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Evidence-Based Intervention Reference Guide: Cancer Prevention and Screening

This is a guide to evidence-based interventions relevant to cancer prevention and screening quality improvement projects.

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Evidence-Based Intervention Resources

- [ACS Quality Improvement Implementation Manual](#)
- [ACS Comprehensive Cancer Control Initiatives](#)
- [CPSTF Community Guide](#)
- [ACS Evidence Based Interventions video](#)
- [NCI Evidence-Based Cancer Control Programs](#)
- [ACS Prostate Cancer Shared Decision Aid](#)
- [RE-AIM](#)
- [ACS Roundtable Resources](#)

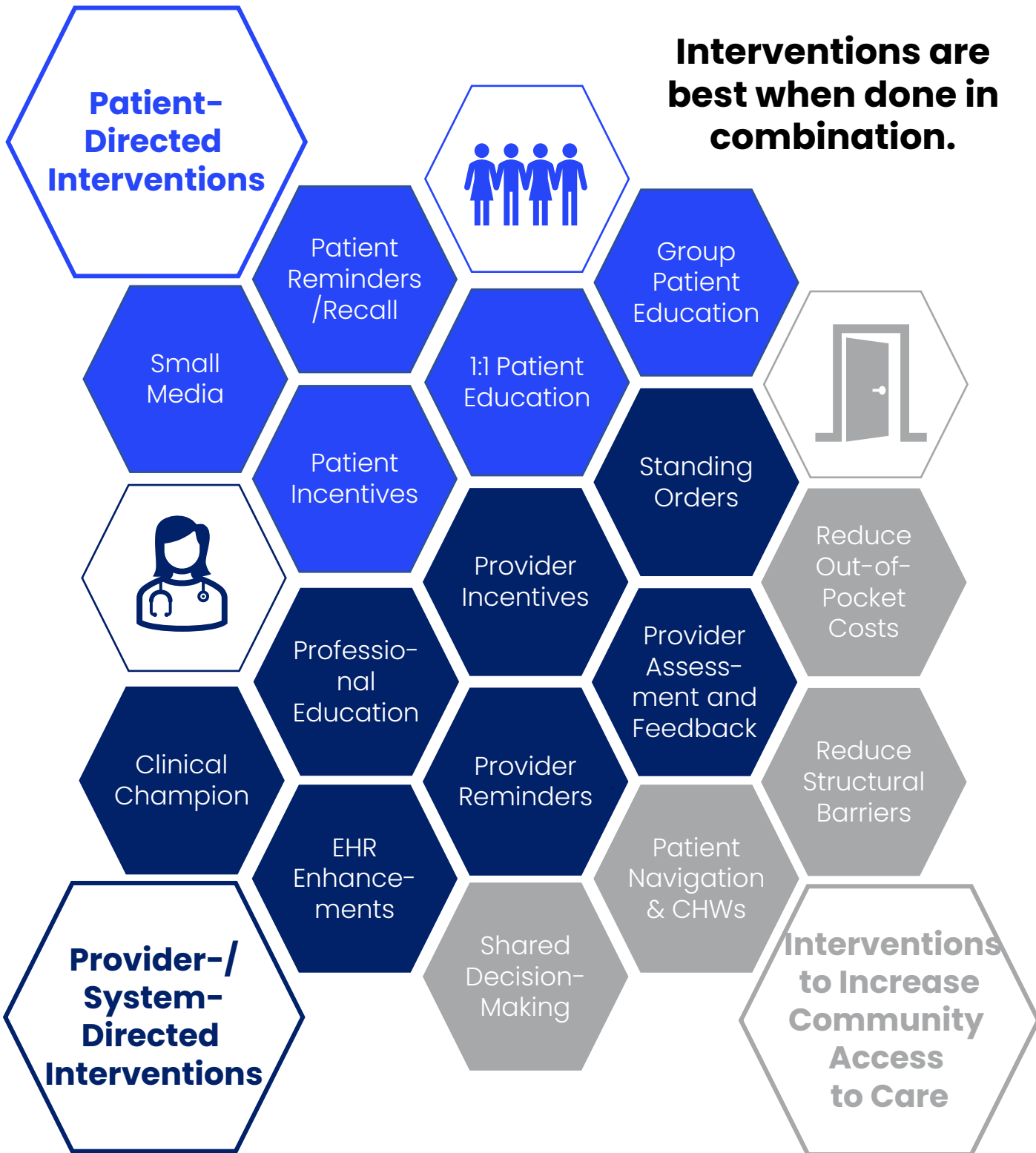
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Contact interventions@cancer.org for any questions about this document.

