Working together to improve health care quality, outcomes, and affordability in Washington State.

Prostate Cancer Screening Report and Recommendations

September 2015

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Executive Summary

The Dr. Robert Bree Collaborative was established in 2011 to provide a forum in which public and private health care stakeholders can work together to improve quality, health outcomes, and cost-effectiveness of care in Washington State. Variation in prostate cancer screening with the prostate specific antigen (PSA) test and high rates of PSA testing that may expose men to increased risk of harm, lower quality of life, and undue cost was identified by the Bree Collaborative as a priority area for improvement and the Collaborative elected to form a workgroup to address this issue. The workgroup met from March 2015 to November 2015 to develop the following recommendations.

Prostate cancer is the most common type of cancer diagnosed among men. The PSA test is commonly used to screen men for prostate cancer. However, evidence conflicts as to whether the PSA test when used for prostate cancer screening has been associated with reductions in prostate cancer mortality, and if present, absolute risk reduction is small. The potential for overtreatment is high and the majority of harms from prostate cancer screening occur due to psychological consequences of a positive test, in those that do have a positive test, harms from biopsy, and in those that have a positive biopsy, harms from the treatment itself. Prostatectomy and radiation are common forms of treatment in the United States, resulting in serious complications (e.g., heart attack, stroke, impotence, urinary incontinence).

Guidelines on using the PSA test for routine prostate cancer screening differ on whether health care providers should initiate a discussion about PSA testing with all men in an appropriate age range (e.g., 55-69) and risk category or discuss screening only at the patient's request. Most guidelines recommend shared decision making prior to a PSA test. Despite these recommendations and those of others discussed previously, use of a shared decision-making process is uncommon and variable and many men given the test are not informed of the potential harms, benefits, and scientific uncertainty.

The Bree Collaborative recommends against routine screening with PSA testing for average risk men 70 years and older, under 55 years old, who have significant co-morbid conditions, or with a life expectancy less than 10 years. All men should be evaluated by their provider for family history and factors that may elevate the risk of prostate cancer (e.g., first or second degree relative with a prostate or breast cancer diagnosis, race). Primary care clinicians should review evidence regarding PSA testing for prostate cancer screening. The shared decision making process should be formalized and documented in the patient's medical record. The patient decision aids used in the shared decision-making process should be certified by Washington State when available.

For primary care clinicians, we recommend two possible pathways depending on the physician's interpretation of the evidence. Clinicians who believe there is overall benefit from screening PSA testing should order this test for average risk men between 55-69 years old only after a formal and documented shared decision-making process. Clinicians who believe there is overall harm from screening PSA testing may initiate testing of average-risk men aged 55-69 at the request of the patient after a formal and documented shared decision-making process. Only men who express a definite preference for screening after discussing the advantages, disadvantages, and scientific uncertainty should have PSA testing.

Dr. Robert Bree Collaborative Background

The Dr. Robert Bree Collaborative was established in 2011 by Washington State House Bill 1311 *"…to provide a mechanism through which public and private health care stakeholders can work together to improve quality, health outcomes, and cost effectiveness of care in Washington State."* The Bree Collaborative was modeled after the Washington State Advanced Imaging Management (AIM) project and named in memory of Dr. Robert Bree, a pioneer in the imaging field and a key member of the AIM project.

Members are appointed by the Washington State Governor and include public health care purchasers for Washington State, private health care purchasers (employers and union trusts), health plans, physicians and other health care providers, hospitals, and quality improvement organizations. The Bree Collaborative is charged with identifying up to three health care services annually that have substantial variation in practice patterns, high utilization trends in Washington State, or patient safety issues. For each health care service, the Bree Collaborative identifies and recommends best-practice evidence-based approaches that build upon existing efforts and quality improvement activities aimed at decreasing variation. In the bill, the legislature does not authorize agreements among competing health care providers or health carriers as to the price or specific level of reimbursement for health care services. Furthermore, it is not the intent of the legislature to mandate payment or coverage decisions by private health care purchasers or carriers.

See **Appendix A** for a list of current Bree Collaborative members.

Recommendations are sent to the Washington State Health Care Authority for review and approval. The Health Care Authority (HCA) oversees Washington State's largest health care purchasers, Medicaid and the Public Employees Benefits Board Program, as well as other programs. The HCA uses the recommendations to guide state purchasing for these programs. The Bree Collaborative also strives to develop recommendations to improve patient health, health care service quality, and the affordability of health care for the private sector but does not have the authority to mandate implementation of recommendations.

For more information about the Bree Collaborative, please visit: www.breecollaborative.org.

Variation in PSA testing and high rates of PSA testing that may expose men to increased risk of harm, lower quality of life, and undue cost was identified by the Bree Collaborative as a priority area for improvement and the Collaborative elected to form a workgroup to address this issue. The workgroup met from March 2015 to November 2015 to develop the following recommendations.

See **Appendix B** for the Prostate Cancer Screening workgroup charter and a list of members.

Problem Statement

Prostate cancer is the most common type of cancer diagnosed among men.[1] Men have a lifetime risk of 14% with an average five year survival of 98.9%.[2] The prostate specific antigen (PSA) test has been used to screen men for prostate cancer along with the digital rectal exam since approval by the United States Food and Drug Administration in 1986.[3,4] Evidence conflicts as to whether the PSA test has been associated with reductions in prostate cancer mortality, and if present, absolute risk reduction is small. While the PSA test is often used in conjunction with the digital rectal exam, it is more sensitive and there are no trials looking at efficacy of the digital rectal exam alone.[5] Consequently, these recommendations only review the PSA test for prostate cancer screening.

