We also used the XLeap virtual meeting platform during the TEP meeting to capture written responses to discussion questions and provide an additional forum to ensure that all TEP members had an opportunity to share their thoughts. After the TEP meeting, we conducted four key informant interviews (KIIs) to gather additional information about the topic. We selected KIIs based on TEP suggestions or names retrieved from our evidence scan. We conducted KIIs via Zoom using a semi-structured interview guide. The TEPs and KIIs were conducted between January 2024 and February 2024. The names and affiliations of persons who participated are provided in **Table M.1**.

2.3 Synthesis of Information

The goal of this work was to synthesize data from across three sources (i.e., environmental scan results, TEP meeting transcript, and KII notes). To do so, we used an iterative, inductive approach to identify patterns and overarching themes in the data. Members of the project team with previous experience synthesizing data from qualitative sources (KS, VN, SR) individually reviewed the three data sources and then convened for discussion and consolidation of overlapping themes to reach a final consensus on the identified themes. The team then selected salient quotes to illustrate each theme. Finally, we identified suggestions for future actions to

support challenging conversations related to stopping screening in patients who may not benefit.

Section 3: Results

3. Results

The results section is organized around three overarching themes:

1. **Strengthening patient-provider relationships**
2. **Health system changes needed to support person-centered discussions**
3. **Approaches beyond the healthcare system**

From our discussions with TEP members and key informants (KIs) on the challenges and strategies aimed at patient, provider, and system levels, we identified three main themes around engaging in challenging conversations about stopping screening with individuals who may not benefit. Within each overarching theme, we identified subthemes supported by specific statements, examples, and illustrative quotes. For clarity, we refer to TEP members and KIs, including those representing the patient/consumer perspective, as "experts" in the sections that follow.

3.1 Strengthening Patient-Provider Relationships

The topic of stopping screening evokes complex emotions and passionate opinions about screening, including fear of missing a cancer diagnosis, to distrust of providers and the healthcare system. Experts offered several suggestions to improve communication about the emotionally charged topic of stopping screening.

3.1.1 Issues Involved in Screening Conversations

Pro-screening bias. Discussing stopping screening involves confronting an individual's mortality, a topic that many individuals and providers find difficult to confront and which providers may feel ill-equipped to discuss,[11-13] particularly in the face of the pro-screening bias permeating our society. Decades of national and local public health campaigns have advocated for disease prevention through screening action.[14] Many individuals screen without a second thought, especially when they have acquaintances diagnosed with a disease, and have no intention to ever stop screening.[15, 16]

> "Patients may not be aware of the idea of stopping screening since almost all public health campaigns are pro-screening; it can feel unexpected and strange."
>
> —TEP member

Fear. Fear powerfully factors into persistent screening despite potential lack of benefit and increased harms. Both patient and provider experts agreed that fear of missing a diagnosis drives patients to seek screening and providers to offer it. Both groups can have an unwavering belief that identifying any cancer is good and can identify a story of a family member, friend, or patient who developed

cancer in the absence of screening. One patient representative noted that harm is a relative concept: although providers may see false positive screens and potential downstream testing complications as harms, individuals may fear any undetected cancer and extensive follow-up tests with negative results can transform that fear into relief. From a clinician perspective, fears of lawsuits or damage to the patient-provider relationship may drive the clinician to provide screening for a patient.[13, 17-19]

Distrust. Broaching the topic of screening cessation can seed or propagate distrust of the provider or healthcare system among individuals. Concerns included provider abandonment, financial motivations to save money trumping patient care, or minimization of quality of life in favor of impersonal estimates of quantity of life, the latter of which were raised by the patient representative experts. Although the perception of having care taken away has been documented in de-implementation research,[20] minoritized populations that were historically denied access to equitable healthcare can experience the stopping of any care as discrimination. For example, one patient representative reported biases against persons with disabilities, such as assumptions of poor quality of life, resulting in denial of care.[21] One expert conveyed the resentment of Black women in one intervention, who viewed their opportunity to screen within the context of the civil rights movement and were resistant to give up healthcare services that were previously only available to White people. One researcher expert encountered mistrust of communities that do not feel represented by the evidence that underlie guidelines. Additionally, older individuals may fear being victims of ageism.

> "In some cases, I would say, this is more for the Black women…it was, 'If my provider told me to stop screening, I would just go get a second opinion, because clearly they don't know what they're talking about.' … [They] think about these ideas of 'we fought long and hard, and why in the world would we give that up?'"
>
> —Key Informant

> "You know, a fear of giving up—Like, 'Oh, I'm old, so you're giving up on me now that [I've turned] 75.' … Almost a fear of ageism.... That notion that you are cutting off care at a certain age just doesn't sit well with some people. They feel—I don't know if I go as far as to say discriminatory. Maybe perhaps in some cases they feel that way. But it just doesn't sit well with some people."
>
> —Key Informant

3.1.2 Strategies to Strengthen Patient-Provider Relationships

Experts suggested several interventions to approach difficult conversations about stopping screening. Although patient and provider education interventions aimed at improving knowledge represent one approach,[22-25] experts emphasized broadly improving patient and provider communication skills, rather than delivering topic-specific knowledge.

> "I know it's important to have [conversations about stopping screening] come from the clinicians, and they really need to be educated about it. But I'm just a little reluctant to put a lot of faith in how far we can go with that. I think it really is incumbent on us [former] patients to help newly diagnosed people to learn how to self-advocate."
>
> —TEP member

Patient empowerment. Patient representative experts highlighted the importance of patient self-advocacy skills to communicate in a patient-provider partnership for any issue. They suggested resources outside of the healthcare system, including peer networks, specific advocacy organizations,[26, 27] as well as the presence of a supportive person to help express individual preferences and values and encourage questions. Although family involvement was generally encouraged, one TEP member cautioned that the individual and family may have differing values and preferences, and the former should be placed front and center.

Reframing conversations about stopping screening. In general, experts recommended reframing stopping screening from a discrete decision about screening prompted by a letter from radiology or an electronic health record (EHR) alert to one component of an individual's overall care. Many individuals and providers favored emphasizing "health priorities" relative to screening, as is borne out in qualitative research[28] and panel consensus. As one expert said, presenting prioritizing treatment of more pressing medical issues as a substitute to screening could mitigate the concern of taking away care. Other suggestions included the use of life course messaging: presenting screening as an activity that begins and will eventually end, well before the trade-off between benefits and harms becomes murky. Some experts indicated that just introducing the idea of choice in screening may be an intervention, as many patients may not even recognize they have a choice to begin with.

> "It would be great to have a 'warning shot' that there may come a time when the harms of screening outweigh the benefits for a person in the media messaging so the conversation doesn't come out of the blue."
>
> —TEP member

Provider scripts. Provider scripts supply concrete examples of what to say when broaching the difficult conversation about stopping screening and were repeatedly mentioned. Experts cited resources such as ePrognosis-associated conversation guides,[29] materials from Vital Talk,[30] and Ariadne Labs.[31] One expert cited her work in developing specific discussion guides for breast and colon cancer screening discussions, offering brief and lengthier disease-specific scripts as well as scripts for approaching stopping screening through 1) a direct approach, 2) a focus on competing medical issues, or 3) a discussion about how harms can outweigh benefits.[32] In one qualitative study, both patients and providers agreed that scripts should encourage patients to express their feelings and allow for personalization.[32] Although the estimation of life expectancy, using tools such as ePrognosis, can help determine overall prognosis, both individuals and providers are wary of explicitly discussing life expectancy.[12, 13] Experts encountered indignant reactions from individuals who felt like providers were playing God and should not be giving estimates of life expectancy. Provider experts favored engaging in a discussion that was informed by life expectancy but not universally led by it. For example, focusing on time to benefit or actively listening for patients who might be more open to the topic may be strategies to personalize discussions.

> "Shared decision making doesn't mean anything if doctors don't know how to do it."
>
> —Key Informant

Shared decision making. Shared decision making is often cited as a tool for navigating decisions fraught with medical uncertainty, like decisions to continue or stop screening. Although the decision aid is often the engine of shared decision-making interventions,[33-37] both patient and provider experts indicated that the actual discussion of values and preferences was more helpful than the decision aid. One expert conducting community-based research elicited more information through a discussion with the patient rather than handing them a decision aid. She noted that individuals often benefited from having someone sit down with them for an extended period to walk them through the decision-making process before they could consider a specific decision.

> "Way more often, I encounter [a patient case] that's a closer balance of harms and benefits, and I feel like I need to weigh the patient's preferences—I don't know that there's an absolute right answer in those cases. Sometimes, when we talk about these topics, it's as if there's a threshold at which it's a right answer and a wrong answer. But there's a patient preference issue here that hasn't really been defined."
>
> —TEP member

The limitations of decision aids were also described in the literature and by experts. For example, one expert published studies of the discrepancies between the language of decision aids and the health literacy of specific populations.[38, 39] Experts advocated for tailoring decision aids and interventions to the community served to address the current lack of decision aids for diverse populations.[40, 41] One expert reported the need to substantially revise decision aids for cancer screening when they were tested with specific communities. Another expert's suggested educating nonclinical providers such as social workers, community health workers (CHWs), or patient navigators, who could expand the work force to engage in shared decision making, supporting "time poor" clinical providers. Several experts stressed the importance of setting aside personal biases about the clinical situation and never denying a screening test if receiving that care aligns with a patient's values. Furthermore, both patient and provider experts framed shared decision making as an ongoing conversation that might involve revisiting the screening decision or taking steps to de-intensify screening over time.[24]

> "It needs to start at the provider level by encouraging people [to ask questions]: Have you had all of your questions answered? Do you feel comfortable with the decision at this point?' And being able to come back and ask more later, or change your mind, and have another discussion."
>
> —TEP member

Dyadic interventions. The lukewarm reception of decisions aids, particularly by patient representatives, underscores how patients are often not included in developing tools meant to support patient-provider discussion, potentially limiting their usefulness. We identified some literature in our environmental scan that simultaneously examined individual and provider communication preferences,[12] though broader work on interventions targeting both parties were not retrieved.

3.2 Health System Changes

Experts underscored the need for health system changes to support person-centered discussions about stopping screening, especially in the setting of increasing provider burden in the primary care and the minimal to moderate impact of decision aids—the most prevalent individual level intervention—on screening rates.[33]

3.2.1 Incentivization of Person-Centered Discussions in Primary Care

The business case for stopping screening and the role of alternative payment models. Making the business case for system changes to support person-centered discussions is challenging for several reasons. The lack of financial incentives in the current fee-for-service payment model makes it difficult to incorporate person-centered care, noting that reducing unnecessary care is simply not a financial priority for healthcare organizations. As one expert

stated, “There is no incentive for health systems to stop screening.” Another expert questioned the cost-effectiveness of health systems to stop screening. For example, implementing resources and interventions to stop screening may or may not outweigh the costs of conducting the screenings, especially for underscreened populations.