Evidence-Based Intervention Types

Interventions are best when done in combination.



Interventions at-a-Glance

Intervention	Breast Cancer Screening†	Cervical Cancer Screening†	Colorectal Cancer Screening†	HPV Vaccination	Lung Cancer Screening	Prostate Cancer Screening
Multicomponent Interventions	Recommended†	Recommended†	Recommended†	Recommended†	Recommended	Supported*
Patient-Directed Interventions						
Patient Incentives	Insufficient Evidence	Insufficient Evidence	Insufficient Evidence	Potential positive effect, but grade of evidence low ¹	Insufficient Evidence	Insufficient Evidence
Patient Reminders	Recommended	Recommended	Recommended	Recommended ^{2,3}	Recommended for surveillance after initial screening ⁴	Supported* ⁵
Group Education	Recommended	Insufficient Evidence	Insufficient Evidence	Evidence supports health education	Recommended ⁷	Supported* ⁸
Mass Media	Insufficient Evidence	Insufficient Evidence	Insufficient Evidence	Insufficient evidence	Insufficient Evidence	Insufficient Evidence
One-on-One Education	Recommended	Recommended	Recommended	Recommended: Strong provider recommendation ⁶	Recommended ^{9,10}	Supported ¹¹
Small Media	Recommended	Recommended	Recommended	Recommended ¹²	Insufficient Evidence	Supported ¹³
Provider- and System- Directed Interventions						
Engaging a clinical champion^{14,15,16,17}	Evidence supports engaging a clinical champion in implementing evidence-based practices and influencing change.					
EHR Enhancements^{18,19,20}	Recommended	Recommended	Recommended ²¹	Recommended ²²	Recommended ²³	Evidence supports improving tracking systems ^{24,25}
Professional Education	Recommended ²⁶	Recommended ²⁶	Recommended ²⁷	Recommended ²⁸	Recommended ^{29,30}	Supported* ¹³
Provider Assessment and Feedback	Recommended	Recommended	Recommended	Recommended ³¹	Insufficient Evidence	Insufficient Evidence
Provider Incentives	Insufficient Evidence	Insufficient Evidence	Insufficient Evidence	Insufficient Evidence	Insufficient Evidence	Insufficient Evidence
Provider Reminder and Recall Systems	Recommended	Recommended	Recommended	Recommended ³²	Recommended ³³	Supported* ¹³
Standing Orders^{34,35}	Recommended ³⁶	Recommended ³⁷	Recommended ^{38,39}	Recommended	Recommended	Insufficient Evidence
Interventions to Increase Community Access to Care						
Promoting Informed Decision-Making for Cancer Screening	Insufficient Evidence	Insufficient Evidence	Insufficient Evidence	N/A for HPV vaccination	Recommended ⁴⁰	Recommended ^{13,41}
Interventions Engaging Patient Navigators & CHWs	Recommended	Recommended	Recommended	Use of CHWs in HPV vaccination is supported ⁴²	Patient Navigation Recommended ⁴³	Insufficient Evidence
Reducing Structural Barriers	Recommended	Insufficient Evidence	Recommended	Insufficient Evidence	Recommended ⁴⁴	Evidence supports allowing longer appointment times ¹³
Reducing Patient Out-of-Pocket Costs	Recommended	Insufficient Evidence	Insufficient Evidence	Insufficient Evidence	Insufficient Evidence	Insufficient Evidence

[Full list of references and Bibliography](#) begins on page 13.

† Recommendations for breast, cervical, and colorectal interventions with no footnote are based on guidance from the [Community Preventive Services Task Force Guide](#).

*Interventions listed are determined to be **recommended** as evidence-based, **supported** by research but not currently recommended, or currently **lacking sufficient evidence** to be supported or recommended.

Patient-Directed Interventions

Group Patient Education

- Breast[†]
- Lung⁷

Group patient education conveys information on indications for, benefits of, and ways to overcome barriers to screening, with the goal of informing, encouraging, and motivating participants to seek recommended screening. Group education is usually conducted by health professionals or by trained laypeople who use presentations or other teaching aids in a lecture or interactive format, and often incorporate role modeling or other methods. Group education can be given to a variety of groups, in different settings, and by different types of educators with different backgrounds and styles.