Approximately 27% of estimated new cancer cases of all cancer cases in men in 2014 were due to prostate cancer with a higher lifetime risk of diagnosis among black men and a lower lifetime risk among Asian American/Pacific Islander, American Indian/Alaska Native and Hispanic men when compared to non-Hispanic white men.[1] Prostate cancer is the second leading cause of cancer deaths in men, with an estimated 21.4/100,000 of deaths (all races, age-adjusted) due to the disease.[2]

> Nationally, approximately 27.5% of men 40 years and older report PSA screening, which increases to 49% in those 70 to 74 years old.[6]

Use of the PSA test has been associated with an increase in the number of men diagnosed and is also associated with a shift from diagnosis of later stage disease to earlier stage disease.[7] Most guidelines agree that those over 70 would not benefit from screening. However, evidence of a beneficial impact of PSA testing on mortality in the 50 to 74 year old age group is conflicting.[8,9] The American Prostate, Lung, Colorectal, and Ovarian Cancer Screening Trial designed and sponsored by the National Cancer Institute followed over 75,000 men aged 55 to 74 years in 10 screening centers after random assignment to intervention of annual PSA testing for 6 years or control with usual care.[8] After 13 years of follow-up, cumulative prostate cancer mortality rates in the intervention and control populations were not significantly different at 3.7 and 3.4 deaths per 10,000 person years respectively. Investigators found no interactions with age, having PSA testing prior to assignment, or comorbidity.

The European Randomised Study of Screening for Prostate Cancer followed over 182,000 men aged 50 to 74 years in eight countries after randomization to intervention or control.[9] After 13 years of follow-up, the absolute risk reduction of death from prostate cancer in the intervention compared to control group was 1.3 per 1,000 men randomized, relative risk reduction was 21% (27% after adjustment for selection effects), and the number needed to screen reduced from 1,055 men at 11 years of follow-up to 781 men at 13 years with 27 needing to be diagnosed to avert one death from prostate cancer.

The American trial has been criticized for having high rates of PSA testing in the control arm, high rates of pre-trial PSA testing, reducing the statistical significance of results, and of lacking a standardized PSA

threshold for biopsy.[10,11] The European trial has been criticized for heterogeneity between study centers including in randomization and consent procedures, variation in screening intervals ranging from two to four years, variation in what constituted a test needing further evaluation ranging from 2.5 ng/mL to 4 ng/mL (and up to 10 ng/mL initially in the Finland center) and only finding significant results in the Swedish and Dutch study centers.[12]

Prostate Specific Antigen Test Accuracy

A PSA test can be positive and accurately indicate that cancer is present but can also be positive when no cancer is present (a false positive). The risk of a positive PSA test when no cancer is present is high, approximately 75%-80% using a PSA threshold between 2.5 ng/mL to 4 ng/mL (but this has been estimated to be as high as 88.1% depending on age, PSA level, and Gleason score).[13] Positive PSA tests are associated with anxiety, increased additional testing, and increased risk of a biopsy.

> Variation in PSA testing and high rates of PSA testing may expose men to increased risk of harm, lower quality of life, and undue cost by detecting cancers that are either not present or that would never result in prostate cancer and result in unneeded and potentially harmful treatment.

Additionally, a detected cancer may not have caused harm in the patient's lifetime (overdiagnosis). Overdiagnosis is relevant to prostate cancer due to the high number of men who are found to have had prostate cancer during an autopsy due to death from another cause, which had not caused harm during the man's life or was not clinically relevant (as high as in 80% of autopsies of those dying in their 80s).[14] Overdiagnosis can lead to overtreatment, or unnecessary treatment, of disease.

Estimates of overdiagnosis vary and depend on the population or context including screening characteristics such as PSA level cutoffs, lead time definition, and calculation methods.[15] Early results from the National Cancer Institute's Surveillance, Epidemiology, and End Results (SEER) registry data found overdiagnosis rates of about 29% for white men and 44% for black men.[16] More recent results use SEER as well as other models and estimate overdiagnosis to range from 23% to 66%.[15] The amount of overdiagnosis or overdetection that men considering screening find acceptable varies considerably.[17]