Alternative payment models are becoming more attractive for the Centers for Medicare & Medicaid Services with its increased emphasis on at-risk contracting (e.g., value-based purchasing, accountable care organizations, the Medicare Shared Savings Program, and bundled payments). Some research has shown that alternative payment models may reduce low-value care in general,[42, 43] though one expert reported contradictory results in some of her own research on accountable care organizations.[44] This expert suggested that to make the business case for stopping screening, health systems must incorporate quality measures for inappropriate screening into accountable care organizations and other alternative payment models.

Modification of quality measures. Several experts suggested that modifying quality measures used for pay-for-performance could promote prioritization of stopping screening discussions, though few studies of quality measures promoting discussion or offering opt-out options were identified in the literature scan or by experts.[45, 46] Reducing screening incentives or making it easier to opt a patient out of screening would help support having conversations about stopping screening. Although some experts suggested that specific quality measures and incentives to *not* provide care could reduce unnecessary care, other experts, particularly patient representatives, were concerned that this strategy could lead to conflicts of interest (e.g., financial benefit for clinicians to deny services). Rather, both patient representatives and some other experts noted that the goal of quality measures should be to have meaningful discussions with patients about screening in the context of a trusted patient-provider relationship. Building a measure that rewards discussion rather than the screening may be one strategy to pursue.

3.2.2 Promotion of Patient-Provider Communication

Experts agreed that more readily available resources for providers can encourage and foster communication with patients about stopping screening.

Leveraging EHR systems to support challenging conversations. Existing clinical reminder systems tend to promote screening regardless of patient choice and often penalize providers for not performing screening.[45] Experts proposed that building decision support into EHRs would be beneficial for helping providers prioritize preventive care options tailored to an individual’s health and priorities. The EHR could incorporate life expectancy estimates, shared decision-making support, alerts if stopping screening is appropriate, and communication guides for providers. For example, in a small pilot study, information on life expectancy, payoff time, and a personalized benefit/harm assessment was built into the EHR reminder for colorectal cancer screening; the alert also made recommendations for or against screening.[45] In this study, PCPs were engaged with the intervention and preferred the inclusion of time to benefit in the alert when making decisions regarding colorectal cancer screening. Furthermore, the EHR tool made screening suggestions that were similar to patient-provider decision making in 9 of 10 patients. Another

expert cited a study where decision support delivered via EHR alerts to raise awareness of harms reduced low-value care compared with education.[46]

Support ongoing provider communication training. Although research shows that provider education on stopping screening and prognosis training improves provider knowledge and may change behaviors, the positive outcomes tend to wane over time, particularly for one-time trainings.[24, 32] Experts noted that systems currently lack reinforced training for providers regarding screening discussions, and a healthcare system commitment to ongoing training could further improve discussions about stopping screening.

> "I think it is very much the case that there's incentive to do more and to have these sort of clinical decision supports. [EHR alerts] are a blunt instrument saying everyone should get this."
>
> —TEP member

> "We had a curriculum for PCPs about life expectancy and incorporating that into cancer screening, how to counsel people to stop, and right after we showed that increased knowledge and self-efficacy to do these behaviors. But it went away after 6 months with no reinforcements. So there has to be institutional commitment to make it something that will be reinforced in other ways than a one-time course."
>
> —TEP member

3.2.3 Alignment of Institutional Priorities with Person-Centered Screening

Standardized Messaging. Experts repeatedly emphasized the need to standardize screening messages across the health system. PCPs do not always have the primary input on whether an individual is screened. Specialists may push for screening based on their specialty organization's guidelines, which may not align with primary care-oriented recommendations.

> "For example, from mammography, it's on primary care physicians to have these conversations [about screening] with women. But actually, breast radiologists are the people who really promote the screening directly and independently. So, bringing those people together has been actually something that we've been challenging within our healthcare system."
>
> —TEP member

One expert described an ongoing system-level intervention in her institution to find consensus on messaging, such as changing the default language on results that get returned to patients from specialty departments (e.g., radiology, post-colonoscopy, or pathology) to continue screening without qualification. Collaboration efforts have proved very challenging.

Investment in the annual wellness visit. The role of the annual wellness visit (AWV) elicited mixed views from experts. In 2011, Medicare introduced the AWV at no cost to fee-for-service Medicare beneficiaries.[47] Some clinician experts were concerned that the AWV was being used to push for all screening in the absence of true discussion. However, one expert cited her research on a possible modest decrease in low-value screening during AWVs.[48] The AWV may be an opportunity to engage in person-centered conversations about stopping screening.

3.3 Approaches Beyond the Health Care System

As one expert pointed out, not everyone has access to the healthcare system; interventions in clinical settings will simply miss many individuals who could benefit from person-centered conversations about screening. Experts suggested several strategies outside of healthcare delivery settings to support challenging conversations about stopping screening, considering public health departments, community settings, and guideline updates.

3.3.1 Public Health Messaging

Public health messaging was repeatedly discussed by patient and provider experts as a strategy needed to address the pro-screening bias of patients and providers. Although one expert reported their ongoing study of broader messaging about stopping breast cancer screening, most experts were unaware of public health campaigns for other common screenings in older adults. One expert illustrated the power of public health campaigns in the adoption of risk-reduction behaviors over time (e.g., seat belt use) and suggested that large advocacy organizations (e.g., the American Public Health Association) could come together and decide on messaging for stopping screening that could then trickle down to professional organizations, advocacy groups, and local communities. A model for this top-down strategy is the Choosing Wisely campaign.[49]

Several experts noted the need for prevention campaigns to highlight patient choice and the option of stopping screening in messaging because most people do not realize that screening is a choice. As conveyed by one expert, framing something as a choice and not a requirement was considered a foreign concept for most individuals.

> "Want to acknowledge that it's so hard to get this messaging right—also don't want to scare people away from appropriate screening … the public health messaging would ideally emphasize the conversation between patient and clinician, and that more [does not equal better]."
>
> —TEP member

One expert offered examples of alternative messages without bias, indicating that screening should be strongly considered by some individuals and that stopping screening could be considered by others. Another expert suggested that public health messaging on the harms of care following goal-discordant screening could help to counteract pro-screening messaging. Messaging could emphasize the notion that there might be a time when the harms of screening outweigh the benefits for an individual.

> "You could have a message like 'some people should screen, and some people should consider stopping—both are being healthy. Both are taking care of your body'."
>
> —Key Informant

An issue noted by several experts was the potential impact of public health messaging campaigns among populations that have historically lacked access to healthcare. Any public health messaging about stopping screening needs to ensure that it does not perpetuate discrimination against marginalized communities. To that end, some experts qualified that messages about stopping screening are too nuanced to consider as a population-level public health campaign and should be focused on the community level in trusted settings where they may be better received.

3.3.2 Interventions in the Community

Most research in the literature on conversations regarding stopping screening focuses on the clinic setting. Yet providers in clinic settings believe they have little time to engage in stopping screening discussions and many people do not have regular provider visits, which also limits opportunities for nuanced screening conversations. One expert discussed ongoing work to train alternative providers in the community setting who are not "time poor" like healthcare providers. These providers, including social workers, CHWs, and navigators, may have the better cultural and contextual understanding to support screening conversations.

Community-level interventions in trusted community-based organizations (CBOs) such as Black churches, community pharmacies, and senior centers may have a greater impact on screening decisions, especially for populations that have disproportionately lacked access to screening. One expert highlighted her work with specific communities in developing relevant decision aids and decision support, pointing to a need to collaborate with communities and CBOs.

> "There's a continuum around what [community engagement] looks like. At one end, it's something like talking to five patients about XY intervention and asking them, 'Well, what do you think about this? What else should we be doing?' All the way down to the sort of more full community-based participatory research where they're involved in every single aspect. But there's a continuum. And for me, I don't care where you are on the continuum—just be on the continuum."
>
> —Key Informant

CBO members may also have conversations with patients about stopping screening. As one expert noted, people tend to trust these organizations that are often embedded in the community. However, she said an ongoing challenge was facilitating transitioning the conversation back to a healthcare provider.

3.3.3 Robust Screening Guidelines to Support Conversations about Screening

Although healthcare providers rely on clinical practice guidelines to guide decision making about screening, guidelines often have variable information on harms or the trade-offs in benefits and harms for more medically complicated individuals.[50] One expert emphasized this point by reflecting that many doctors follow guidelines and there is not much information in guidelines about this topic. As discussed above, discrepancies between guidelines for different professional societies also cause confusion. Current screening guidelines also provide minimal information on how to communicate about screening for those individuals who may not benefit from screening.

Section 4: Discussion

4. Discussion

4.1 Summary of Findings

Consolidating expert input with scan findings, we identified three major themes (1) strengthening patient-provider communication, including reframing conversations about stopping screening to health prioritization and communication support for providers and patients; (2) making changes in healthcare systems, such as incentivizing screening discussions over screening rates, using the EHR to provide communication support in real time to providers, and aligning priorities with patient-centered screening through standardizing patient communications from the healthcare system; and (3) considering the role of organizations outside of the healthcare system, including public health messaging, empowering non-medical staff in the community to engage in conversations about stopping screening, and revamping guidelines.

Experts emphasized the need to broadly improve communication on all levels—for individuals, providers, healthcare systems, and public entities. Experts recommended empowering individuals, a focus on the discussion piece of shared decision making rather than a specific decision-aid tool, coordinated messaging among healthcare system stakeholders, and tapping into the power of public health and professional organization guidelines.

4.2 Future Directions

Experts pointed to the need for formative and intervention work on decision-making support at the individual level, including inviting underserved patient communities into the tool development process. Additionally, dyadic interventions, interventions simultaneously aimed at both patients and clinicians, could help keep both parties on the same page and promote mutually beneficial outcomes compared with interventions that focus only on providers or only on patients. Both of these individual level interventions could result in care tailored to unserved communities and improve patient-provider communication.

However, most expert suggestions for future work fell outside of the patient-provider interaction, implying that clinic-level interventions may be insufficient.[33] Suggested future work focused on implementation work within the healthcare system as well as outside it.

4.2.1 Healthcare System-Oriented Interventions

Several experts called for future research within healthcare systems in strategies support screening discussions. Proposed research included better understanding screening in minoritized populations, incorporating decision support into EHRs, studying the impact of revised quality measures and pay-for-performance measures, and investing in multicomponent interventions.