Tips for implementing a group patient education intervention:

- Keep educational opportunities interactive and engaging.
 - Play music during breaks or before/after the meeting.
 - Ask open-ended questions as prompts.
 - Use a combination of individual, small-group (2-3), and large-group activities.
- Incorporate different teaching aids for different learning styles.
 - Use PowerPoint slides to share photos, infographics, data, etc.
 - Show videos for engaging storytelling.
 - Provide individual worksheets for those who need to write things as they learn.
- Use pre- and post-testing to gauge how successful the activity was.

One-on-One Patient Education

- Breast[†]
- Cervical[†]
- Colorectal[†]
- Lung^{9,10}
- HPV Vaccination⁶

One-on-one patient education delivers information to individuals about indications for, benefits of, and ways to overcome barriers to cancer screening or HPV vaccination, with the goal of informing, encouraging, and motivating them to seek recommended screening. These messages are delivered by health care workers or other health professionals, lay health advisers, or volunteers, and are conducted by telephone or in person in medical, community, worksite, or household settings.

These messages can be tailored with the intent to reach one specific person, based on characteristics unique to that person, related to the outcome of interest, and derived from an individual assessment. One-on-one education is often accompanied by supporting materials delivered via small media (e.g., brochures), and may also involve patient reminders.

Tips for implementing a one-on-one patient education intervention:

- Tailor the content to specific populations.
 - Deliver the information in preferred language.
- Use supporting materials like small media and infographics.
 - Ensure the reading comprehension level and language are appropriate for your patient population.
- Use patient reminders as another opportunity for one-on-one education by adding a message about the importance of screening on mailed reminders, virtual reminders, and in phone call reminder scripts.
- Overcome patient hesitation by using motivational interviewing techniques.

Patient Incentives*

**Potential positive effect for HPV vaccination, but grade of evidence low*

Patient incentives are small, non-coercive rewards (e.g., cash or coupons) that aim to motivate people to seek colorectal cancer screening for themselves or to encourage others (e.g., family members, close friends) to seek screening. Incentives are distinct from interventions designed to improve access to services (e.g., transportation, childcare, reducing patient out-of-pocket costs).

Patient-Directed Interventions (*cont'd*)

Patient Reminders/Recall

- Breast[†]
- Cervical[†]
- Colorectal[†]
- Lung⁴
- HPV Vaccination^{2,3}

Patient reminders are written (letters, postcards, emails, or texts) or telephone messages (including automated messages) advising people that they are due for screening or vaccination. The patient reminders may be enhanced by one or more of the following:

- Follow-up printed or telephone reminders
- Additional text or discussion with information about indications for, benefits of, and ways to overcome barriers to screening
- Assistance in scheduling appointments

These interventions can be general for the overall target population or tailored with the intent to reach one specific person, based on characteristics unique to that person, related to the outcome of interest, and derived from an individual assessment.

Tips for implementing a patient reminder/recall intervention:

- Think through the many options for reminders (mail, virtual, phone, etc), and choose the intervention that best fits your patient population's needs and preferences.
 - Consider using multiple methods of reminders for a more comprehensive approach.
 - Test the message contents to see if they need to be finessed or changed for better results.
 - When using text reminders, make use of automated responses to schedule an appointment.
- Schedulers should be aware of a patient reminder campaign so they are prepared for questions and concerns.
- Many reminders are available in other languages; ensure you are using the correct language for your patient population.
- If possible, schedule future appointments for additional screening before patients leave the office depending on the screening guideline recommendations.

Small Media

- Breast[†]
- Cervical[†]
- Colorectal[†]
- HPV Vaccination¹²

Small media includes videos and printed materials, including letters, brochures, and newsletters. These materials can be used to inform and motivate people to be screened for cancer. They can provide information tailored to specific individuals or targeted to general audiences.

Tips for implementing a small media intervention:

- Use video media for a more interactive patient education or reminder system.
- Tailor the language and content used in your media to your patient population.
 - Use images that are representative of your patient population to better resonate with the intended audience.
- Consider different messages that might better resonate with your patients.
- Share small media at your health system and throughout the community to reach a wider audience.