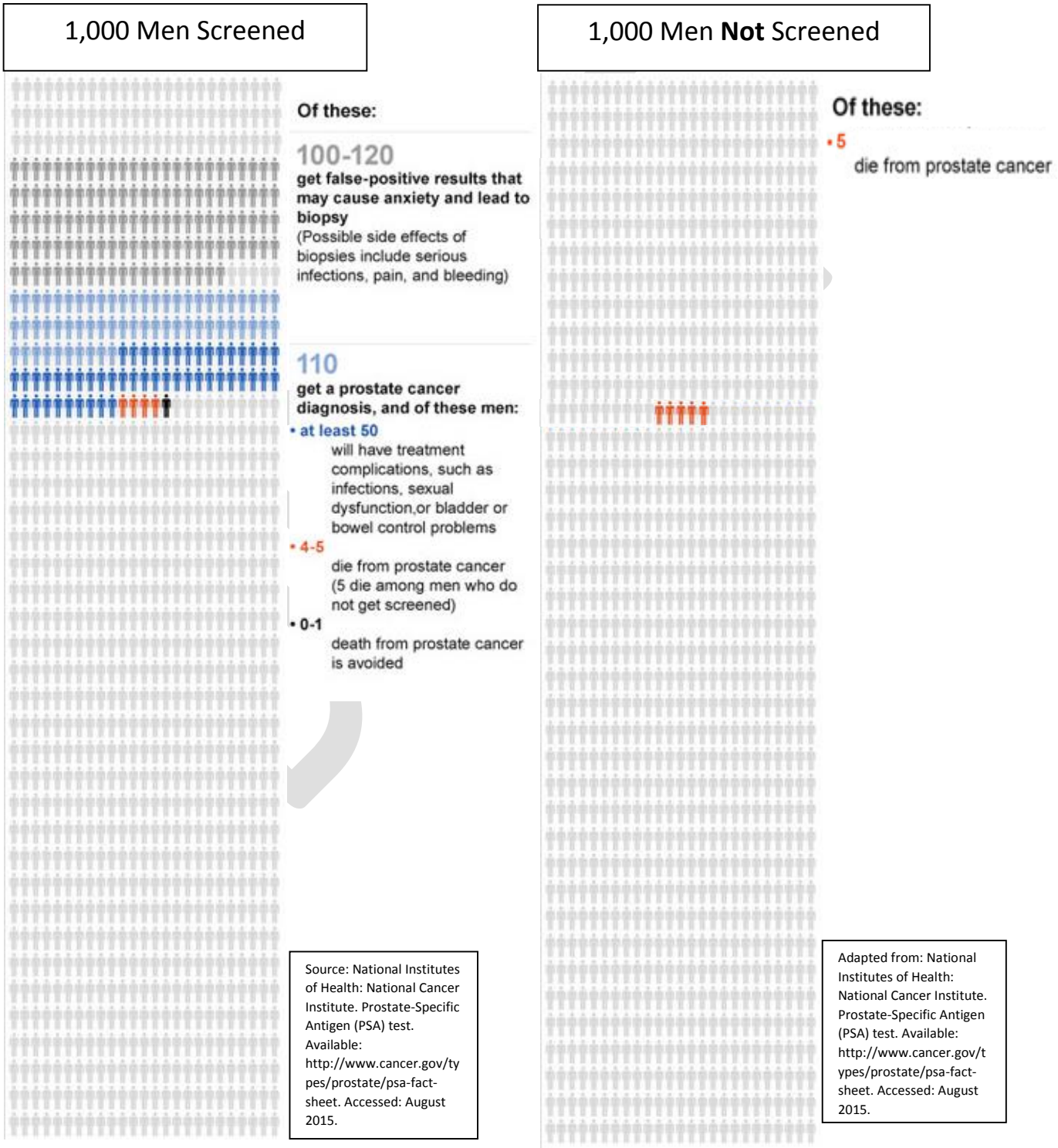
Screening Harms

For a screening to be effective, the screening must be able to accurately detect disease but treatment for the disease also must be effective. The majority of harms from prostate cancer screening occur due to psychological consequences of a positive test, in those that do have a positive test, harms from biopsy, and in those that have a positive biopsy, harms from the treatment itself. Prostatectomy and radiation are common forms of treatment in the United States, resulting in serious possible complications such as heart attack, stroke, impotence, and urinary incontinence.[2,18]

Complications resulting from a positive PSA test are numerous and much of the literature is in agreement about how often these harms occur. Numbers taken from the United States Preventative

Services Task Force (USPSTF) PSA-Based Screening for Prostate Cancer analysis have been adopted into an infographic from www.cancer.gov. Specific complications depend on the type of treatment given. The USPSTF estimated treatment distributions of 60% surgical, 30% radiation, and 10% observation, however this distribution does not take into account a trend toward greater use of active surveillance that may decrease harms. See **Appendix C** for this information presented in a cascade diagram (men aged 55-69 years screened 1-4 years with PSA test over a 10 year period).

Figure 1: Results of Screening vs. Not Screening 1,000 Men with PSA Test[19]



PSA Testing Guidelines

After a systematic review in 2012, the United States Preventive Services Task Force (USPSTF) recommended "*against prostate specific antigen-based screening for prostate cancer*" concluding "*that many men are harmed as a result of prostate cancer screening and few, if any, benefit*."[19] Additionally, the USPSTF recommends that "Physicians should not offer or order PSA screening unless they are prepared to engage in shared decision making that enables an informed choice by patients. Similarly, patients requesting PSA screening should be provided with the opportunity to make informed choices to be screened that reflect their values about specific benefits and harms." The American Academy of Family Physicians recommendations align with those of the USPSTF.[20]

> Guidelines differ on whether health care providers should initiate a discussion about PSA testing with all men in the appropriate age range and risk category or only discuss screening if the patient initiates the discussion.

The American Cancer Society (ACS) and the American College of Physicians (ACP) both recommend providers initiate a discussion with their patients starting at age 50.[5,21,22] The American Urological Association (AUA) recommends this discussion starting at age 55.[23] While both the ACP and the AUA recommend against this practice after age 69, the ACS does not recommend an upper age limit bound. The American Society of Clinical Oncology offers no upper or lower age bounds, recommending men discuss PSA testing with their providers if they have a greater than 10 year life expectancy.[24] The National Comprehensive Cancer Network recommends the most aggressive PSA testing schedule starting at age 45 and repeating at 1-2 years depending on the results.[25]

Acknowledging the controversy around benefit and known harms of screening, all of the guidelines reviewed by the Bree Collaborative Prostate Cancer Screening workgroup recommend shared decision-making before men are screened.[5,19-25] The majority of guidelines recommend against screening for men with a life expectancy of less than 10 years and most recommend screening men between lower age bounds of 50 to 55 and upper age bounds of 69 to 75 years of age.

See **Table 1** for a comparison of guidelines. See **Appendix D** for exact guideline language.

Organizations also recommend using tools to estimate life expectancy without endorsing specific tools. Many are in the public domain including:

- United States Social Security Administration: www.socialsecurity.gov/OACT/population/longevity.html
- American Armed Forces Mutual Aid Association: www.aafmaa.com/DecisionCenter/Tools,FormsResources/Calculateyourlifeexpectancy.aspx

Table 1: Comparison of Prostate Specific Antigen Testing Guidelines[5,19-25]

	Screening using Shared Decision Making	Based on Life Expectancy	Frequency
US Preventative Services Task Force, 2012	No PSA testing for screening regardless of age unless men request testing, then shared decision making		
American Academy of Family Physicians, 2012	No PSA testing for screening regardless of age unless men request testing, then shared decision making		
American Cancer Society, 2014	Initiate discussion on screening: • Average risk men over age 50 years • High risk men (African American, first degree relative diagnosed before 65), at 45 years • Higher risk men (multiple first degree relatives diagnosed before 65), at 40 years	Do not offer screening if ≤10 years	• Individualize screening intervals based on PSA • Annual if ≥2.5 ng/mL, biannual if less • Biopsy if ≥4 ng/mL • Individualized biopsy decision if between 2.5-4 ng/mL
American College of Physicians, 2013	Initiate discussion on screening: • Average risk men between 50 and 69 years • High risk men (African American, first degree relative diagnosed before 65), at 45 years • Higher risk men (multiple first degree relatives diagnosed before 65), at 40 years	Do not offer screening if ≤10-15 years	No more often than 2-4 years
American Society of Clinical Oncology, 2012	Initiate discussion on screening if life expectancy exceeds 10 years		N/A
American Urological Association, 2013	Initiate discussion on screening to men aged 55-69 • Individualized decision for higher risk men starting younger than 55	Do not offer screening if ≤10-15 years	Individualize screening intervals, 2 year interval emphasized over annual interval
National Comprehensive Cancer Network	Initiate discussion for baseline testing for men aged 45-49 years • Individualized decision >70 years	Do not offer screening if ≤10 years	Testing every 1-2 years depending on PSA ng/ml at age 45, wait to 50 if ≤1 ng/mL

