

CADTH RAPID RESPONSE REPORT: REFERENCE LIST

Prostate-Specific Antigen Testing for Prostate Cancer: Clinical Utility and Guidelines

Service Line: Rapid Response Service
Version: 1.0
Publication Date: August 22, 2019
Report Length: 7 Pages

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Cite As: *Prostate-Specific Antigen Testing for Prostate Cancer: Clinical Utility and Guidelines*. Ottawa: CADTH; 2019 Aug. (CADTH rapid response report: reference list).

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Funding: CADTH receives funding from Canada's federal, provincial, and territorial governments, with the exception of Quebec.

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Research Questions

1. What is the clinical utility of prostate-specific antigen testing for prostate cancer?
2. What are the evidence-based guidelines on the use of prostate-specific antigen testing for prostate cancer screening?

Key Findings

Two systematic reviews were identified regarding the clinical utility of prostate-specific antigen testing for prostate cancer. In addition, five evidence-based guidelines were identified regarding the use of prostate-specific antigen testing for prostate cancer screening.

Methods

A limited literature search was conducted by an information specialist on key resources including Medline via Ovid, the Cochrane Library, the University of York Centre for Reviews and Dissemination (CRD) databases, the websites of Canadian and major international health technology agencies, as well as a focused Internet search. The search strategy was comprised of both controlled vocabulary, such as the National Library of Medicine's MeSH (Medical Subject Headings), and keywords. The main search concepts were prostate specific antigen testing and prostate cancer. Search filters were applied to limit retrieval to health technology assessments, systematic reviews, meta-analyses, or network meta-analyses, randomized controlled trials, controlled clinical trials, or any other type of clinical trial, and guidelines. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2014 and August 15, 2019. Internet links were provided, where available.

Selection Criteria

One reviewer screened citations and selected studies based on the inclusion criteria presented in Table 1.

Table 1: Selection Criteria

Population	Q1,2: Asymptomatic people or individuals at risk of prostate cancer
Intervention	Q1,2: One or more prostate-specific antigen measurements, with or without addition screening methods (e.g., digital rectal examination)
Comparator	Q1: No screening, or usual care Q2: Not applicable

Outcomes	Q1: Clinical utility (e.g., morbidity and mortality, false positives, false negatives, unnecessary treatment, physical harms [e.g., bruising, bleeding, complications], psychological harms) Q2: Guidelines
Study Designs	Health technology assessments, systematic review, meta-analyses, randomized control trials, evidence-based guidelines.

Results

Rapid Response reports are organized so that the higher quality evidence is presented first. Therefore, health technology assessment reports, systematic reviews, and meta-analyses are presented first. These are followed by randomized controlled trials, and evidence-based guidelines.

Two systematic reviews^{1,2} were identified regarding the clinical utility of prostate-specific antigen testing for prostate cancer. In addition, five evidence-based guidelines³⁻⁷ were identified regarding the use of prostate-specific antigen testing for prostate cancer screening. No relevant health technology assessments, meta-analyses, or randomized controlled trials were identified.

Additional references of potential interest are provided in the appendix.

Health Technology Assessments

No literature identified.

Systematic Reviews and Meta-analyses

1. Araujo F, Oliveira U, Jr. Current guidelines for prostate cancer screening: a systematic review and minimal core proposal. *Rev Assoc Med Bras.* 2018;64(3):290-296. [PubMed: PM29641784](#)
2. Hayes JH, Barry MJ. Screening for prostate cancer with the prostate-specific antigen test: a review of current evidence. *JAMA.* 2014;311(11):1143-1149. [PubMed: PM24643604](#)

Randomized Controlled Trials

No literature identified.

Guidelines and Recommendations

3. Tikkinen KAO, Dahm P, Lytvyn L, et al. Prostate cancer screening with prostate-specific antigen (PSA) test: a clinical practice guideline. *BMJ.* 2018;362:k3581. [PubMed: PM30185545](#)
See: "Current Guidelines on PSA testing", pages 4 and 5:
4. Rendon RA, Mason RJ, Marzouk K, et al. Canadian Urological Association recommendations on prostate cancer screening and early diagnosis. *Can Urol Assoc J.* 2017;11(10):298-309. <https://cuaj.ca/index.php/journal/article/view/4888/3304>. Accessed 2019 Aug 21.
See: "PSA Screening", page 299:

5. Vickers AJ, Eastham JA, Scardino PT, Lilja H. The Memorial Sloan Kettering Cancer Center recommendations for prostate cancer screening. *Urology*. 2016;91:12-18.
[PubMed: PM26850815](#)
6. Bell N, Connor Gorber S, Shane A, et al. Recommendations on screening for prostate cancer with the prostate-specific antigen test. *CMAJ*. 2014;186(16):1225-1234.
[PubMed: PM25349003](#)
See: “Recommendations” and “Other Guidelines”, pages 1229 and 1231:
7. Heidenreich A, Bastian PJ, Bellmunt J, et al. EAU guidelines on prostate cancer. part 1: screening, diagnosis, and local treatment with curative intent-update 2013. *Eur Urol*. 2014;65(1):124-137.
[PubMed: PM24207135](#)

Appendix — Further Information

Previous CADTH Reports

8. Treatment versus active surveillance in men with low risk prostate cancer: clinical effectiveness and guidelines. (*CADTH rapid response report: summary of abstracts*). Ottawa (ON): CADTH; 2015: <https://www.cadth.ca/sites/default/files/pdf/htis/apr-2015/RB0834%20Treatment%20versus%20active%20surveillance%20in%20low%20risk%20prostate%20cancer%20Final.pdf>. Accessed 2019 Aug 21.

