

Prevention of Prostate Cancer Morbidity and Mortality

Primary Prevention and Early Detection



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KEYWORDS

• Prostate cancer • Prostate-specific antigen • Screening • Shared decision making

KEY POINTS

- More than any other cancer, prostate cancer screening with the prostate-specific antigen (PSA) test increases the risk a man will have to face a diagnosis of prostate cancer.
- The best evidence from screening trials suggests a small but finite benefit from prostate cancer screening in terms of prostate cancer-specific mortality, about 1 fewer prostate cancer death per 1000 men screened over 10 years.
- The more serious harms of prostate cancer screening, such as erectile dysfunction and incontinence, result from cancer treatment with surgery or radiation, particularly for men whose PSA-detected cancers were never destined to cause morbidity or mortality.
- Active surveillance has the potential to “uncouple” overdiagnosis from overtreatment.
- Because of the close balance of potential benefits and harms, informed men should have the opportunity to decide whether PSA screening is right for them.

INTRODUCTION: MAGNITUDE OF THE PROBLEM

Incidence and Mortality

Prostate cancer is an important health problem, with 181,000 new cases and 26,000 deaths predicted in the United States for 2016.¹ The estimated lifetime risk of a prostate cancer diagnosis is about 13%, whereas the risk of eventually dying of prostate

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cancer is about 2.5%.² The median age at diagnosis is 66 years, and the median age at death is 80 years. The distribution of age at death is shown in **Fig. 1**.

Time Trends

With the introduction of the prostate-specific antigen (PSA) test in the late 1980s, prostate cancer incidence increased precipitously (**Fig. 2**). After peaking in 1992, incidence has fallen. Prostate cancer mortality increased and decreased similarly.¹ The age-adjusted prostate cancer death rates dropped from about 40 deaths per 100,000 men in 1992 to about 20 per 100,000 in 2013.² The latter figure is less than the baseline mortality of about 30 prostate cancer deaths per 100,000 men in the 1960s and 1970s, before the “PSA era.” There is little debate that PSA screening led to the incidence peak in the early 1990s. However, more debate surrounds the subsequent decrease, which may be attributable to the depletion of cases among men being retested³ as well as a decrease in testing in response to clinical trial results and guidelines discouraging routine screening. Even more controversy surrounds the reasons for the mortality increase and decrease. The changes may be attributable to reduced mortality due to early detection, or improved treatment of both early- and late-stage prostate cancer. However, causation is hard to prove at the population level. Lung cancer mortality among men also peaked in the early 1990s and has fallen steadily since then, only coincidentally related to PSA testing.¹ Prostate cancer mortality has also fallen in the United Kingdom, despite little screening.⁴ Other theoretic contributors include the introduction of statins for treatment of hypercholesterolemia,⁵ with reports of positive effects on prostate cancer mortality in treatment trials.⁶ However, analyses from screening trials have been less persuasive.⁷

Risk Factors

In addition to age and PSA testing, race and family history are the most important risk factors for prostate cancer. African American men have an age-adjusted incidence of about 200 per 100,000 men compared with 120 per 100,000 for white men. Differences

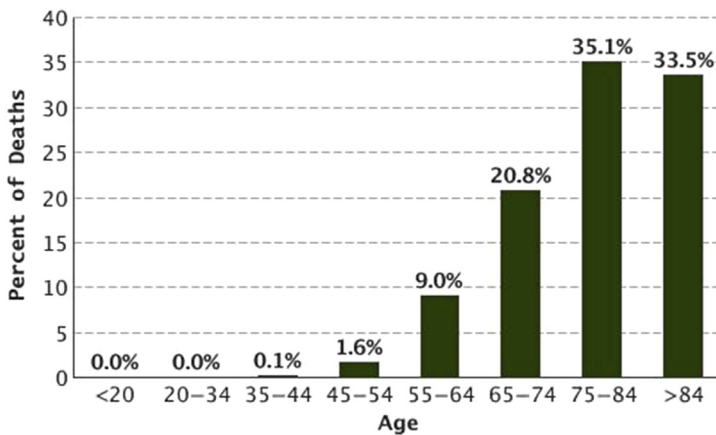


Fig. 1. Percent of prostate cancer deaths by age group, 2009-2013. (Data from Howlander N, Noone AM, Krapcho M, et al, editors. SEER cancer statistics review, 1975-2013. Bethesda (MD): National Cancer Institute. Available at: http://seer.cancer.gov/csr/1975_2013/. Based on November 2015 SEER data submission, posted to the SEER Web site. Accessed November 29, 2016.)

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