Shared Decision Making

Shared decision making is a "*collaborative process that allows patients and their providers to make health care decisions together, taking into account the best scientific evidence available, as well as the patient's values and preferences*."[26] The American College of Physicians defines shared decision making as a conversation between a patient and health care provider that discusses "*enhancing value by decreasing harms and costs while preserving most benefits*."[27]

Often, shared decision making conversations are enhanced by the use of a patient decision aid. The Washington State legislature passed legislation in 2012 giving the "*Medical Director of the Washington Health Care Authority (HCA) the authority to certify patient decision aids*."[28] Patient decision aids are defined as "*a written, audio-visual, or on-line tool that provides a balanced presentation of the condition and treatment options, benefits, and harms including, if appropriate, a discussion of the limits of scientific knowledge about outcomes. They include a means to acknowledge that the tool has been fully reviewed and understood*."[28] RCW 7.70.060 includes elements of shared decision making to qualify for higher legal protection. More information is available here: http://apps.leg.wa.gov/rcw/default.aspx?cite=7.70.060.

All of the guidelines reviewed by the Bree Collaborative Prostate Cancer Screening workgroup recommend shared decision making prior to a PSA test. Despite these recommendations and those of others discussed previously, use of prostate cancer screening shared decision-making is variable. PSA testing has been shown to be associated with discussing advantages only and with discussing both PSA testing advantages and disadvantages but not with discussion of scientific uncertainty.[29]

Results from the 2010 National Health Interview Survey show that: [29]

- 64.3% of men report not being offered a discussion of the advantages, disadvantages, or scientific uncertainty around PSA testing;
- 27.8% reported being screened less than annually, and 25.1% reported nearly annual screening.

Of men over 70 years, only 27.2% report having a discussion of advantages and disadvantages of PSA testing.[6]

Additionally, of the 80% of primary care physicians who report routinely discussing prostate cancer with patients, 64.1% report encouraging patients to have a PSA test.[30] Other surveys have found health care providers to bring up the issue of PSA testing in 64.6% of cases with 73.4% of health care providers recommending PSA testing and discussing the disadvantages of screening for only 32% of men.[31] However, health care providers were less likely to recommend PSA testing for patients reporting less than very good health, indicating a trend toward alignment with guidelines to not offer PSA testing if life expectancy is less than 10 years.

The effect of specific patient decision aids on patient understanding and opinion have shown mixed results, some having little effects on understanding of the scientific uncertainty. A newer prostate cancer screening patient decision aid video was shown to increase men's knowledge of the advantages, disadvantages, and scientific uncertainty of PSA testing and significantly increase the number of men reporting "*leaning away*" from receiving a PSA test.[32]

Treatment Trends

The health care system has been moving away from more aggressive prostate cancer treatment and toward protocols including active surveillance or watchful waiting in part due to an acknowledgement of the harms associated with more aggressive forms of treatment. Multiple studies have shown a trend toward active surveillance for low-risk prostate cancer management.[33,34] However, there is also variation not due to individual patient characteristics that instead depends on individual urology practice indicating opportunity for greater standardization.[35] For men diagnosed with low-risk prostate cancer, use of active surveillance varied from 27-80% for individual urology practices.[33]

Use of more aggressive treatment types, such as primary androgen deprivation therapy and neoadjuvant hormonal therapy with external-beam radiation have decreased from 41.3% (2004-07) to 12.5% (2008-13) and 63% (2000-01) to 6.7% (2008-13) respectively.[34] While many of these other studies have focused on academic medical centers and may not be applicable to the general population, a study of community-based practice patterns found active surveillance to increase sharply in 2010 through 2013 and high-risk disease to be more appropriately treated with "*potentially curative local treatment rather than androgen deprivation alone*."[36]

When following health-related quality of life outcomes in those undergoing active surveillance compared to external beam radiotherapy, at two years of follow-up the radiotherapy group had lower clinically meaningful outcomes for bowel function and bother and general physical health.[37] The proportion of men choosing to continue with active surveillance once selected has also increased, the most common reason for discontinuing being disease progression (volume progression in 64.7% of cases and grade progression in 78.2% of cases).[38]

Workgroup Discussion

The workgroup acknowledges that the evidence from the two major PSA testing trials conflicts and that there are significant limitations to both studies. PSA testing for prostate cancer screening has notable harms but PSA testing may also have a possible beneficial impact on prostate cancer mortality. All men should be evaluated first by their provider for family history and factors that may elevate the risk of prostate cancer (e.g., first or second degree relative with a prostate or breast cancer diagnosis, race, exposure to known carcinogens).

The USPSTF and American Academy of Family Physicians recommend against screening men for prostate cancer using the PSA test, although shared decision making is recommended for men who request a PSA test. The majority of other guidelines including that of the American Cancer Society and American College of Physicians recommend clinicians initiate the discussion with all men based on age (e.g., 50 years old to 74 years old) with special considerations based on being a member of a higher-risk group. The majority of the workgroup's conversation revolved around whether to recommend clinicians initiate the discussion or whether to recommend that interested men initiate the discussion themselves.

Currently, men over 70, 75, and even 80 are screened. Most men given the PSA test regardless of age are not informed of the harms, benefits, and conflicting evidence behind the test. While the benefit of the PSA test is not clear, we encourage avoiding unwanted testing by allowing men to be informed of the harms, benefits, and conflicting evidence before being given a PSA test.

Screening recommendations are generally applied to patients who are asymptomatic. However, men with lower urinary tract symptoms are no more likely to have prostate cancer than men without symptoms.[39] Therefore, in most cases lower urinary tract symptoms are not an indication of prostate cancer and are not a reason to screen.