Provider- and System-Directed Interventions

Clinical Champion/ Leadership Buy-In

- Breast^{14,15,16}
- Cervical^{14,15,16}
- Colorectal^{14,15,16}
- Lung^{14,15,16}
- HPV Vaccination^{14,15,16}

Clinical champions are clinicians at health systems who serve as advocates for screening and vaccination programs. These individuals have an interest in improving processes and practices around screening or vaccination and are knowledgeable about the focus of the project. They can be helpful in getting system buy-in, accessing resources to support the work, and sharing the successes of the project.

Tips for a clinical champion intervention:

- This person should have a clear understanding of how the focus area is prioritized at the health system.
- Make sure not to assign too many roles on the QI team to one person.
- When presenting clinical content, use clinical champions as subject-matter experts.

EHR Enhancements

- Breast^{18,19,20}
- Cervical^{18,19,20}
- Colorectal^{18,19,20,21}
- Lung^{18,19,20,23}
- HPV Vaccination^{18,20,22}

EHR (electronic health record) systems can help coordinate a multitude of care components (patient information, adherence to care, patient and provider reminders, orders and test results, etc.). By enhancing current EHR capabilities, health systems may be able to improve their data tracking/reporting and communication processes to reduce barriers and delays in care.

Tips for implementing EHR enhancement interventions:

- If EHR allows, incorporate patient and provider reminders into the system.
- Integrate with a population management system to better understand your data.
- Leverage patient portals to improve communication with your patients.
- Provide professional education to all clinic staff regarding any EHR updates so everyone is aware of the changes/improvements that could affect workflow.
- Test small changes to an EHR enhancement with limited staff before making the change system-wide to minimize errors and disruptions.

Professional Education

- Breast²⁶
- Cervical²⁶
- Colorectal²⁷
- Lung^{29,30}
- HPV Vaccination²⁸

Professional education aims to increase knowledge of clinical staff and change their attitudes about screening and vaccination. Information may be shared through written materials, videos, lectures, continuing medical education programs, computer-assisted instruction, or distance-based training.

Tips for implementing a professional education intervention:

- Leverage existing meetings for educational opportunities to reach as many team members as possible.
- Use existing materials like Implementing Interventions PowerPoint decks from the American Cancer Society as aids to learning.
- Use pre- and post-testing to measure effectiveness of education.

Provider Incentives*

**Insufficient evidence is needed for health system partner; however, health plan partners often use incentives for HPV vaccination.*

Provider incentives are direct or indirect rewards intended to motivate providers to perform cancer screening or make appropriate referrals for their patients to receive these services. Rewards are often monetary, but can also include non-monetary incentives (e.g., continuing medical education credit). Because some form of assessment is needed to determine whether providers receive rewards, an assessment component may be included in the intervention.

Provider- and System-Directed Interventions (cont'd)

Provider Assessment and Feedback

- Breast[†]
- Cervical[†]
- Colorectal[†]
- HPV Vaccination³¹

Provider assessment and feedback interventions both evaluate provider performance in delivering or offering screening or vaccination to patients (assessment) and present providers with information about their performance in providing screening or vaccination services (feedback). Feedback may describe the performance of a group of providers (e.g., mean performance for a practice) or an individual provider, and may be compared with a goal or standard.

Tips for implementing a provider assessment and feedback intervention:

- Incorporate assessment into existing team dashboards or spreadsheets with other metrics.
- Use feedback that many team members will see.
 - System-wide email
 - Regularly used dashboard
 - Large posterboard in break room
- Leverage competition and offer prizes for high performers.
 - Public display like a trophy or a certificate
 - Food options like breakfast for the whole clinic
- Engage system leadership in sharing results of the assessment and feedback.

Provider Reminders/Recall

- Breast[†]
- Cervical[†]
- Colorectal[†]
- Lung³³
- HPV Vaccination³²

Provider reminders and recalls inform health system providers it is time for a patient's cancer screening or vaccination (called a "reminder") or that the patient is overdue for screening or vaccination (called a "recall"). The reminders can be provided in different ways, such as in patient charts or by email.

Tips for implementing a provider reminder/recall intervention:

- Incorporate automated EHR reminders as much as possible.
- If automated reminders are consistently ignored, try a different method of reminder like a sticker or other visual cue.
- Explore positive deviants and learn best practices that can be shared with others.
- Review patients due for screening during morning huddles or other team meetings.
- Engage everyone at the clinic in the effort to find and encourage screening.