Screening in minoritized populations. Experts called for healthcare systems to study the impact of interventions on screening rates for different subgroups—including by age, race and ethnicity, and socioeconomic status—as well as the unintended consequences, including reduced appropriate screening in underscreened populations.

> ""[We need] a more systems-oriented approach that does not put more work on clinicians…[a strategy beyond the individual and provider] requires buy-in from leadership outside of the clinic."
>
> —TEP member

Quality measures. Several experts stated that EHR alerts are integral to the strategy of leveraging quality measures to improve decision-making and screening appropriateness. EHR alerts could (1) provide informational and communication support such as life expectancy estimates and scripts and (2) capture the impact of such alerts on stopping screening and possibly decision quality. One expert reported the need to validate modified quality measures.

Incentives. Experts were unaware of ongoing research on reducing screening by modifying pay-for-performance metrics to focus on screening discussion. Additionally, further study of the impact of alternative payment models could expand information on their role in promoting appropriate screening, as current research on the impact of different payment models on screening discussions is minimal.[42-44]

Multicomponent interventions. Across the literature and expert input, we identified suggestions for healthcare systems to invest in multicomponent interventions. Examples include combining provider training on communication, increasing patient education on the harms of screening, and implementing revisions to EHR alerts to promote discussion of stopping screening versus screening uptake. Ideally, experts suggested that multicomponent interventions could be grounded in an implementation framework like the Consolidated Framework for Implementation Research.

Consistent messaging. Studying the facilitators and barriers of specialty cross-collaboration within a healthcare system could inform future interventions on coordinated messaging on appropriate screening. One expert noted that stakeholders like business leaders in the health field, marketing experts who could introduce novel approaches to messaging, and technology professionals with expertise in technologies like artificial intelligence could bring novel and valuable insights on how to improve messaging about screening to reach a wider population.

4.2.2 Interventions Outside the Healthcare System

Experts recommended community contribution, guideline advancement, and professional organization collaboration as the focus for interventions outside of the healthcare system and provider office.

Community contribution. Community-based interventions that coordinate with the healthcare system may improve healthcare access. Some suggested interventions included EHR linkage between CBOs and healthcare systems facilitating connections from shared decision-making conversations with trusted community providers to providers who could continue the discussion and ultimately order screening or document reasons for not screening. Starting the discussion about stopping screening in a community setting by either licensed providers or CHWs could offset the time crunch experienced by providers as well as empower individuals to initiate screening discussions and engage in shared decision making. Furthermore, the results of community-based work may support institutionalizing CHWs and ensure funding beyond the time-limited period of grant funding.

Guideline advancement. Provider and patient experts stressed the importance of robust screening guidelines to support provider and patient discussion of stopping screening, by including more information about harms and communication. Primary research studies that collect more thorough data on potential harms and expand eligible populations to more medically complex patients are the starting point to more thorough guidelines. Experts suggested expanding the current work of the USPSTF[51] to include ways to directly communicate with individuals about this topic, embedding communication guides and scripts into the recommendation itself.

Professional collaboration. Finally, similar to striving for consensus among different specialty groups within the healthcare system, several experts reported the need for cross-collaboration between professional organizations to harmonize guidelines to reduce confusion for individuals. For example, the American College of Obstetricians and Gynecologists and the Society for Gynecology aligned their guidelines with the USPSTF in 2016 and 2023.[52]

4.3 Limitations

This report has several limitations. The environmental scan was intended to give a broad overview of strategies for stopping screening in individuals who may be unlikely to benefit. The definition of 'unlikely to benefit' was defined by the study authors and, consequently, there may be heterogeneity of the populations included in the scan (e.g., older age, poor health status). The scan is not a comprehensive systematic review of all the strategies, nor does it address all studies that have examined the impact or feasibility of these strategies. There may be ongoing efforts that are not included in the published literature or research protocols that are relevant to the scan's aim. The environmental scan did not include non-screening CPS such as vaccination, preventive medications, or behavioral counseling. Additionally, despite including terms for chronic disease screening, we did not identify any non-cancer screening studies. We also did not search for original papers published prior to 2012.

By design, we limited the TEP to 14 people and conducted four KIIs. Although we aimed for a diverse panel in terms of occupation, organizational affiliation, geographic location, gender, and racial/ethnic group, the input from the TEP and interviews cannot fully represent the diversity of opinions for clinicians, researchers, policymakers, payers, patients, or caregivers in the United

States. We strove to elicit the widest spectrum of input from participants, and as such, the comments expressed were not necessarily consensus views.

4.4 Conclusions

Stopping the delivery of person-centered screening to individuals who may not benefit faces several challenges such as a strong pro-screening bias and distrust of providers and healthcare systems that introduce the idea of stopping screening. Across a range of experts and findings from our literature scan, we identified several strategies that could be used at the patient-provider level, system-related changes, and efforts outside of the healthcare environment. Prominent examples include development of communication skills to support shared decision making, leveraging the EHR to promote person-centered discussions, adapting quality measures to incentivize person-centered discussions, and engaging guideline developers to build a stronger scaffold to support difficult conversations about stopping screening. Evidence for many of these strategies, particularly at the system level and beyond, is limited but presents opportunities for further work to support person-centered discussions of stopping screening.

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Appendices

Appendix A: Summary of Guidelines for Screening Recommendations

A.1 Guideline Recommendations by Age, Health Status, or Life Expectancy

Screening	USPSTF	Professional Society
Abdominal aortic aneurysm	Recommendation for general age group (*grade D*):[53] ▪ Against routine screening with ultrasonography in women who have never smoked and have no family history of abdominal aortic aneurysm (AAA). Recommendation for older patients *(grade B)*: ▪ One-time screening with ultrasonography in men ages 65 to 75 years who have ever smoked. Recommendation for medically complex patients *(grade N/A)*: ▪ Clinicians should consider the presence of comorbid conditions and not offer screening if patients are unable to undergo surgical intervention or have a reduced life expectancy.	Society for Vascular Surgeons[54] Recommendation for general age group: ▪ None. Recommendation for older patients *(grade A)*: ▪ One-time ultrasound screening in men or women ages 65 to 75 years with a history of tobacco use. Recommendation for older patients *(grade C)*: ▪ One-time ultrasound screening in men or women older than 75 years with a history of tobacco use and in otherwise good health who have not previously received a screening ultrasound examination. ▪ Ultrasound screening in first-degree relatives who are between ages 65 and 75 years or in those older than 75 years and in good health. Recommendation for medically complex patients: ▪ None.
Breast cancer	Recommendation for general age group (*grade C*):[7] ▪ Decision to start screening mammography in women prior to age 40 years should be an individual one. ▪ Beginning mammography screening at a younger age and screening more frequently may increase the risk for overdiagnosis and subsequent overtreatment. Recommendation for older patients *(grade B)*: ▪ Biennial screening mammography for women ages 50 to 74 years.	American Cancer Society[55] Recommendation for general age group *(Strong)*: ▪ Regular screening mammography starting at age 45 years for women with an average risk of breast cancer. Recommendation for general age group *(Qualified)*: ▪ Clinical breast examination not recommended among average-risk women at any age. ▪ Continue mammography screening as long as overall health is good and have a life expectancy of 10 years or longer.

Screening	USPSTF	Professional Society
Breast cancer (continued)	Recommendation for older patients *(grade I)*: ▪ Insufficient evidence to assess the balance of benefits and harms of screening mammography in women age 75 years or older. Recommendation for medically complex patients *(grade N/A)* ▪ Current Cancer Intervention and Surveillance Modeling Network models suggest that women ages 70 to 74 years with moderate to severe comorbid conditions that negatively affect their life expectancy are unlikely to benefit from mammography.	Recommendation for older patients *(Qualified)*: ▪ Biennial screening or opportunity to continue screening annually for women age 55 years or older. Recommendation for medically complex patients: ▪ Women in poor health or with severe comorbid conditions and limited life expectancy may be more vulnerable to harms of screening.
Cervical cancer	Recommendation for general age group (*grade A*):[56] ▪ Screening every 3 years with cervical cytology alone for women ages 21 to 29 years. ▪ Screening every 3 years with cervical cytology alone, every 5 years with high-risk human papillomavirus (hrHPV) testing alone, or every 5 years with hrHPV testing in combination with cytology (cotesting) for women ages 30 to 65 years. Recommendation for older patients *(grade D)*: ▪ Against screening in women older than 65 years who have had adequate prior screening and are not otherwise at high risk for cervical cancer. Recommendation for medically complex patients *(grade N/A)*: ▪ Women with risk factors that increase risk for cervical cancer (e.g., HIV infection, a compromised immune system, in utero exposure to diethylstilbestrol, and previous treatment of a high-grade precancerous lesion or cervical cancer) are not included in this recommendation and should receive individualized follow-up.	American College of Obstetricians and Gynecologists[52] Endorses USPSTF cervical cancer screening recommendations.

Screening	USPSTF	Professional Society
Cervical cancer (continued)	▪ Women who have had a hysterectomy with removal of the cervix and do not have a history of a high-grade precancerous lesion or cervical cancer are not at risk for cervical cancer and should not be screened.	
Chlamydia/gonorrhea	Recommendation for general age group (*grade B)*:[57] ▪ Screening in all sexually active women age 24 years or younger and in women age 25 years or older who are at increased risk for infection. Recommendation for general age group (*grade I)*: ▪ Insufficient evidence to assess the balance of benefits and harms of screening in men. Recommendation for older patients (*grade B*): ▪ Same as for general age group. Recommendation for medically complex patients: ▪ None.	Infectious Disease Society of America No recommendations. CDC[58] Recommendation for general age group (*Grade N/A)*: ▪ Screening in all sexually active women younger than age 25 years and in older women at increased risk of infection. ▪ Screening in pregnant women younger than age 25 years and in older pregnant women at increased risk for infection during their first prenatal visit and again during their third trimester if risk remains high. ▪ Insufficient evidence for screening among heterosexual men who are at low risk for infection; however, screening young men can be considered in high prevalence clinical settings. ▪ Annual screening in men who have sex with men, with more frequent screening if risk behaviors persist or if they or their sex partners have multiple partners. Recommendation for older patients: ▪ None. Recommendation for medically complex patients: ▪ None.