Additionally, the workgroup discussed cost-effectiveness for PSA testing for prostate cancer screening. However, a cost-effectiveness analysis is only as valid as its underlying measures of effectiveness and cost and the literature is mixed.

Recommendations for Stakeholders

Primary Care (and others who screen for prostate cancer)

- The Bree Collaborative recommends against routine screening with PSA testing for men:
  - At average risk 70 years and older,
  - At average risk under 55 years old,
  - Who have significant co-morbid conditions, or with a life expectancy less than 10 years.
- Primary care clinicians should review evidence regarding PSA testing for prostate cancer screening. The shared decision making process should be formalized and documented in the patient's medical record. The patient decision aids used in the shared decision-making process should be certified by Washington State when available. For primary care clinicians, we recommend two possible pathways depending on the physician's interpretation of the evidence:
  - Clinicians who believe there is overall benefit from screening with PSA testing should order this test for average risk men between 55-69 years old only after a formal and documented shared decision-making process.
  - Clinicians who believe there is overall harm from screening with PSA testing may initiate testing of average-risk men aged 55-69 at the request of the patient after a formal and documented shared decision-making process.
  - Only men who express a definite preference for screening after discussing the advantages, disadvantages, and scientific uncertainty should have screening with PSA testing.
- Men who are at higher risk of prostate cancer because of African American descent, a family history or first degree male relative diagnosed with prostate cancer prior to age 65, Agent Orange exposure, or having a known or suspected familial genetic predisposition to breast, ovarian cancer, or prostate cancer (e.g. BRCA1, BRCA2) should be given the opportunity to discuss the harms, benefits, and scientific uncertainty about PSA testing using a formal and documented shared decision-making process including conversations about increased risk. This conversation can begin earlier than age 55. Only men who express a definite preference for screening should have PSA testing.
- Medical facilities should train clinicians on the shared decision-making process, make available patient decision aids, and allow for tracking of the shared decision-making process within the patient's medical record.

Hospitals

- Support communication and education of patients that accurately reflects the most recent medical knowledge on PSA testing for prostate cancer screening.
- Encourage discussions between clinicians and patients about the potential harms, benefits, and conflicting evidence for PSA testing for prostate cancer screening. Only men who express a definite preference for screening should have PSA testing.

Health Plans

- Reimburse clinicians for engaging patients in a formal and documented shared decision-making process (using a Washington State-approved patient decision aid when available) about prostate specific antigen testing for prostate cancer screening.

Employers/Health Care Purchasers

- Contract with health plans that reimburse clinicians for engaging patients in a formal and documented shared decision-making process (using a Washington State-approved patient decision aid when available) about prostate specific antigen testing for prostate cancer screening.

Washington State Health Care Authority

- Prioritize certification of a PSA testing for prostate cancer screening patient decision aid.
- Include use of the shared decision making process in contractual requirements (e.g., in Accountable Care Organization contracts).

Implementation and Measurement

Washington State has the potential to reduce variation in PSA testing rates while acknowledging the existing scientific uncertainty and conflicting guidelines. Aligning practice patterns, reimbursement, and patient understanding of prostate cancer screening can positively impact men's health in our state.

The workgroup discussed various implementation tactics including requiring prior authorization for PSA testing. This idea was deemed too burdensome for insurance plans. Additionally, at least 29 states, including Washington State, have enacted laws requiring insurers to include coverage for PSA testing. Washington State legislation requires State employees to have coverage, the State's basic health plan to include coverage, requires disability insurance to include coverage, and requires health service contracts to include coverage.

See RCW 41.05.177 here: http://apps.leg.wa.gov/RCW/default.aspx?cite=41.05.177;
RCW 70.47.210 here: http://apps.leg.wa.gov/Rcw/default.aspx?cite=70.47.210;
RCW 48.20.392 here: http://app.leg.wa.gov/rcw/default.aspx?cite=48.20.392; and
RCW 48.44.327 here: http://apps.leg.wa.gov/rcw/default.aspx?cite=48.44.327.

Providers should be trained how to have a balanced and unbiased conversation using a formal patient decision aid about the harms, benefits, and scientific uncertainty of PSA testing for prostate cancer screening. Before having a PSA test, men deserve to be aware of the cascade of decisions that may be put into motion by having a PSA test and be aware of the differences between their risk of having prostate cancer and their risk of prostate cancer mortality. We believe these issues are best addressed in the primary care setting and should be supported by a reimbursement structure that allows for and encourages clinicians or other staff to have the time to have these conversations.

There are many examples of shared decision making implementation, perhaps the most relevant coming from Group Health Cooperative's experience implementing a shared decision making pilot in 2007 that included a patient decision aid focused on benign prostatic hyperplasia.[40] Patients were mailed decision aid videos and written materials or were able to access the materials online. Researchers found that most importantly patients need to be invited to participate in treatment decisions, that the shared decision making process can reduce practice variation, widespread use of shared decision making requires the support of practice leadership, and the necessity of consistent evaluation, iterative improvement, and embedding shared decision making in training and culture.[40] Practices should track use of the shared decision making process and identify and intervene in cases where men are systematically being given a PSA test without discussing the harms, benefits, and scientific uncertainty.

The workgroup believes that impacting standard use of PSA testing in those over 70 is the area of greatest impact. Unfortunately, this age group is predominately outside of the purview of the Bree Collaborative, being mainly covered by Medicare. The workgroup acknowledges the difficulty of obtaining data from the Centers for Medicare and Medicaid Services but encourages organizations within Washington State to gain access to CMS data in order to track PSA testing by age.