Standing Orders

- Breast^{34,35,36}
- Cervical^{34,35,37}
- Colorectal^{38,39}
- Lung^{34,35*}
- HPV Vaccination^{34,35}

Standing orders provide written authority for members of health care teams to perform certain clinical care without obtaining a physician order first. These orders can relieve physician workloads and streamline processes for cancer screening and HPV vaccination.

Tips for implementing a standing order intervention:

- Use existing standing order templates as an example to get started.
- Work to get leadership signoff and buy-in for the order.
- Use professional education to ensure everyone on the team is aware of the standing order in place.
- Incorporate new orders into system processes so they become systematic.
 - Use a process map tool to help identify where the orders will come into play and who they will involve.

*Standing orders for Tobacco Use History and Eligibility Assessment

Interventions to Increase Community Access to Care

Community Health Workers

- Breast[†]
- Cervical[†]
- Colorectal[†]
- HPV Vaccination⁴²

Community health workers (CHWs) are trained frontline health workers who serve as a bridge between communities and health care systems. They are from, or have a close understanding of, the community served. They often receive on-the-job training and work without professional titles. Organizations may hire CHWs or recruit volunteers to act in this role. CHWs may work alone or as part of an intervention team that includes other health care professionals.

Patient Navigation

- Breast[†]
- Cervical[†]
- Colorectal[†]
- Lung⁴³

Patient navigation in the cancer care setting refers to individualized assistance offered to patients, families, and caregivers to help overcome health care system barriers and facilitate timely access to quality health and psychosocial care from pre-diagnosis through all phases of the cancer experience. Patient navigation services advance health equity when implemented among populations that often have lower screening rates. With timely and appropriate follow-up care and treatment, patient navigation services improve health for these groups.

Tips for implementing **Community health worker** or **patient navigation** interventions:

- Include navigators and CHWs into your QI meetings to get a better understanding of your patients' unique barriers to care.
- Create unique professional education opportunities for this group.
- Review caseloads for these team members to better understand their reach and the support they need.

Reduce Out-of-Pocket Costs

- Breast[†]

Interventions to reduce patient out-of-pocket costs attempt to minimize or remove economic barriers that make it difficult for patients to access cancer screening services. Costs can be reduced through a variety of approaches, including vouchers, reimbursements, reduction in copays, or adjustments in federal or state insurance coverage. Efforts to reduce patient costs may be combined with measures to provide patient education, information about program availability, or measures to reduce structural barriers.

Tips to implementing intervention that reduce out-of-pocket costs for patients:

- Work with other community organizations on a sliding scale or free mammogram program.
- Explore the opportunity for charity care at your health system.
- Apply for grants to reduce the cost for uninsured or underinsured patients.
- Collaborate with a local BCCCP program (breast and cervical) for free treatment of any diagnosed breast or cervical cancer in specific populations.

Shared Decision-Making

- Lung⁴⁰

Providers play a key role in determining the eligibility of patients for lung cancer screening, ensuring patients understand the benefits and harms of lung cancer screening and working with them to make decisions about screening that are consistent with the patients' values. Shared decision-making is a communication process in which practitioners discuss options and work collaboratively with patients toward preference-based decisions.

Interventions to Increase Community Access to Care *(cont'd)*

Reduce Barriers to Care

- Breast[†]
- Colorectal[†]
- Lung⁴⁴

Structural barriers are non-economic burdens or obstacles that make it difficult for people to access cancer screening. Interventions designed to reduce these barriers may facilitate access to cancer screening services by:

- Reducing time or distance between service delivery settings and target populations
- Modifying hours of service to meet patient needs
- Offering services in alternative or non-clinical settings (e.g., mobile mammography vans at worksites or in residential communities)
- Eliminating or simplifying administrative procedures and other obstacles (e.g., scheduling assistance, transportation, dependent care, translation services, limiting the number of clinic visits)

Tips for implementing an intervention to reduce barriers to care:

- Extend traditional office hours, and publicize new hours widely with patients.
 - Test a small change first to see how it works, like extending hours one evening a week for two weeks.
 - Use data and patient feedback to understand what hours and days would be most useful to them.
 - Get buy-in from everyone at the clinic so the extended hours don't fall to one or two individuals.
 - Track the patients utilizing the extended hours to measure success.
- Look into opportunities to support transportation needs for patients, including:
 - Gas cards
 - Bus vouchers
 - Community rideshare programs
- Partner with mobile units as available to meet patients where they are.
- Systematize processes as much as possible to avoid variation.
- Test new policy changes on a small scale before implementing system-wide.
- Make everyone at the clinic aware of the policy change and expectations.
 - Add office policies to a centralized location at an office for staff to reference as needed.
 - Integrate office policies into new staff onboarding and host refreshers for current staff.