Screening	USPSTF	Professional Society
Colorectal cancer	Recommendation for general age group (*grade B)*:[6] ▪ Screening in adults ages 45 to 49 years. Recommendation for older patients *(grade A)*: ▪ Screening in all adults ages 50 to 75 years (*grade A*). ▪ Selective screening in adults ages 76 to 85 years (*grade C*). Recommendation for medically complex patients *(grade N/A)*: ▪ Stopping screening varies based on a patient's health status (e.g., life expectancy, comorbid conditions), prior screening status, and individual preferences.	American Cancer Society[59] Recommendation for general age group (*Qualified)*: ▪ Begin screening at age 45 years. ▪ Continue screening for average-risk adults in good health with a life expectancy of greater than 10 years through age 75 years. Recommendation for older patients *(Strong)*: ▪ Regular screening in adults age 50 years or older. Recommendation for older patients *(Qualified)*: ▪ Individualize screening decisions for individuals ages 76 through 85 years based on patient preferences, life expectancy, health status, and prior screening history. ▪ Screening discouraged for individuals older than age 85 years. Recommendation for medically complex patients *(Grade N/A)*: ▪ Harms of colonoscopy rise significantly and nonlinearly with age and comorbidity burden. ▪ Focus of screening among individuals ages 76 to 85 years should be on healthy individuals with no or few comorbidities who are expected to live at least 10 years.
Depression	Recommendation for general age group (*grade B)*:[60] ▪ Screening in the adult population, including pregnant and postpartum persons. Recommendation for older patients *(grade B)*: ▪ Same as general age group. Recommendation for medically complex patients *(grade N/A)*: ▪ In the absence of evidence, a pragmatic approach might include using clinical judgment while considering risk factors, comorbid conditions, and life events to determine if additional screening of patients at increased risk is warranted.	American Psychological Association No guidelines for screening found.

Screening	USPSTF	Professional Society
Prediabetes and type 2 diabetes	Recommendation for general age group (*grade B*):[61] ▪ Screening in adults ages 35 to 70 years who are overweight or have obesity. Recommendation for older patients *(grade B)*: ▪ Same as general age group. Recommendation for medically complex patients *(grade N/A)*: ▪ Clinicians should consider screening at an earlier age in persons who have a family history of diabetes, a history of gestational diabetes, or a history of polycystic ovarian syndrome, and have a lower body mass index (BMI) in Asian American persons.	American Association of Clinical Endocrinology[62] Recommendation for general age group (*Grade N/A)*: ▪ Screening in adults age 35 years or older, regardless of risk factors. Recommendation for older patients *(Grade N/A)*: ▪ Screening in adults ages 35 to 70 years who have are overweight or have obesity. Recommendation for medically complex patients *(Grade N/A)*: ▪ Screening in persons with risk factors for diabetes (regardless of age). ▪ Testing should be considered in all adults who are obese (BMI 30 kg/m^2), and those who are overweight (BMI 25 to 23 kg/m^2 in Asian Americans) and have additional risk factors.
Hepatitis B	Recommendation for general age group (*grade B)*:[63] ▪ Screening in adolescents and adults at increased risk for infection. Recommendation for general age group (*grade A)*: ▪ Screening in pregnant women at their first prenatal visit. Recommendation for older patients (*grade B*): ▪ Same as for general age group Recommendation for medically complex patients *(grade N/A)*: ▪ Screening should be offered to other risk groups defined by clinical and behavioral characteristics in which prevalence of positive HBsAg is 2% or greater (e.g., persons with HIV).	CDC[64] Recommendation for general age group (*Grade N/A)*: ▪ Screening in all adults age 18 years or older at least once in their lifetime. ▪ Screening in all pregnant people during each pregnancy, preferably in the first trimester, regardless of vaccination status or history of testing. Recommendation for older patients: ▪ None. Recommendation for medically complex patients: ▪ Testing susceptible people periodically, regardless of age with ongoing risk for exposures while risk for exposures persists (e.g., people with HIV).

Screening	USPSTF	Professional Society
Hepatitis C	Recommendation for general age group (*grade B)*:[65] ▪ Screening in adults ages 18 to 79 years. ▪ Consider screening in adolescents younger than age 18 years who are at high risk. Recommendation for older patients (*grade B)*: ▪ Same as for general age group. Recommendation for medically complex patients: ▪ None.	Recommendation for older patients: ▪ None. Recommendation for medically complex patients: ▪ None.
HIV infection	Recommendation for general age group (*grade A)*:[66] ▪ Screening in all pregnant persons, including those who present in labor or at delivery whose HIV status is unknown. ▪ Screening in adolescents and adults ages 15 to 65 years. Recommendation for older patients (*grade A)*: ▪ Screening in adults older than age 65 years who are at high risk. Recommendation for medically complex patients: ▪ None.	CDC[67] Recommendation for general age group (*grade N/A)*: ▪ Voluntary screening in all adolescents and adults ages 13 to 64 years, regardless of other recognized risk factors, unless HIV prevalence was documented to be less than 0.1% within a patient community. ▪ All persons should be screened at least once in their lifetime and those with risk factors be screened more frequently (e.g., annually). Recommendation for older patients: ▪ None. Recommendation for medically complex patients: ▪ None.
Hypertension	Recommendation for general age group (*grade A)*:[68] ▪ Screening in adults age 18 years or older with office blood pressure measurement. Recommendation for older patients (*grade A*, under general recommended practice considerations): ▪ Annual screening for hypertension in adults age 40 years or older. Recommendation for medically complex patients: ▪ None.	American College of Cardiology/American Heart Association [69] None.

Screening	USPSTF	Professional Society
Lung cancer	Recommendation for general age group (*grade B*):[8] ▪ Annual screening with low-dose computed tomography (LDCT) in adults ages 50 to 80 years who have a 20 pack-year smoking history and currently smoke or have quit within the past 15 years. Recommendation for older patients (*grade B)*: ▪ Same as for general age group. Recommendation for medically complex patients (*grade N/A*): ▪ Screening should be discontinued once a person has not smoked for 15 years or develops a health problem that substantially limits life expectancy or the ability or willingness to have curative lung surgery.	American Cancer Society[70] Recommendation: Same as USPSTF.
Osteoporosis	Recommendation for general age group (*grade B)*:[71] ▪ Screening with bone measurement testing to prevent osteoporotic fractures in postmenopausal women younger than age 65 years who are at increased risk of osteoporosis, as determined by a formal clinical risk assessment tool. Recommendation for general age group (*grade I)*: ▪ Insufficient evidence to assess the balance of benefits and harms of screening for osteoporosis to prevent osteoporotic fractures in men. Recommendation for older patients (*grade B)*: ▪ Screening for osteoporosis with bone measurement testing to prevent osteoporotic fractures in women age 65 years or older. Recommendation for medically complex patients: ▪ None.	American Association of Clinical Endocrinology[72] Recommendation for general age group (*grade B)*: ▪ Evaluate all postmenopausal women age 50 years or older for osteoporosis risk. Recommendation for older patients (*Grade B)*: ▪ Evaluate all postmenopausal women age 50 years or older for osteoporosis risk. Recommendation for medically complex patients: ▪ None.

Screening	USPSTF	Professional Society
Unhealthy drug use	Recommendation for general age group (*grade B*):[73] ▪ Screening by asking questions about unhealthy drug use in adults age 18 years or older. ▪ Screening should be implemented when services for accurate diagnosis, effective treatment, and appropriate care can be offered or referred. Recommendation for older patients (*grade B*): ▪ Same as for general age group. Recommendation for medically complex patients: ▪ None.	American Society of Addiction Medicine Recommendation: None. American Psychological Association Recommendation: None.

Abbreviations: HBsAg = hepatitis B surface antigen; HIV = human immunodeficiency virus; N/A = not applicable; USPSTF= United States Preventive Services Task Force.

Methods Appendix

In this appendix, we provide additional details regarding the methods we used.

M.1 Environmental Scan Overarching Methods

The goal of the environmental scan for each topic was to provide technical expert panel (TEP) members with a broad overview of the existing literature and other relevant background information. The scan was conducted over approximately 12 weeks by a team consisting of a scan lead, an information specialist, two research analysts, an implementation science expert, and editors.

M.1.1 Scoping of Scan

The scan began with the development of the topic scope and guiding question to focus the search strategy. Our guiding question for the scan was: What strategies, tools, or interventions exist at the patient, provider, or healthcare system level to stop preventive screening services in individuals who have aged out of recommendations or who have poor health status?

M.1.2 Scan Data Sources and Searches

An information specialist experienced in literature search methods developed search strategies using a combination of keywords and controlled vocabulary related to stopping screening and screening cessation. Searches of electronic databases were limited to PubMed, AgeLine, and APA PsycInfo. The searches covered the period from January 2012 to August 2023. To identify grey literature, we also searched websites of federal agencies, advocacy groups, and professional organizations, as well as Google and ClinicalTrials.gov. In addition to electronic databases and websites, we manually searched reference lists from recent and relevant review articles and editorials. All citations were managed and deduplicated using EndNote X9 (Clarivate Analytics).

Search No.	PubMed Query	Results
#1	Search: "Primary Health Care"[Mesh] OR "Physicians, Primary Care"[Mesh] OR "primary care"[tiab] OR "primary health care"[tiab] OR PHC[tiab] OR "General Practice"[Mesh] OR "Family Practice"[Mesh] OR "general practice"[tiab] OR "family practice"[tiab] OR "Preventive Health Services"[Mesh] OR "Preventive Medicine"[Mesh] OR "family practice"[tiab] OR "Preventive Health Services"[Mesh] OR "Preventive Medicine"[Mesh] OR "Community Health Centers"[Mesh] OR "Federally Qualified Health Center"[tiab] OR "Federally Qualified Health Centers"[tiab] OR FQHC*[tiab]	1,058,418