Systematic Review – Patient Population Not Specified

9. Fenton JJ, Weyrich MS, Durbin S, Liu Y, Bang H, Melnikow J. Prostate-specific antigen-based screening for prostate cancer: evidence report and systematic review for the US Preventive Services Task Force. *JAMA*. 2018;319(18):1914-1931.
[PubMed: PM29801018](#)
10. Ilic D, Djulbegovic M, Jung JH, et al. Prostate cancer screening with prostate-specific antigen (PSA) test: a systematic review and meta-analysis. *BMJ*. 2018;362:k3519.
[PubMed: PM30185521](#)
11. Feng ZJ, Xue C, Wen JM, Li Y, Wang M, Zhang N. PSAD test in the diagnosis of prostate cancer: a meta-analysis. *Clin Lab*. 2017;63(1):147-155.
[PubMed: PM28164507](#)
12. Rahal AK, Badgett RG, Hoffman RM. Screening coverage needed to reduce mortality from prostate cancer: a living systematic review. *PLoS One*. 2016;11(4):e0153417.
[PubMed: PM27070904](#)
13. Pron G. Prostate-specific antigen (PSA)-based population screening for prostate cancer: an evidence-based analysis. *Ont Health Technol Assess Ser*. 2015;15(10):1-64.
[PubMed: PM26366236](#)

Randomized Controlled Trials – Alternative Patient Population

14. Hugosson J, Roobol MJ, Mansson M, et al. A 16-yr follow-up of the European Randomized study of Screening for Prostate Cancer. *Eur Urol*. 2019;76(1):43-51.
[PubMed: PM30824296](#)
15. Pinsky PF, Miller E, Prorok P, Grubb R, Crawford ED, Andriole G. Extended follow-up for prostate cancer incidence and mortality among participants in the Prostate, Lung, Colorectal and Ovarian randomized cancer screening trial. *BJU Int*. 2019;123(5):854-860.
[PubMed: PM30288918](#)
16. Martin RM, Donovan JL, Turner EL, et al. Effect of a low-intensity PSA-based screening intervention on prostate cancer mortality: the CAP randomized clinical trial. *JAMA*. 2018;319(9):883-895.
[PubMed: PM29509864](#)

17. Pinsky PF, Prorok PC, Yu K, et al. Extended mortality results for prostate cancer screening in the PLCO trial with median follow-up of 15 years. *Cancer*. 2017;123(4):592-599.
[PubMed: PM27911486](#)
18. Schroder FH, Hugosson J, Roobol MJ, et al. Screening and prostate cancer mortality: results of the European Randomised study of Screening for Prostate Cancer (ERSPC) at 13 years of follow-up. *Lancet*. 2014;384(9959):2027-2035.
[PubMed: PM25108889](#)

Guidelines and Recommendations – Methodology Not Specified

19. Cabarkapa S, Perera M, McGrath S, Lawrentschuk N. Prostate cancer screening with prostate-specific antigen: a guide to the guidelines. *Prostate Int*. 2016;4(4):125-129.
[PubMed: PM27995110](#)
20. Ontario Health Technology Advisory Committee. Prostate-specific antigen (PSA)–based population screening for prostate cancer: OHTAC recommendation. Toronto (ON): Health Quality Ontario; 2015:
<https://www.hqontario.ca/Portals/0/Documents/evidence/reports/recommendation-psa-screening-1505-en.pdf>. Accessed 2019 Aug 21.

Clinical Practice Guidelines

21. Prostate cancer. (*Clinical practice guideline GU-004 version 6*). Edmonton (AB): Alberta Health Services; 2015:
<https://www.albertahealthservices.ca/assets/info/hp/cancer/if-hp-cancer-guide-gu004-prostate.pdf>. Accessed 2019 Aug 21.
See: “Recommendations”, page 3:

Review Articles

22. Carrion DM, Gomez Rivas J, Alvarez-Maestro M, Martinez-Pineiro L. Biomarkers in prostate cancer management. Is there something new? *Arch Esp Urol*. 2019;72(2):105-115.
[PubMed: PM30855011](#)
23. Tan GH, Nason G, Ajib K, et al. Smarter screening for prostate cancer. *World J Urol*. 2019;37(6):991-999.
[PubMed: PM30859272](#)
24. Robinson JG, Hodges EA, Davison J. Prostate-specific antigen screening: a critical review of current research and guidelines. *J Am Assoc Nurse Pract*. 2014;26(10):574-581.
[PubMed: PM24399687](#)

Additional References

25. Loeb S. Guideline of guidelines: prostate cancer screening. *BJU Int*. 2014;114(3):323-325.
[PubMed: PM24981126](#)
See: “Key points”, page 325