Interventions to Increase Shared Decision-Making for Prostate Cancer Screening

Guidelines for prostate cancer screening recommend that providers engage in shared decision-making (SDM) conversations with eligible patients to allow them the opportunity to make an informed decision about whether to be screened for prostate cancer. The following prostate cancer screening interventions include strategies that remove barriers, create opportunities, and increase utilization of these SDM conversations.

Clinical Champion/ Leadership Buy-In

Prostate^{14, 15, 16, 17}

Leadership buy-in for improving the utilization and effectiveness of shared decision-making conversations for prostate cancer screening in practice can influence provider acceptance and attitude toward the importance of SDM for prostate cancer screening. Having a clinical champion in place can also help increase the utilization of SDM conversations by keeping staff energized and focused on adherence to guidelines for informed decision-making. Clinical champions can also periodically monitor clinic-level goals for SDM for prostate cancer screening and recommend adjustments to health system interventions and approaches when needed.

Patient Education

*Prostate*¹³

Patient education that is aimed at promoting informed prostate cancer screening decisions can be used to increase the number of men who are aware of their individual risk level and encourage them to talk to their provider about the benefits and risks of prostate cancer screening through a shared decision-making process. Introducing patients to the PSA test, potential harms and benefits of testing, and information to help them understand their screening options prior to the SDM process can help facilitate informed decision-making by increasing patient knowledge and confidence in their screening decision.

Patient Reminders

*Prostate*⁵

Promoting the use of patient reminders designed to enhance knowledge of the decision-making process for prostate cancer screening may increase patient understanding regarding the benefits and limitations of PSA testing for prostate cancer screening and increase the likelihood that they will request and participate in shared decision-making conversations with their providers. Ensure that reminders are in the preferred language and at the appropriate health literacy level for your patient population in order to promote health equity.

Provider Education

*Prostate*¹¹

Provider education regarding prostate cancer screening can be used to increase the knowledge of health care providers around the benefits, risks, and limitations of PSA testing for prostate cancer screening, how and when to have effective shared decision-making conversations with patients, and how to best communicate with African American patients about their increased risk of prostate cancer. Provider education should focus on increasing the use of SDM conversations rather than increasing PSA testing overall and include methods for integrating SDM into practice within limited time frames available during patient consultations. Ensure that educational materials are in the preferred language and at the appropriate health literacy level for your patient population in order to promote health equity.

Interventions to Increase Shared Decision-Making for Prostate Cancer Screening (*cont'd*)

EHR Enhancements (improving tracking systems)

Prostate^{24,25}

Improving utilization of shared decision-making conversations for prostate cancer screening begins with having the ability to effectively document and track when these conversations have taken place.

By improving current tracking systems or implementing new methods for tracking SDM conversations, health systems can assess their current processes for implementing these conversations and determine the rate at which SDM is taking place for eligible patients. Tracking how often these conversations are taking place can also help identify potential gaps/barriers to SDM, as well as identify appropriate interventions to increase the utilization of SDM for prostate cancer screening.

Reduce Barriers (limited appointment times)

*Prostate*¹³

A significant barrier to shared decision-making conversations for prostate cancer screening is the limited time allocated in patient consultations to engage an SDM process. Providing health care providers with effective methods for integrating these conversations into practice within a limited time frame can help facilitate SDM implementation. Training for health care providers regarding how to have effective SDM conversations in a limited time frame may also include developing appropriately tailored questions or utilizing decision aids.

Provider Reminders/ Recall

*Prostate*¹³

Provider reminders and recall interventions inform health system providers that a patient is due (reminder) or overdue (recall) for a shared decision-making conversation for prostate cancer screening. Options for provider reminders include manual reminders (flagging of medical charts to highlight patients due for an SDM conversation) or electronic reminders (alerts set up through the health system's EHR based on criteria selected for SDM conversations).

When setting up provider reminders, it's important for health systems to develop a workflow that ensures records are properly flagged, providers are properly trained on changes in protocol, providers are engaging in SDM conversations appropriately, and SDM conversations and results are being properly documented.

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