Search No.	PubMed Query	Results
#2	Search: "Patient-Centered Care"[Mesh] OR (("patient-centered"[tiab] OR "patient-focused"[tiab] OR "person-centered"[tiab]) AND care[tiab]) OR "Precision Medicine"[Majr] OR ((individual*[tiab] OR Individualize*[tiab] OR holistic[tiab] OR "whole person"[tiab] OR personalized[tiab]) AND care[tiab]) OR "patient needs"[tiab] OR "patient values"[tiab] OR "Physician-Patient Relations"[Mesh] OR "Doctor-patient relation*"[tiab] OR "Professional-Patient Relations"[Mesh] OR "Patient Preference"[Mesh] OR "patient preference*"[tiab] OR "social competenc*"[tiab] OR "Decision Making, Shared"[Mesh] OR "shared decision making"[tiab] OR "Patient Self-Determination Act"[Mesh] OR "patient decision making"[tiab] OR "patient engagement"[tiab] OR "patient involvement"[tiab] OR "patient empowerment"[tiab] OR "patient partnership"[tiab] OR "patient activation" [tiab] OR "patient-activated"[tiab] OR "Patient Acceptance of Health Care"[Mesh] OR "consumer participation"[title] OR "consumer engagement"[tiab] OR "consumer involvement"[tiab] OR "consumer empowerment"[tiab] OR "consumer partnership"[tiab] OR "consumer activation"[tiab] OR "patient context"[tiab] OR "integrated care"[tiab] OR "coordinated care"[tiab] OR "Care coordination"[tiab] OR "continuity of care"[tiab] OR "healthcare teams"[tiab] OR "team-based care"[tiab] OR teamwork[tiab]	625,859
#3	Search: "Preventive Health Services"[Mesh] OR "clinical preventive services"[tiab] OR "clinical preventive service"[tiab] OR Preventive[title] OR Prevention[title] OR Mass Screening[Mesh] OR screening[title] OR screen*[title] OR screens[title] OR screened[title] OR "Primary Prevention"[Mesh] OR "Chronic Disease/prevention and control"[Mesh] OR ("preventive service*"[tw])	1,027,107
#4	Search: "Early Detection of Cancer"[Mesh]	37,811
#5	Search: colonoscopy[tiab] OR lifestyle*[tiab] OR smoking[tiab] OR tobacco[tiab] OR cholesterol[tiab] OR alcohol*[tiab] OR "blood pressure"[tiab:~1] OR hypertension[tiab] OR "breast cancer"[tiab:~1] OR "cervical cancer"[tiab:~1] OR "colon cancer"[tiab:~1] OR depression[tiab] OR diabetes[tiab] OR "substance abuse"[tiab:~1] OR HIV[tiab] OR "intimate partner violence"[tiab:~1] OR "domestic violence"[tiab:~1] OR "healthy diet"[tiab:~1] OR "lung cancer"[tiab:~1] OR osteoporosis[tiab] OR fracture*[tiab] OR "abdominal aortic aneurysm"[tiab:~1] OR "chlamydia"[tiab] OR "gonorrhea"[tiab] OR "Hepatitis B"[tiab:~1] OR "Hepatitis C"[tiab:~1] OR "Lung Cancer"[tiab:~1] OR Prediabetes[tiab] OR syphilis[tiab] OR "drug use"[tiab] OR "drug abuse"[tiab] OR "Substance use"[tiab]	4,090,015
#6	Search: #3 OR #4 OR #5	4,883,926
#7	Search: #1 AND #2 AND #6	86,900
#8	Search: multiple chronic conditions[MeSH Terms] OR medical futility[MeSH Terms] OR (multiple[tiab] AND "Chronic Disease"[Mesh]) OR "Comorbidity"[Mesh] OR multimorbid*[tw] OR comorbidity[tiab] OR comorbidities[tiab] OR comorbid[tiab] OR "co-morbid"[tiab:~1] OR "patient complexity"[tiab:~1] OR "multiple chronic comorbidities"[tiab:~1] OR "multiple chronic conditions"[tiab:~1] OR "multiple chronic disease"[tiab:~1] OR "multiple chronic diseases"[tiab:~1]	371,203

Search No.	PubMed Query	Results
#9	Search: Aging[MeSH Terms] OR Life Expectancy[MeSH Terms] OR Terminal Care[Mesh] OR Hospices[Mesh] OR Aged[MeSH Terms] OR Age factors[MeSH Terms] OR "life expectancy"[tiab:~1] OR "Frail Elderly"[Mesh] OR elderly[tiab] OR "older adult"[tiab:~1] OR "older adults"[tiab:~1] OR hospice*[title] OR "terminal care"[title] OR geriatric[tiab]	4,170,069
#10	Search: #8 OR #9	4,389,247
#11	Search: #7 AND #10	27,183
#12	Search: "Choosing Wisely"[tw] OR CWDIF[tiab] OR "low-value care"[tw] OR "low-value service*"[tw] OR "low-value screening"[tiab] OR De-adopt*[tw] OR deadopt*[tw] OR Deimplement*[tiab] OR "de-implement*"[tiab] OR "Medical Overuse"[Mesh] OR "Patient Harm"[Mesh] OR "Unnecessary Procedures"[Mesh] OR "Antimicrobial stewardship"[tiab] OR ((inappropriate[tiab] OR appropriate[tiab]) AND (management[tiab] OR screening[tiab] OR use[tiab])) OR "harmful service*"[tiab] OR (harm*[tiab] AND care[tiab]) OR ("low-value"[tiab] AND decision*[tiab]) OR Overuse[tiab] OR (reduc*[tiab] AND (inappropriate[tiab] OR harm*[tiab] OR screening[tiab])) OR (unnecessary[tiab] AND (use[tiab] OR screening[tiab])) OR (wasteful[tiab] AND (use[tiab] OR screening[tiab])) OR (stop*[tiab] AND screening[tiab])	486,343
#13	Search: #11 AND #12	3,084
#14	Search: #13 NOT (animals[mesh] NOT human[mesh])	3,084
#15	Search: #13 NOT (animals[mesh] NOT human[mesh]) Filters: from 2012 - 2023	1,867
#16	Search: #13 NOT (animals[mesh] NOT human[mesh]) Filters: English, from 2012 - 2023	1,811
#17	Search: afghanistan[Mesh:NoExp] OR africa[Mesh:NoExp] OR "africa, northern"[Mesh:NoExp] OR "africa, central"[Mesh:NoExp] OR "africa, eastern"[Mesh:NoExp] OR "africa south of the sahara"[Mesh:NoExp] OR "africa, southern"[Mesh:NoExp] OR "africa, western"[Mesh:NoExp] OR albania[Mesh:NoExp] OR algeria[Mesh:NoExp] OR andorra[Mesh:NoExp] OR angola[Mesh:NoExp] OR "antigua and barbuda"[Mesh:NoExp] OR argentina[Mesh:NoExp] OR armenia[Mesh:NoExp] OR azerbaijan[Mesh:NoExp] OR bahamas[Mesh:NoExp] OR bahrain[Mesh:NoExp] OR bangladesh[Mesh:NoExp] OR barbados[Mesh:NoExp] OR belize[Mesh:NoExp] OR benin[Mesh:NoExp] OR bhutan[Mesh:NoExp] OR bolivia[Mesh:NoExp] OR borneo[Mesh:NoExp] OR "bosnia and herzegovina"[Mesh:NoExp] OR botswana[Mesh:NoExp] OR brazil[Mesh:NoExp] OR brunei[Mesh:NoExp] OR bulgaria[Mesh:NoExp] OR "burkina faso"[Mesh:NoExp] OR burundi[Mesh:NoExp] OR "cabo verde"[Mesh:NoExp] OR cambodia[Mesh:NoExp] OR cameroon[Mesh:NoExp] OR "central african republic"[Mesh:NoExp] OR chad[Mesh:NoExp] OR china[Mesh] OR comoros[Mesh:NoExp] OR congo[Mesh:NoExp] OR croatia[Mesh:NoExp] OR cuba[Mesh:NoExp] OR "democratic republic of the congo"[Mesh:NoExp] OR cyprus[Mesh:NoExp] OR djibouti[Mesh:NoExp] OR dominica[Mesh:NoExp] OR "dominican republic"[Mesh:NoExp] OR ecuador[Mesh:NoExp] OR	1,249,955

Search No.	PubMed Query	Results
#17 (cont)	egypt[Mesh:NoExp] OR "el salvador"[Mesh:NoExp] OR "equatorial guinea"[Mesh:NoExp] OR eritrea[Mesh:NoExp] OR eswatini[Mesh:NoExp] OR ethiopia[Mesh:NoExp] OR fiji[Mesh:NoExp] OR gabon[Mesh:NoExp] OR gambia[Mesh:NoExp] OR "georgia (republic)"[Mesh:NoExp] OR ghana[Mesh:NoExp] OR grenada[Mesh:NoExp] OR guatemala[Mesh:NoExp] OR guinea[Mesh:NoExp] OR guinea-bissau[Mesh:NoExp] OR guyana[Mesh:NoExp] OR haiti[Mesh:NoExp] OR honduras[Mesh:NoExp] OR "independent state of samoa"[Mesh:NoExp] OR india[Mesh] OR "indian ocean islands"[Mesh:NoExp] OR indochina[Mesh:NoExp] OR indonesia[Mesh:NoExp] OR iran[Mesh:NoExp] OR iraq[Mesh:NoExp] OR jamaica[Mesh:NoExp] OR jordan[Mesh:NoExp] OR kazakhstan[Mesh:NoExp] OR kenya[Mesh:NoExp] OR kosovo[Mesh:NoExp] OR kuwait[Mesh:NoExp] OR kyrgyzstan[Mesh:NoExp] OR laos[Mesh:NoExp] OR lebanon[Mesh:NoExp] OR liechtenstein[Mesh:NoExp] OR lesotho[Mesh:NoExp] OR liberia[Mesh:NoExp] OR libya[Mesh:NoExp] OR madagascar[Mesh:NoExp] OR malaysia[Mesh:NoExp] OR malawi[Mesh:NoExp] OR mali[Mesh:NoExp] OR malta[Mesh:NoExp] OR mauritania[Mesh:NoExp] OR mauritius[Mesh:NoExp] OR "mekong valley"[Mesh:NoExp] OR melanesia[Mesh:NoExp] OR micronesia[Mesh:NoExp] OR monaco[Mesh:NoExp] OR mongolia[Mesh:NoExp] OR montenegro[Mesh:NoExp] OR morocco[Mesh:NoExp] OR mozambique[Mesh:NoExp] OR myanmar[Mesh:NoExp] OR namibia[Mesh:NoExp] OR nepal[Mesh:NoExp] OR nicaragua[Mesh:NoExp] OR niger[Mesh:NoExp] OR nigeria[Mesh:NoExp] OR oman[Mesh:NoExp] OR pakistan[Mesh:NoExp] OR palau[Mesh:NoExp] OR panama[Mesh] OR "papua new guinea"[Mesh:NoExp] OR paraguay[Mesh:NoExp] OR peru[Mesh:NoExp] OR philippines[Mesh:NoExp] OR qatar[Mesh:NoExp] OR "republic of belarus"[Mesh:NoExp] OR "republic of north macedonia"[Mesh:NoExp] OR romania[Mesh:NoExp] OR russia[Mesh] OR rwanda[Mesh:NoExp] OR "saint kitts and nevis"[Mesh:NoExp] OR "saint lucia"[Mesh:NoExp] OR "saint vincent and the grenadines"[Mesh:NoExp] OR "sao tome and principe"[Mesh:NoExp] OR "saudi arabia"[Mesh:NoExp] OR serbia[Mesh:NoExp] OR "sierra leone"[Mesh:NoExp] OR senegal[Mesh:NoExp] OR seychelles[Mesh:NoExp] OR singapore[Mesh:NoExp] OR somalia[Mesh:NoExp] OR "south sudan"[Mesh:NoExp] OR "sri lanka"[Mesh:NoExp] OR sudan[Mesh:NoExp] OR suriname[Mesh:NoExp] OR syria[Mesh:NoExp] OR taiwan[Mesh:NoExp] OR tajikistan[Mesh:NoExp] OR tanzania[Mesh:NoExp] OR thailand[Mesh:NoExp] OR timor-leste[Mesh:NoExp] OR togo[Mesh:NoExp] OR tonga[Mesh:NoExp] OR "trinidad and tobago"[Mesh:NoExp] OR tunisia[Mesh:NoExp] OR turkmenistan[Mesh:NoExp] OR uganda[Mesh:NoExp] OR ukraine[Mesh:NoExp] OR "united arab emirates"[Mesh:NoExp] OR uruguay[Mesh:NoExp] OR uzbekistan[Mesh:NoExp] OR vanuatu[Mesh:NoExp] OR venezuela[Mesh:NoExp] OR vietnam[Mesh:NoExp] OR "west indies"[Mesh:NoExp] OR yemen[Mesh:NoExp] OR zambia[Mesh:NoExp] OR zimbabwe[Mesh:NoExp]	