Appendix A: Bree Collaborative Members

Member	Title	Organization
Susie Dade MS	Deputy Director	Washington Health Alliance
John Espinola MD, MPH	Vice President, Quality and Medical Management and Provider Engagement	Premera Blue Cross
Gary Franklin MD, MPH	Medical Director	Washington State Department of Labor and Industries
Stuart Freed MD	Medical Director	Wenatchee Valley Medical Center
Joe Gifford MD	Chief Executive, ACO of Washington	Providence Health and Services
Richard Goss MD	Medical Director	Harborview Medical Center – University of Washington
Christopher Kodama MD	Medical Vice President, Clinical Operations	MultiCare Health System
Paula Lozano MD, MPH	Assistant Medical Director, Department of Preventive Care	Group Health Cooperative
MaryAnne Lindeblad RN, MPH	Director, Medicaid Program	Health Care Authority
Greg Marchand	Director, Benefits & Policy and Strategy	The Boeing Company
Robert Mecklenburg MD	Medical Director, Center for Health Care Solutions	Virginia Mason Medical Center
Kimberly Moore MD	Associate Chief Medical Officer	Franciscan Health System
Carl Olden MD	Family Physician	Pacific Crest Family Medicine, Yakima
John Robinson MD, SM	Chief Medical Officer	First Choice Health
Terry Rogers MD (Vice Chair)	Chief Executive Officer	Foundation for Health Care Quality
Jeanne Rupert DO, PhD	Director of Medical Education	Skagit Valley Hospital
Kerry Schaefer	Strategic Planner for Employee Health	King County
Lani Spencer RN, MHA	Vice President, Health Care Management Services	Amerigroup
Hugh Straley MD (Chair)	Retired	Medical Director, Group Health Cooperative; President, Group Health Physicians
Jay Tihinen	Assistant Vice President Benefits	Costco Wholesale
Carol Wagner RN, MBA	Senior Vice President for Patient Safety	The Washington State Hospital Association
Shawn West MD	Family Physician	Edmonds Family Medicine

Appendix B: Prostate Cancer Screening Workgroup Charter and Roster

Problem Statement

The prostate specific antigen (PSA) test has been used to test asymptomatic men for prostate cancer along with the digital rectal exam since FDA approval in 1986.[1] After a systematic review in 2012, the United States Preventive Services Task Force recommended "against prostate specific antigen-based screening for prostate cancer" concluding "that many men are harmed as a result of prostate cancer screening and few, if any, benefit."[2] Variation in PSA testing and high rates of PSA testing may expose men to increased risk of harm, lower quality of life, and undue cost. Despite these recommendations, those of the American Urological Association, and others, PSA testing for prostate cancer screening is common.

Aim

To align with evidence-based best practice and standardize the use of prostate specific antigen testing for prostate cancer screening in Washington State.

Purpose

To identify evidence-based best practice for prostate cancer specific antigen testing for prostate cancer screening and propose recommendations along with data-driven implementation strategies to the full Bree Collaborative.

Duties & Functions

The PCS workgroup shall:

- Consult members of the Washington State Hospital Association, the Washington State Medical Association, the Washington State Urology Society, and other stakeholder organizations and subject matter experts for feedback, as appropriate.
- Research evidence-based guidelines and emerging best practices to align current PSA testing practice.
- Meet for six to nine months, as needed.
- Provide updates at Bree Collaborative meetings.
- Post draft report on the Bree Collaborative website for public comment prior to sending report to the Bree Collaborative for approval and adoption.
- Present findings and recommendations in a report.
- Recommend data-driven implementation strategies.
- Create and oversee subsequent subgroups to help carry out the work, as needed.

[1] National Cancer Institute at the National Institutes of Health. Prostate-Specific Antigen (PSA) Test. Accessed: March 2015. Available: www.cancer.gov/cancertopics/types/prostate/psa-fact-sheet.
[2] Moyer VA; U.S. Preventive Services Task Force. Screening for prostate cancer: U.S. Preventive Services Task Force recommendation statement. Ann Intern Med. 2012 Jul 17;157(2):120-34.

Structure

The PCS workgroup will consist of individuals appointed by the chair of the Bree Collaborative or the workgroup chair and confirmed by Bree Collaborative members.

The chair of the PCS workgroup will be appointed by the chair of the Bree Collaborative.

The Bree Collaborative project director will staff and provide management and support services for the PCS workgroup.

Less than the full PCS workgroup may convene to: gather and discuss information; conduct research; analyze relevant issues and facts; or draft recommendations for the deliberation of the full workgroup. A quorum shall be a simple majority and shall be required to accept and approve recommendations to send to the Bree Collaborative.

Meetings

The PCS workgroup will hold meetings as necessary. The PCS workgroup chair will conduct meetings and arrange for the recording of each meeting, and will distribute meeting agendas and other materials prior to each meeting.

