

**REVIEW ARTICLE:  
PROSTATE CANCER SCREENING USING PROSTATE SPECIFIC ANTIGEN:  
CONTROVERSIES AND RECOMMENDATIONS**

**\*Agbo CA, \*Shuaibu SI**

\*Division of Urology, Surgery Department, Jos University  
Teaching Hospital, Jos, Nigeria

**Corresponding Author:**

**Dr. Christian A. Agbo**

**Tel:** +234-8065959221,

**email:** agboxtian@yahoo.ca

**ABSTRACT**

**Background:** Prostate cancer is the commonest cancer among men in Nigeria and early detection is key to cure and survival but its screening through prostate specific antigen (PSA) has remain controversial in literature. Screening with prostate specific antigen (PSA) has led to more men diagnosed with prostate cancer than in previous years with potential for negative effects from overdiagnosis and overtreatment.

**Method:** This is a review article on the controversies and recommendations regarding prostate cancer screening following detailed search of literature and online databases such as Pubmed and Google using PSA, DRE, prostate cancer, screening as key words.

**Conclusion:** Prostate cancer screening is fraught with a lot of controversies therefore it should be individualised through discussion between the physician and informed client using appropriate guidelines and recommendations.

**Key Words:** Screening, prostate, cancer, PSA, DRE

**Introduction**

Prostate Cancer is the number one cancer in men with increasing incidence and morbidity among black African ancestry<sup>1,2</sup>. The worldwide burden of this disease is rising<sup>3</sup>. Cure is possible through early detection from screening, but it is not clear whether early detection and treatment lead to any change in the natural history and outcome of the disease<sup>4</sup>. The goal of prostate cancer screening is to reduce the morbidity and mortality from this disease through early detection. However it has been fraught with controversies in many literatures and this has led to heated discussions and debates resulting in many conflicting positions and policy papers<sup>5</sup>.

Screening is the presumptive identification of unrecognized disease or defects by means of tests, examinations, or other procedures that can be applied rapidly<sup>6</sup>. Common screening techniques for prostate cancer include the digital rectal examination (DRE) and assessment of serum prostate-specific antigen (PSA) levels<sup>7</sup>.

DRE is the oldest and cheapest. It was the first and only diagnostic tool used for detection of prostate cancer until the mid-1980 before the discovery of PSA<sup>8</sup>. However, this test has considerable interexaminer variability and the majority of cancers detected by means of digital rectal examination are at an advanced stage<sup>9,10</sup>.

The use of PSA as a serum marker has revolutionised prostate cancer diagnosis but its use for screening is controversial. PSA is organ- but not cancer specific, therefore, it may be elevated in benign prostatic hyperplasia (BPH), prostatitis and other non-malignant condition.

**Controversies** Screening generally aims to reduce disease-specific and overall mortality, and to improve a person's future quality of life. Screening for prostate cancer has generated considerable debate within the medical and broader community, as demonstrated in literature and the varying recommendations made by medical organizations and governed by national policies<sup>11</sup>.

A number of studies<sup>4,12,13</sup> have demonstrated the benefits of prostate cancer screening. The European Randomized Study of Screening for Prostate Cancer (ERSPC) found that PSA screening significantly reduces the mortality of prostate cancer but is also associated with a high risk of over-diagnosis. Furthermore, data from the ERSPC, showed the cumulative risk of metastatic disease at 9 to 11 years of follow-up was 31% to 33% lower in the screened arm compared to the control arm and that the benefit of screening increases with time<sup>13,14</sup>. Reduction in prostate cancer-specific mortality may take up to 10 years, therefore, men who have a life expectancy less than 10 should be informed that screening for prostate cancer is unlikely to be beneficial<sup>15</sup>.

The incidence of metastatic disease at presentation has declined by approximately three-fourths in the US since the advent of PSA screening<sup>15</sup>.

The ERSPC report was consistent with the **Göteborg randomised population-based prostate-cancer screening trial** which demonstrated a 56% reduction in risk of metastatic disease and that the benefit of prostate-cancer screening compares favourably to other cancer screening programs<sup>16</sup>.

These results however are in contrast with the US

Prostate, Lung, Colorectal and Ovarian (PLCO) Cancer Screening trial conducted in the United States. The PLCO studied the mortality of prostate, lung, cervix, and ovary cancer screening in a randomised fashion. The PLCO study showed no mortality differences between its randomised arms for prostate cancer after seven years of follow-up<sup>17</sup>. After 13 years of follow-up, the cumulative mortality rates from prostate cancer in the intervention and control groups were 3.7 and 3.4 deaths per 10,000 person-years, respectively, meaning that there was no significant difference between the two groups<sup>17</sup>.

In a study by Bangma and colleagues, it showed that the main drawback of prostate cancer screening is the increased risk of overdiagnosis of prostate cancer meaning detection of cancers that may not give rise to symptoms or lead to death during the lifetime of a typical man<sup>18</sup>. This was consistent with the conclusion made in the systematic review of article according to the Cochrane database system<sup>11</sup> which showed that over diagnosis and over treatment are common and are associated with treatment-related harms and that men should be informed of these and the demonstrated adverse effects when they are deciding whether or not to undertake screening for prostate cancer<sup>10,11</sup>.

### **Recommendations**

Based on the results of the PLCO trial, the U.S. Preventive Service Task Force (USPSTF) advised against PSA screening in their draft recommendation issued in 2011<sup>19</sup>. However, many large national urological associations like the American Urological Association (AUA), Canadian Urological Association (CUA) and European Urological Association (EAU) still value the benefit of PSA screening for men after age 45 to 50 and recommend physician-patient discussion about screening on an individual basis. The decision should follow a discussion about the uncertainties, risks, and

potential benefits of screening with age of patient, patients' risk factor and life expectancy taken into consideration<sup>4,11,15</sup>.

Currently, active surveillance for early detected cases is a feasible strategy to reduce overtreatment without compromising the therapeutic window and chance for cure. The review of literature showed that active surveillance can reduce overtreatment by almost 50 percent at 15 years and that men on active surveillance are not at immediate risk of death from the disease if therapy is deferred until the cancer progresses<sup>4,15</sup>.

### Conclusion

The topic of prostate cancer screening is controversial in many literature. It is useful in early detection of prostate cancer but with the risk of overdiagnosis and overtreatment. Many national urological associations (AUA, EUA, CUA) still find it valuable provided it is individualised and done through discussion between the physician and informed client using appropriate guidelines and recommendations.

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