Search No.	PubMed Query	Results
#18	Search: "Organisation for Economic Co-Operation and Development"[Mesh:NoExp] OR "European Union"[Mesh:NoExp] OR "Developed Countries"[Mesh:NoExp] OR australasia[Mesh:NoExp] OR australia[Mesh] OR austria[Mesh:NoExp] OR "baltic states"[Mesh:NoExp] OR belgium[Mesh:NoExp] OR canada[Mesh] OR chile[Mesh:NoExp] OR colombia[Mesh:NoExp] OR "costa rica"[Mesh:NoExp] OR "czech republic"[Mesh:NoExp] OR denmark[Mesh] OR estonia[Mesh:NoExp] OR europe[Mesh:NoExp] OR finland[Mesh:NoExp] OR france[Mesh] OR germany[Mesh] OR greece[Mesh:NoExp] OR hungary[Mesh:NoExp] OR iceland[Mesh:NoExp] OR ireland[Mesh:NoExp] OR israel[Mesh:NoExp] OR italy[Mesh] OR japan[Mesh] OR korea[Mesh:NoExp] OR latvia[Mesh:NoExp] OR lithuania[Mesh:NoExp] OR luxembourg[Mesh:NoExp] OR mexico[Mesh:NoExp] OR netherlands[Mesh:NoExp] OR "new zealand"[Mesh:NoExp] OR "north america"[Mesh:NoExp] OR norway[Mesh] OR poland[Mesh:NoExp] OR portugal[Mesh:NoExp] OR "republic of korea"[Mesh] OR "scandinavian and nordic countries"[Mesh:NoExp] OR slovakia[Mesh:NoExp] OR slovenia[Mesh:NoExp] OR spain[Mesh:NoExp] OR sweden[Mesh:NoExp] OR switzerland[Mesh:NoExp] OR turkey[Mesh:NoExp] OR "united kingdom"[Mesh] OR "united states"[Mesh]	3,514,537
#19	Search: #17 NOT #18	1,162,830
#20	Search: #16 NOT #19	1,685
#21	Search: address[pt] OR "autobiography"[pt] OR "bibliography"[pt] OR "biography"[pt] OR congress[pt] OR "dictionary"[pt] OR "directory"[pt] OR "festschrift"[pt] OR "historical article"[pt] OR lecture[pt] OR "legal case"[pt] OR "legislation"[pt] OR "news"[pt] OR "newspaper article"[pt] OR "periodical index"[pt]	762,014
#22	Search: #20 NOT #21	1,676
#23	Search: "Systematic Reviews as Topic"[Mesh] OR "cochrane database syst rev"[ta] OR "systematic literature review"[ti] OR "systematic review"[ti] OR ("systematic review"[tiab] AND review[pt]) OR "this systematic review"[tw] OR "meta-analysis"[pt] OR "meta-analysis as topic"[MeSH Terms] OR "meta-analyses"[tiab] OR "meta-analysis"[tiab] OR meta synthesis[tiab] OR "Umbrella Review"[tiab]	440,709
#24	Search: #22 AND #23	79
#25	Search: ((randomized[title/abstract] OR randomised[title/abstract]) AND controlled[title/abstract] AND trial[title/abstract]) OR (controlled[title/abstract] AND trial[title/abstract]) OR "controlled clinical trial"[publication type] OR "Randomized Controlled Trial"[Publication Type] OR "Single-Blind Method"[MeSH] OR "Double-Blind Method"[MeSH] OR "Random Allocation"[MeSH] OR "Clinical Trial, Phase IV" [Publication Type] OR "Clinical Trial, Phase III" [Publication Type] OR "Comparative Study" [Publication Type] OR "Pragmatic Clinical Trial"[Publication Type] OR "Clinical Trial"[Publication Type] OR "Comparative Study" [Publication Type]	2,862,875
#26	Search: #22 AND #25	375

Search No.	PubMed Query	Results
#27	Search: "Case-Control Studies"[MeSH] OR "Cohort Studies"[MeSH] OR "Epidemiologic Studies"[MeSH] OR "Cross-Sectional Studies"[MeSH] OR "Organizational Case Studies"[MeSH] OR "Cross-Over Studies"[MeSH] OR "Follow-Up Studies"[MeSH] OR "Seroepidemiologic Studies"[MeSH] OR "Evaluation Studies"[Publication Type] OR "observational study"[tiab:~1] OR "observational studies"[tiab:~1] OR "comparative study"[pt] OR "cohort"[tiab] OR "compared"[tiab] OR "case control"[tiab] OR "multivariate"[tiab]	8,210,137
#28	Search: #22 AND #27	886
#29	Search: ((("meta ethnography" OR "meta ethnographic") OR ("meta synthesis") OR (synthesis AND ("qualitative literature" OR "qualitative research")) OR ("critical interpretive synthesis") OR ("systematic review" AND ("qualitative research" OR "qualitative literature" OR "qualitative studies")) OR ("thematic synthesis" OR "framework synthesis") OR ("realist review" OR "realist synthesis") OR ((("qualitative systematic review" OR "qualitative evidence synthesis")) OR ("qualitative systematic reviews" OR "qualitative evidence syntheses")) OR (("quality assessment" OR "critical appraisal") AND ("qualitative research" OR "qualitative literature" OR "qualitative studies")) OR (("literature search" OR "literature searching" OR "literature searches") AND ("qualitative research" OR "qualitative literature" OR "qualitative studies")) OR (Noblit AND Hare)) OR ("meta narrative" OR "meta narratives" OR "narrative synthesis") OR ("realist reviews" OR "meta study" OR "meta method" OR "meta triangulation")) OR (CERQUAL OR CONQUAL)	18,147
#30	Search: #22 AND #29	19

Search No.	AgeLine (Ebsco) Query	Limiters/Expanders	Results
S1	DE "Primary Care" OR “primary care physician” OR “primary care physicians” OR TI “Primary health care” OR AB “primary health care” OR TI “primary care” OR AB “primary care” OR TI “general practice” OR AB “general practice” OR TI “family practice” OR AB “family practice” OR DE "Preventive Medicine" OR TI “preventive medicine” OR AB “preventive medicine” OR TI “preventive health” OR AB “preventive health” OR TI “Community Health Center” OR AB “Community Health Center” OR TI “Community Health Centers” OR AB “Community Health Centers” OR TI "Federally Qualified Health Center" OR AB “Federally Qualified Health Center” OR TI "Federally Qualified Health Centers"[tiab] OR AB “Federally Qualified Health Centers” OR TI FQHC* OR AB FQHC*	Expanders - Apply equivalent subjects Search modes - Find all my search terms	6,403
S2	TX “Patient-Centered Care" OR TI “patient-centered” OR AB “Patient-centered” OR TI “patient centered” OR AB “patient centered” OR TI “person-centered” OR AB “person-centered” OR TI “person centered” OR AB “person centered” OR TI “precision medicine” OR AB “precision medicine” OR TI ((individual* OR Individualize* OR holistic OR "whole person" OR personalized) AND care) OR AB ((individual* OR Individualize* OR holistic OR	Expanders - Apply equivalent subjects Search modes - Find all my search terms	29,754

Search No.	AgeLine (Ebsco) Query	Limiters/Expanders	Results
S2 (cont)	"whole person" OR personalized) AND care) OR TI “patient needs” OR AB “patient needs” OR TI “patient values” OR AB “patient values” OR “physician-patient relations” OR “doctor-patient relations” OR “professional-patient relations” OR “patient preference” OR “patient preferences” OR “social competence” OR “social competency” OR “shared decision-making” OR “shared decision making” OR “shared decisionmaking” OR TI “shared decision” OR DE "Consumer Directed Care" OR DE “Service Coordination” OR TI ("patient decision making" OR "patient engagement" OR "patient involvement" OR "patient empowerment" OR "patient partnership" OR "patient activation" OR "patient-activated" OR "Patient Acceptance of Health Care" OR "consumer participation" OR "consumer engagement" OR "consumer involvement" OR "consumer empowerment" OR "consumer partnership" OR "consumer activation" OR "patient context" OR "integrated care" OR "coordinated care" OR "Care coordination" OR “Service coordination” OR "continuity of care" OR "healthcare teams" OR "team-based care") OR AB ("patient decision making" OR "patient engagement" OR "patient involvement" OR "patient empowerment" OR "patient partnership" OR "patient activation" OR "patient-activated" OR "Patient Acceptance of Health Care" OR "consumer participation" OR "consumer engagement" OR "consumer involvement" OR "consumer empowerment" OR "consumer partnership" OR "consumer activation" OR "patient context" OR "integrated care" OR "coordinated care" OR "Care coordination" OR “Service coordination” OR "continuity of care" OR "healthcare teams" OR "team-based care")		
S3	DE "Preventive Medicine" OR “Preventive medicine” OR TI preventive OR TI “clinical preventive services” OR AB “clinical preventive services” OR TI prevention OR DE "Screening" OR TI screening OR AB screening OR TI screen* OR TI screens OR TI screened OR TI “primary prevention” OR AB “primary prevention” OR TI “preventive service” OR AB “Preventive service” OR TI “preventive services” OR AB “preventive services” OR “early detection of cancer”	Expanders - Apply equivalent subjects Search modes - Find all my search terms	9,988
S4	TI (colonoscopy OR lifestyle* OR smoking OR tobacco OR cholesterol OR alcohol* OR "blood pressure" OR hypertension OR "breast cancer" OR "cervical cancer" OR "colon cancer" OR depression OR diabetes OR "substance abuse" OR HIV OR "intimate partner violence" OR "domestic violence" OR "healthy diet" OR "lung cancer" OR osteoporosis OR fracture* OR "abdominal aortic aneurysm" OR "chlamydia" OR "gonorrhea" OR "Hepatitis B" OR "Hepatitis C" OR "Lung Cancer" OR Prediabetes OR syphilis OR "drug use" OR "drug abuse" OR "Substance use") OR AB (colonoscopy OR lifestyle* OR smoking OR tobacco OR cholesterol OR alcohol* OR "blood pressure" OR hypertension OR "breast cancer" OR "cervical cancer" OR "colon cancer" OR depression OR diabetes OR "substance abuse" OR HIV OR "intimate partner violence" OR "domestic violence" OR "healthy diet" OR "lung cancer" OR osteoporosis OR fracture* OR "abdominal aortic aneurysm" OR "chlamydia" OR "gonorrhea" OR "Hepatitis B" OR "Hepatitis C" OR "Lung Cancer" OR Prediabetes OR syphilis OR "drug use" OR "drug abuse" OR "Substance use")	Expanders - Apply equivalent subjects Search modes - Find all my search terms	33,005