Name	Title	Organization
John Gore, MD, MS	Urologist, clinician, surgeon, researcher	University of Washington Medicine
Matt Handley, MD	Associate Medical Director, Quality and Informatics	Group Health Cooperative
Leah Hole-Marshall, JD	Medical Administrator	Department of Labor & Industries
Steve Lovell	Retired	Patient and Family Advisory Council
Rick Ludwig, MD (Chair)	Chief Medical Officer	Accountable Care Organization, Providence Health & Services
Bruce Montgomery, MD	Clinical Director of Genitourinary Medical Oncology	Seattle Cancer Care Alliance
Eric Wall, MD, MPH	Market Medical Director	UnitedHealthcare
Shawn West, MD	Family Physician	Edmonds Family Medicine
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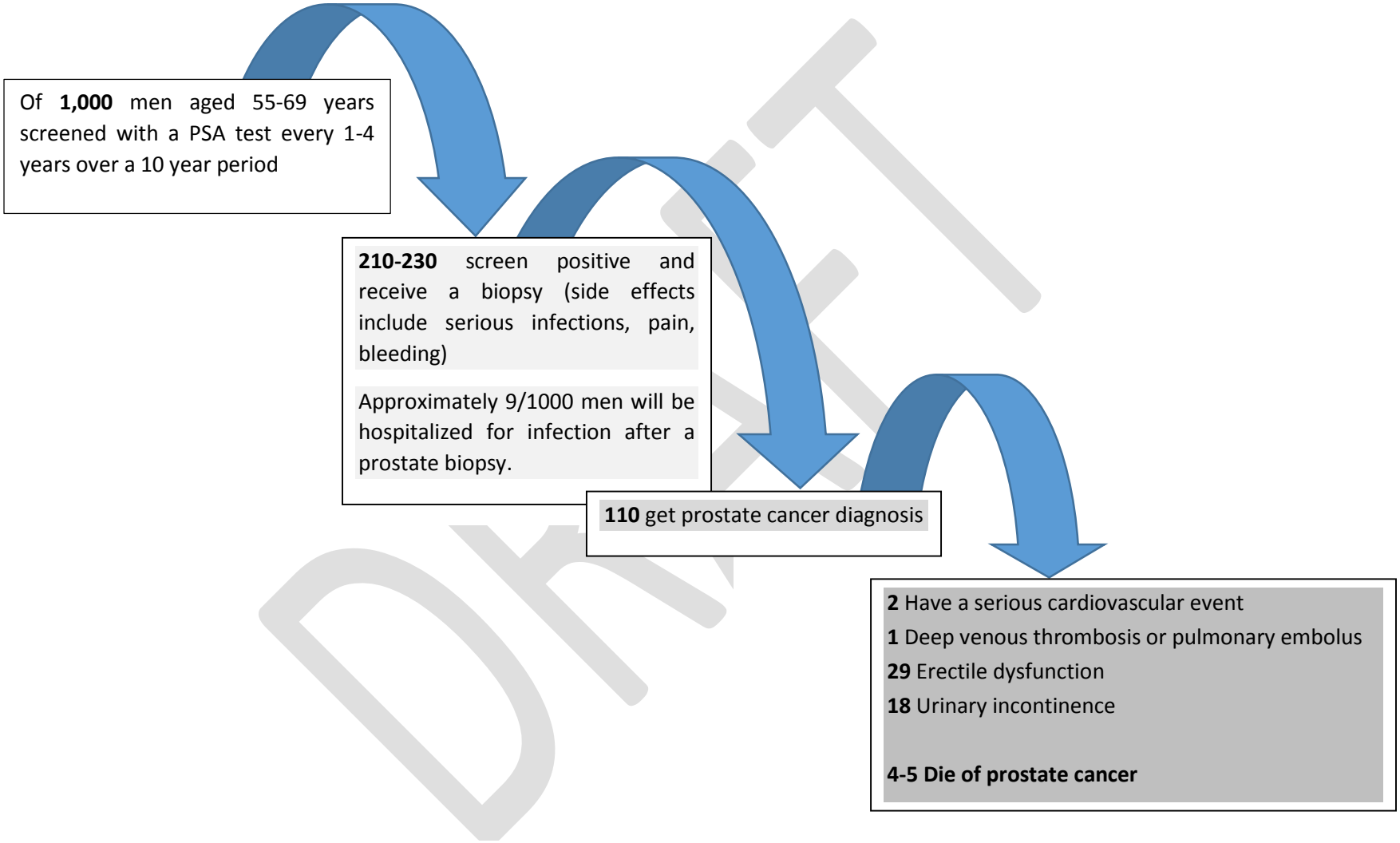
Appendix C: Cascade Diagram of Risk of Harms from Prostate Cancer Screening[19]



0-1 prostate cancer death is avoided

Appendix D: Prostate Specific Antigen Testing Excerpted Guideline Language[5,19-25]

American Academy of Family Physicians

Population: Adult men

Recommendation: **Do not use PSA-based screening for prostate cancer**. Grade: D

Screening tests: Contemporary recommendations for prostate cancer screening all incorporate the measurement of serum PSA levels; other methods of detection, such as digital rectal examination or ultrasonography, may be included.

There is convincing evidence that PSA-based screening programs result in the detection of many cases of asymptomatic prostate cancer, and that a substantial percentage of men who have asymptomatic cancer detected by PSA screening have a tumor that either will not progress or will progress so slowly that it would have remained asymptomatic for the man's lifetime (i.e., PSA-based screening results in considerable overdiagnosis).

American Cancer Society

"The American Cancer Society (ACS) recommends that **men have a chance to make an informed decision** with their health care provider about whether to be screened for prostate cancer. The decision should be made after getting information about the uncertainties, risks, and potential benefits of prostate cancer screening. Men should not be screened unless they have received this information. The discussion about screening should take place at:

- Age 50 for men who are at average risk of prostate cancer and are expected to live at least 10 more years.
- Age 45 for men at high risk of developing prostate cancer. This includes African Americans and men who have a first-degree relative (father, brother, or son) diagnosed with prostate cancer at an early age (younger than age 65).
- Age 40 for men at even higher risk (those with more than one first-degree relative who had prostate cancer at an early age).

After this discussion, those men who want to be screened should be tested with the prostate-specific antigen (PSA) blood test. The digital rectal exam (DRE) may also be done as a part of screening.

If, after this discussion, a man is unable to decide if testing is right for him, the screening decision can be made by the health care provider, who should take into account the patient's general health preferences and values."

American College of Physicians

"Guidance Statement 1: ACP **recommends that clinicians inform men** between the age of 50 and 69 years about the limited potential benefits and substantial harms of screening for prostate cancer. ACP recommends that clinicians base the decision to screen for prostate cancer using the prostate-specific antigen test on the risk for prostate cancer, a discussion of the benefits and harms of screening, the patient's general health and life expectancy, and patient preferences. ACP recommends that clinicians should not screen for prostate cancer using the prostate-specific antigen test in patients who do not express a clear preference for screening.

Guidance Statement 2: ACP recommends that clinicians should not screen for prostate cancer using the prostate-specific antigen test in average-risk men under the age of 50 years, men over the age of 69 years, or men with a life expectancy of less than 10 to 15 years."

American Society of Clinical Oncology

"In men with a life expectancy ≤ 10 years,* it is recommended that general screening for prostate cancer with total PSA be discouraged, because harms appear to outweigh potential benefits.

Type and strength of recommendation: evidence-based, strong
Strength of evidence: Moderate, based on five randomized controlled trials (RCTs) with intermediate to high risk of bias, moderate follow-up, and limited data on subgroup populations

In men with a life expectancy >10 years*, it is **recommended that physicians discuss with their patients** whether PSA testing for prostate cancer screening is appropriate for them. PSA testing may save lives but is associated with harms, including complications, from unnecessary biopsy, surgery, or radiation treatment.