Search No.	AgeLine (Ebsco) Query	Limiters/Expanders	Results
S5	S3 OR S4	Expanders - Apply equivalent subjects Search modes - Find all my search terms	39,517
S6	S1 AND S2 AND S5	Expanders - Apply equivalent subjects Search modes - Find all my search terms	1,176
S7	(TX multiple AND (DE "Chronic Diseases" OR TX “chronic condition” OR TX “chronic conditions”)) OR TI “chronic disease” OR AB “Chronic disease” OR TI “chronic diseases” OR AB “Chronic diseases” OR DE "Comorbidity" OR TI comorbid* OR AB comorbid* OR TI co-morbid* OR AB co-morbid* OR TI “patient complexity” OR AB “patient complexity” OR TI “multiple chronic conditions” OR AB “multiple chronic conditions” OR TI “multiple chronic diseases” OR AB “multiple chronic diseases”	Expanders - Apply equivalent subjects Search modes - Find all my search terms	8,684
S8	S6 AND S7	Expanders - Apply equivalent subjects Search modes - Find all my search terms	190
S9	DE "Aging" OR DE "Active Aging" OR DE "Aging in Place" OR DE "Biological Aging" OR DE "Healthy Aging" OR DE "Normal Aging" OR DE "Premature Aging" OR DE "Productive Aging" OR DE "Psychological Aging" OR DE "Successful Aging" OR DE "Life Expectancy" OR TX “life expectancy” OR DE "Terminal Care" OR DE "Hospice" OR TX “terminal care” OR TX hospice* OR DE "Frail Elderly" OR TX “frail elderly” OR TI elderly OR AB elderly OR TI “older adults” OR AB “older adults” OR TX geriatric* OR TX senior*	Expanders - Apply equivalent subjects Search modes - Find all my search terms	116,972
S10	S6 AND S9	Expanders - Apply equivalent subjects Search modes - Find all my search terms	957
S11	S8 OR S10	Expanders - Apply equivalent subjects Search modes - Find all my search terms	986

Search No.	AgeLine (Ebsco) Query	Limiters/Expanders	Results
S12	S11	Limiters - Publication Year: 2012-2023; Publication Type: Journal Article Expanders - Apply equivalent subjects Search modes - Find all my search terms	489
S13	DE "United States"	Expanders - Apply equivalent subjects Search modes - Find all my search terms	91,562
S14	S11 AND S12	Expanders - Apply equivalent subjects Search modes - Find all my search terms	44

Search No.	APA PsycInfo (EbscoHost) Query	Limiters/Expanders	Results
1	DE "Primary Health Care" OR TI “primary care” OR AB “primary care” OR TI “primary health care” OR AB “primary health care” OR DE "General Practitioners" OR TI “general practice” OR AB “general practice” OR TI “family practice” OR AB “family practice” OR DE "Preventive Health Services" OR DE "Preventive Mental Health Services" OR TX “preventive medicine” OR TX “preventive health” OR DE "Community Mental Health Centers" OR DE "Community Mental Health Services" OR DE "Community Counseling" OR TX “community health center” OR TX “community health centers” OR TX “Federally Qualified Health Centers” OR TI FQHC* OR AB FQHC* DE "Patient Centered Care" OR TI (("patient-centered" OR "patient-focused" OR	Expanders - Apply equivalent subjects Search modes - Find all my search terms	100,648

Search No.	APA PsycInfo (EbscoHost) Query	Limiters/Expanders	Results
2	"person-centered") AND care) OR AB (("patient-centered" OR "patient-focused" OR "person-centered") AND care) OR DE "Precision Medicine" OR TI ((individual* OR Individualize* OR holistic OR "whole person" OR personalized) AND care) OR AB ((individual* OR Individualize* OR holistic OR "whole person" OR personalized) AND care) OR TI “patient needs” OR AB “patient needs” OR TI “patient values” OR AB “patient values” OR DE "Therapeutic Processes" OR DE "Dual Relationships" OR DE "Psychotherapeutic Processes" OR DE "Client Participation" OR DE "Client Satisfaction" OR “patient preference” OR “Patient preferences” OR DE "Social Adjustment" OR “social competence” OR “social competencies” OR “social competency” OR (Shared AND (“decision making” OR decisionmaking)) OR (Patient AND (“decision making” OR decisionmaking)) OR TI (“patient self-determination act” OR “Patient engagement” OR "patient involvement" OR "patient empowerment" OR "patient partnership" OR "patient activation" OR "patient-activated" OR "Patient Acceptance of Health Care" OR "consumer participation" OR "consumer engagement" OR "consumer involvement" OR "consumer empowerment" OR "consumer partnership" OR "consumer activation" OR "patient context" OR "integrated care" OR "coordinated care" OR (Care AND coordination) OR "continuity of care" OR "healthcare teams" OR "team-based care" OR teamwork) OR AB ((“patient self-determination act” OR “Patient engagement” OR "patient involvement" OR "patient empowerment" OR "patient partnership" OR "patient activation" OR "patient-activated" OR "Patient Acceptance of Health Care" OR	Expanders - Apply equivalent subjects Search modes - Find all my search terms	249,949

Search No.	APA PsycInfo (EbscoHost) Query	Limiters/Expanders	Results
2 (cont)	"consumer participation" OR "consumer engagement" OR "consumer involvement" OR "consumer empowerment" OR "consumer partnership" OR "consumer activation" OR "patient context" OR "integrated care" OR "coordinated care" OR (Care AND " coordination) OR "continuity of care OR "healthcare teams" OR "team-based care" OR teamwork)		
3	DE "Preventive Health Services" OR DE "Preventive Mental Health Services" OR TI ("clinical preventive services" OR "clinical preventive service") OR AB ("clinical preventive services" OR "clinical preventive service") OR TI (preventive OR prevention) OR DE "Screening" OR DE "Screening Tests" OR TI (screening OR screens OR screened) OR TI “primary prevention” OR AB “primary prevention” OR TX “preventive service” OR TX “preventive services” OR TX “early detection of cancer”	Expanders - Apply equivalent subjects Search modes - Find all my search terms	74,709
4	TI (colonoscopy OR lifestyle* OR smoking OR tobacco OR cholesterol OR alcohol* OR "blood pressure" OR hypertension OR "breast cancer" OR "cervical cancer" OR "colon cancer" OR depression OR diabetes OR "substance abuse" OR HIV OR "intimate partner violence" OR "domestic violence" OR "healthy diet" OR "lung cancer" OR osteoporosis OR fracture* OR "abdominal aortic aneurysm" OR "chlamydia" OR "gonorrhea" OR "Hepatitis B" OR "Hepatitis C" OR "Lung Cancer" OR Prediabetes OR syphilis OR "drug use" OR "drug abuse" OR "Substance use") OR AB (colonoscopy OR lifestyle* OR smoking OR tobacco OR cholesterol OR alcohol* OR "blood pressure" OR hypertension OR "breast cancer" OR "cervical cancer" OR "colon cancer" OR depression OR diabetes OR "substance abuse" OR HIV OR "intimate partner violence" OR	Expanders - Apply equivalent subjects Search modes - Find all my search terms	681,968

Search No.	APA PsycInfo (EbscoHost) Query	Limiters/Expanders	Results
4 (cont)	"domestic violence" OR "healthy diet" OR "lung cancer" OR osteoporosis OR fracture* OR "abdominal aortic aneurysm" OR "chlamydia" OR "gonorrhea" OR "Hepatitis B" OR "Hepatitis C" OR "Lung Cancer" OR Prediabetes OR syphilis OR "drug use" OR "drug abuse" OR "Substance use")		
5	S3 AND S4	Expanders - Apply equivalent subjects Search modes - Find all my search terms	28,176
6	S1 AND S2 AND S5	Expanders - Apply equivalent subjects Search modes - Find all my search terms	942
7	DE "Comorbidity" OR DE "Chronic Illness" OR DE "Chronic Alcohol Intoxication" OR DE "Chronic Mental Illness" OR DE "Chronic Pain" OR DE "Chronic Mental Illness" OR DE "Chronic Psychosis" OR TX (“medical futility” OR multimorbid* OR comorbidity OR comorbidities OR comorbid OR "co-morbid" OR "patient complexity" OR "multiple chronic comorbidities" OR "multiple chronic conditions" OR "multiple chronic disease" OR "multiple chronic diseases")	Expanders - Apply equivalent subjects Search modes - Find all my search terms	126,266
8	DE "Aging" OR DE "Aging in Place" OR DE "Cognitive Aging" OR DE "Healthy Aging" OR DE "Physiological Aging" OR DE "Aging (Attitudes Toward)" OR DE "Life Expectancy" OR TI “life expectancy” OR AB “life expectancy” OR DE "Health Impairments" OR TI elderly OR AB elderly OR TI “older adults” OR AB “older adults” OR DE "Terminally Ill Patients" OR DE "Hospice" OR TI “terminal care” OR AB “terminal care” OR TI hospice* OR AB hospice* or TI geriatric OR AB geriatric	Expanders - Apply equivalent subjects Search modes - Find all my search terms	194,502
9	S7 OR S8	Expanders - Apply equivalent subjects Search modes - Find all my search terms	309,863