Type and strength of recommendation: evidence-based, strong
Strength of evidence: for benefit, moderate; for harm, strong; based on five RCTs (and several cohort studies) with intermediate to high risk of bias, moderate follow-up, indirect data, inconsistent results, and limited data on subgroup populations

It is recommended that information written in lay language be available to clinicians and their patients to facilitate the discussion of the benefits and harms associated with PSA testing prior to the routine ordering of a PSA test.

Type and strength of recommendation: Informal consensus, strong
Strength of evidence: Indeterminate. Evidence was not systematically reviewed to inform this recommendation; however, randomized trials are available on the topic

* Calculation of life expectancy is based on a variety of individual factors and circumstances. A number of life expectancy calculators (eg, http://www.socialsecurity.gov/OACT/population/longevity.html) are available in the public domain; however, ASCO does not endorse any one calculator over another."

American Urological Association

Guideline Statement 1: The Panel recommends against PSA screening in men under age 40 years. (Recommendation; Evidence Strength Grade C)

In this age group there is a low prevalence of clinically detectable prostate cancer, no evidence demonstrating benefit of screening and likely the same harms of screening as in other age groups.

Guideline Statement 2: The Panel does not recommend routine screening in men between ages 40 to 54 years at average risk. (Recommendation; Evidence Strength Grade C)

For men younger than age 55 years at higher risk (e.g. positive family history or African American race), decisions regarding prostate cancer screening should be individualized.

Guideline Statement 3: For men ages 55 to 69 years the Panel recognizes that the decision to undergo PSA screening involves weighing the benefits of preventing prostate cancer mortality in 1 man for every 1,000 men screened over a decade against the known potential harms associated with screening and treatment. For this reason, the **Panel strongly recommends shared decision-making for men age 55 to 69 years that are considering PSA screening, and proceeding based on a man's values and preferences**. (Standard; Evidence Strength Grade B)

The greatest benefit of screening appears to be in men ages 55 to 69 years.

Guideline Statement 4: To reduce the harms of screening, a routine screening interval of two years or more may be preferred over annual screening in those men who have participated in shared decision-making and decided on screening. As compared to annual screening, it is expected that screening intervals of two years preserve the majority of the benefits and reduce overdiagnosis and false positives. (Option; Evidence Strength Grade C)

Additionally, intervals for rescreening can be individualized by a baseline PSA level.

Guideline Statement 5: The Panel does not recommend routine PSA screening in men age 70+ years or any man with less than a 10 to 15 year life expectancy. (Recommendation; Evidence Strength Grade C)

Some men age 70+ years who are in excellent health may benefit from prostate cancer screening.

National Comprehensive Cancer Network

"History and physical including family history, medications, history of prostate disease and screening, including prior PSA and/or isoforms, exams, and biopsies – Start risk and benefit discussion about offering baseline PSA and baseline digital rectal examination (DRE)

- Age 45-49 years
  - DRE normal, PSA >1 ng/mL – Repeat testing at 1-2 intervals
  - DRE normal, PSA ≤1 ng/mL – Repeat testing at age 50
- Age 50-70 years
  - DRE normal, PSA ≤ 3 ng/mL and no other indications for biopsy – Repeat testing at 1-2 year intervals
- Age >70 years
  - DRE normal, PSA ≤ 3 ng/mL and no other indications for biopsy – Repeat testing at 1-2 year intervals
  - Testing above the age of 70 years of life should be done with caution and only in very healthy men with little or no comorbidity as a large proportion may harbor cancer that would be unlikely to affect their life expectancy, and screening in this population would substantially increase rates of over-detection. However a clinically significant number of men in this age group may present with high-risk cancers that pose a significant risk if left undetected until signs or symptoms develop. One could consider increasing the PSA threshold for biopsy in the group (i.e., >4 ng/mL). Very few men above the age of 75 years benefit from PSA testing. Finally, men at age 60 years with a serum PSA <1 ng/mL have a very low risk of metastases or death due to prostate cancer. Similarly, a cut point of 3 ng/mL at age 75 years has a similarly low risk of such outcomes."

US Preventative Services Task Force

"The U.S. Preventive Services Task Force (USPSTF) **recommends against prostate-specific antigen (PSA)-based screening for prostate cancer**.

Screening may benefit a small number of men but will result in harm to many others. A **person** choosing to be screened should believe that the possibility of benefit is more important than the risk for harm. The USPSTF assessment of the balance of benefits and harms in a screened **population** is that the benefits do not outweigh the harms.

Although the precise, long-term effect of PSA screening on prostate cancer–specific mortality remains uncertain, existing studies adequately demonstrate that the reduction in prostate cancer mortality after 10 to 14 years is, at most, very small, even for men in what seems to be the optimal age range of 55 to 69 years. There is no apparent reduction in all-cause mortality. In contrast, the harms associated with the diagnosis and treatment of screen-detected cancer are common, occur early, often persist, and include a small but real risk for premature death. Many more men in a screened population will experience the harms of screening and treatment of screen-detected disease than will experience the benefit. The inevitability of overdiagnosis and overtreatment of prostate cancer as a result of screening means that many men will experience the adverse effects of diagnosis and treatment of a disease that would have remained asymptomatic throughout their lives. Assessing the balance of benefits and harms requires weighing a moderate to high probability of early and persistent harm from treatment against the very low probability of preventing a death from prostate cancer in the long term.

The USPSTF concludes that there is moderate certainty that the benefits of PSA-based screening for prostate cancer do not outweigh the harms.

Although the USPSTF discourages the use of screening tests for which the benefits do not outweigh the harms in the target population, it recognizes the common use of PSA screening in practice today and understands that some men will continue to request screening and some physicians will continue to offer it. The decision to initiate or continue PSA screening should reflect an explicit understanding of the possible benefits and harms and respect patients' preferences. Physicians should not offer or order PSA screening unless they are prepared to engage in shared decision making that enables an informed choice by patients. Similarly, patients requesting PSA screening should be provided with the opportunity to make informed choices to be screened that reflect their values about specific benefits and harms. Community- and employer-based screening should be discontinued."

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