Search No.	APA PsycInfo (EbscoHost) Query	Limiters/Expanders	Results
10	S6 AND S9	Expanders - Apply equivalent subjects Search modes - Find all my search terms	150
11	TX “choosing wisely” OR TI CWDIF OR AB CWDIF OR TX “low-value care” OR “low- value service” OR “low-value services” OR TI “low-value screening” OR AB “low-value screening” OR TX (deadopt* OR “de-adopt*”) OR TI (Deimplement* OR "de-implement*" OR "Medical Overuse" OR "Patient Harm" OR "Unnecessary Procedures" OR "Antimicrobial stewardship" OR ((inappropriate OR appropriate) AND (management OR screening OR use)) OR "harmful service*" OR (harm* AND care) OR ("low-value" AND decision*) OR Overuse OR (reduc* AND (inappropriate OR harm* OR screening)) OR (unnecessary AND (use OR screening)) OR (wasteful AND (use OR screening)) OR (stop* AND screening)) OR AB (Deimplement* OR "de-implement*" OR "Medical Overuse" OR "Patient Harm" OR "Unnecessary Procedures" OR "Antimicrobial stewardship" OR ((inappropriate OR appropriate) AND (management OR screening OR use)) OR "harmful service*" OR (harm* AND care) OR ("low-value" AND decision*) OR Overuse OR (reduc* AND (inappropriate OR harm* OR screening)) OR (unnecessary AND (use OR screening)) OR (wasteful AND (use OR screening)) OR (stop* AND screening))	Expanders - Apply equivalent subjects Search modes - Find all my search terms	90,671
12	S10 AND S11	Expanders - Apply equivalent subjects Search modes - Find all my search terms	35
13	S12	Limiters - Publication Year: 2012-2023; English; Population Group: Human Expanders - Apply equivalent subjects Search modes - Find all my search terms	25

Grey Literature Sources Searched

Source	Information on Screening
Federal agencies	
Administration for Community Living Resource[74]	Nothing found related to stopping screening .
National Institutes of Health National Institute on Aging[75]	Nothing found related to stopping screening.
National Council on Aging [76]	Nothing found related to stopping screening.
National Disability Institute [77]	Nothing found related to stopping screening.
Centers for Disease Control and Prevention[78]	Nothing found related to stopping screening.
Advocacy and professional organizations	
Society for Medical Decision Making [79]	Nothing found related to stopping screening.
Mayo Clinic[80]	Continuing medical education podcast: "Mayo Clinic Talks Episode 95: Preventative Screening for Elderly Patients: When to Stop and What to Stop"[81]
Disability and aging organizations	
National Institute on Disability and Rehabilitation Research, Office of Special Education and Rehabilitative Services	News update: "Mammograms Not Helpful in Women 75 and Older, Study Finds"[82]
National Breast Cancer Coalition[83]	Position on breast cancer screening emphasizes harms of screening: "Mammography for Breast Cancer Screening: Harm/Benefit Analysis"[84]
AgingCare	Article on the stopping screening: "Preventive Screening for Seniors: Is That Test Really Necessary?"[85]
Alzheimer's Association[86]	Nothing found related to stopping screening.

Search No.	Query
1	"Choosing Wisely" OR "low-value care" OR "low-value service*" OR "low-value screening" OR De-adopt* OR deadopt* OR Deimplement* OR "de-implement*" OR "Medical Overuse" OR "Patient Harm" OR "Unnecessary Procedures" OR "Antimicrobial stewardship" OR ((inappropriate OR appropriate) AND (management OR screening OR use)) OR "harmful service*" OR (harm* AND care) OR ("low-value" AND decision*) OR Overuse OR (reduc* AND (inappropriate OR harm* OR screening)) OR (unnecessary AND (use OR screening)) OR (wasteful AND (use OR screening)) OR (stop* AND screening)

M.1.3 Article Selection

Our population of interest was individuals of advanced age or with poor health status. We applied the definitions of advanced age and poor health status found in the retrieved studies in the environmental scan. We limited the scope to clinical screening services with U.S. Preventive Services Task Force (USPSTF) Grade A and B recommendations (see **Appendix A**), and specifically on the stopping these services. We sought information based on studies from the United States, as well as other developed countries with a rating of very high per the United

Nations Human Development Index.[87] We excluded protocol papers, cost-effectiveness studies, and articles published before 2012.

M.1.4 Information Gathering and Synthesis

We used DistillerSR to screen literature retrieved from published databases. We confirmed team members' understanding of the topic scope by screening the titles and abstracts from a sample of records (n=21). For the subsequent screening of titles and abstracts, full text, and grey literature sources, we employed single-reviewer screening. A senior team member reviewed the final list of included information. We created summary tables from relevant articles or websites and summarized information in a narrative format. We also highlighted evidence gaps. The environmental scan team then worked closely with the team leading the TEP to develop a discussion guide for the panel.

M.1.5 Scan Key Findings

- There was limited evidence from interventions aimed at stopping screening in individuals of advanced age or poor health status. Most studies were qualitative.
- Studies with an experimental design were focused on interventions at the patient and provider levels. Example strategies studied include patient and provider education, adoption of patient communication preferences, and provider use of decision aids and life expectancy calculators.
- Although some USPSTF recommendations suggest estimating life expectancy to assist in personalizing screening decisions, patients and providers have mixed feelings about this approach.
- Notable gaps in research were a lack of evidence on non-cancer screening tests and limited research in diverse populations.

M.2 Technical Expert Panel Overarching Methods

We recruited participants and facilitated a TEP meeting for this topic.

M.2.1 Technical Expert Panel Recruitment

We recruited 11 experts and 3 patient representatives for the TEP. We developed an initial list of about 30 potential TEP candidates based on recommendations from the Agency for Healthcare Research and Quality (AHRQ), the Stakeholder Panel, information from the environmental scan, and our own knowledge about experts in the topic area. We considered factors such as role, organization type, clinical or specialty area, gender, geography, and self-identified racial or ethnic minority when compiling the list of potential TEP candidates. After AHRQ approved the list of candidates, we recruited potential members via email over several weeks in waves. We offered participants a $400 honorarium for their participation on the TEP. The list of TEP participants is in **Table M.1**.

M.2.2 Technical Expert Panel Meeting

Prior to the TEP meeting, we worked with AHRQ to develop a detailed agenda, meeting pre-reads, and presentation slide deck. The TEP meeting was 3 hours long and was conducted virtually using Zoom. We also utilized the XLeap virtual meeting platform, which allows meeting participants to respond to important discussion questions during and after the meeting. It also allows for a virtual dialogue between participants, who they can view and respond to what other members share in real time. This tool was used to ensure that all TEP members had an opportunity to share their thoughts and fully participate in the meeting. We recorded the TEP meeting via the Zoom platform. We developed the meeting summary based on the Zoom recording, Zoom chat transcript, and XLeap contributions to summarize the TEP discussion.

M.3 Key Informant Interviews

We identified four potential key informants (KIs). KIs were interviewed after the TEP meeting to obtain additional information or details about an issue or specific example that surfaced at the TEP meeting. After AHRQ approved the list of KI candidates, we invited potential key informants via email. We conducted key informant interviews (KIIs) via Zoom, and each interview lasted no longer than 60 minutes. We developed a tailored, semi-structured interview guide. Each KII was recorded.

M.4 List of Technical Expert Panel Members and Key Informants

Table M.1: Technical Expert Panel Members and Key Informants

Name	Organization	Role	Type of Organization
Michael Barry, MD	Massachusetts General Hospital and Harvard University	Chair of USPSTF; Director of the Informed Medical Decisions Program; Professor of Medicine	USPSTF
Amanda Borsky, DrPH, MPP*	Veterans Health Administration, Women's Health and Health Systems Research, Office of Research and Development	Scientific Program Manager	Federal Agency
Tamara Cadet, PhD, LICSW, MPH	University of Pennsylvania	Associate Professor, Social Policy & Practice; Associate Director, Penn Center for Cancer Care Innovation (PC3I) & Director, Program in Community Engagement Innovation, PC3I	Research/Academia
Beverly Canin	Stakeholders for Care in Oncology Research for our Elders (SCOREboard)	Co-Chair	Patient/Consumer Representative

Name	Organization	Role	Type of Organization
Darren DeWalt, MD, MPH	University of North Carolina at Chapel Hill, School of Medicine	Chief General Medicine and Clinical Epidemiology and Director, UNC School of Medicine Institute for Healthcare Quality Improvement	Research/Academia
Ishani Ganguli, MD, MPH	Harvard Medical School, Brigham and Women's Hospital Division of General Internal Medicine and Primary Care	Assistant Professor of Medicine	Research/Academia
Dennis Heaphy, MPH, MEd, MDiv	Massachusetts Disability Policy and Consortium	Lead Researcher	Patient/Consumer Representative
Carmen Lewis, MD, MPH	University of Colorado School of Medicine, Division of General Internal Medicine	Associate Professor	Research/Academia
Craig Pollack, MD, MHS	Johns Hopkins University, Bloomberg School of Public Health	Professor, Department of Health Policy and Administration	Research/Academia
Thomas Radomski, MD, MS	University of Pittsburgh; VA Center for Health Equity Research and Promotion (CHERP)	Assistant Professor of Medicine and Clinical and Translational Science; Research Health Scientist	Research/Academia
Nancy Schoenborn, MD, MPH	Johns Hopkins University School of Medicine	Associate Professor of Medicine, Associate Professor of Oncology	Research/Academia
Mara Schonberg, MD, MPH	Beth Israel Deaconess Medical Center; Harvard Medical School	Associate Professor	Research/Academia
Alexis Snyder, BA	Independent consultant	Patient and Stakeholder Engagement Specialist and Patient Family Advisor	Patient/Consumer Representative
Heather Thompson Mackey, DNP, ANP-BC, AOCN	Prevent Cancer Foundation	Senior Director of Cancer Prevention and Early Detection	Patient/Consumer Representative
Louise Walter, MD	The University of California, San Francisco; San Francisco VA Health Care System	Chief of UCSF Division of Geriatrics and Professor of Medicine; Section Chief, Geriatrics, Palliative & Extended Care	Research/Academia
Anonymous			Research/Academia
Anonymous			Other

* Speaking on behalf of herself and not institution

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