



TITLE: Human Papillomavirus Testing for Cervical Cancer Screening: Clinical Effectiveness, Cost-effectiveness and Guidelines

DATE: 06 October 2016

RESEARCH QUESTIONS

1. What is the evidence regarding the clinical effectiveness and safety of human papillomavirus (HPV) testing for primary cervical cancer screening?
2. What is the cost-effectiveness of HPV testing for primary cervical cancer screening?
3. What are the guidelines regarding HPV testing for cervical cancer screening?

KEY FINDINGS

Seven systematic reviews and meta-analyses and two evidence-based guidelines were identified regarding HPV testing for cervical cancer screening.

METHODS

A limited literature search was conducted on key resources including PubMed, The Cochrane Library, University of York Centre for Reviews and Dissemination (CRD) databases, Canadian and major international health technology agencies, as well as a focused Internet search. Methodological filters were applied to limit retrieval to health technology assessments, systematic reviews, meta-analyses, and guidelines. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2011 and October 3, 2016. Internet links were provided, where available.

SELECTION CRITERIA

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

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Table 1: Selection Criteria

Population	Adult women who are eligible for cervical cancer screening
Intervention	Testing for human papillomavirus (HPV)
Comparator	Conventional cytology
Outcomes	Clinical effectiveness, safety, test characteristics/accuracy, recommendations for screening
Study Designs	Health technology assessments, systematic reviews, meta-analyses, 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 and evidence-based guidelines.

Seven systematic reviews and meta-analyses and two evidence-based guidelines were identified regarding the clinical effectiveness, safety, and guidelines for HPV testing for cervical cancer screening.

Additional references of potential interest are provided in the appendix.

Health Technology Assessments

No literature identified.

Systematic Reviews and Meta-analyses

1. Mustafa RA, Santesso N, Khatib R, Mustafa AA, Wiercioch W, Kehar R, et al. Systematic reviews and meta-analyses of the accuracy of HPV tests, visual inspection with acetic acid, cytology, and colposcopy. *Int J Gynaecol Obstet*. 2016 Mar;132(3):259-65.
[PubMed: PM26851054](#)
2. Fokom-Domgue J, Combescure C, Fokom-Defo V, Tebeu PM, Vassilakos P, Kengne AP, et al. Performance of alternative strategies for primary cervical cancer screening in sub-Saharan Africa: systematic review and meta-analysis of diagnostic test accuracy studies. *BMJ*. 2015;351:h3084. Available from:
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4490835>
[PubMed: PM26142020](#)
3. Pileggi C, Flotta D, Bianco A, Nobile CG, Pavia M. Is HPV DNA testing specificity comparable to that of cytological testing in primary cervical cancer screening? Results of a meta-analysis of randomized controlled trials. *Int J Cancer*. 2014 Jul 1;135(1):166-77.
[PubMed: PM24302411](#)
4. Arbyn M, Roelens J, Simoens C, Buntinx F, Paraskevaidis E, Martin-Hirsch PP, et al. Human papillomavirus testing versus repeat cytology for triage of minor cytological cervical lesions. *Cochrane Database Syst Rev*. 2013;(3):CD008054.
[PubMed: PM23543559](#)

5. Patanwala IY, Bauer HM, Miyamoto J, Park IU, Huchko MJ, Smith-McCune KK. A systematic review of randomized trials assessing human papillomavirus testing in cervical cancer screening. *Am J Obstet Gynecol*. 2013 May;208(5):343-53. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3686555>
[PubMed: PM23159693](#)
6. Murphy J, Kennedy EB, Dunn S, McLachlin CM, Fung Kee FM, Gzik D, et al. Cervical screening: a guideline for clinical practice in Ontario. *J Obstet Gynaecol Can*. 2012 May;34(5):453-8.
[PubMed: PM22555138](#)
7. Murphy J, Kennedy EB, Dunn S, McLachlin CM, Fung Kee FM, Gzik D, et al. HPV testing in primary cervical screening: a systematic review and meta-analysis. *J Obstet Gynaecol Can*. 2012 May;34(5):443-52.
[PubMed: PM22555137](#)

Guidelines and Recommendations

8. National Guideline Clearinghouse. Screening for cervical cancer: U.S. Preventive Task Force recommendation statement [Internet]. Rockville (MD): U.S. Department of Health and Human Services. 2012 Jun 19 [cited 2016 Oct 6]. Available from: <https://www.guideline.gov/summaries/summary/36624/screening-for-cervical-cancer-us-preventive-services-task-force-recommendation-statement> See *section*: Screening tests/Screening intervals, etc.
9. National Guideline Clearinghouse. Recommendations on screening for cervical cancer: Canadian Preventive Services Task Force [Internet]. Rockville (MD): U.S. Department of Health and Human Services; 2012 [cited 2016 Oct 6]. Available from: <https://www.guideline.gov/summaries/summary/39437/recommendations-on-screening-for-cervical-cancer>

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APPENDIX – FURTHER INFORMATION:

Previous CADTH Reports

10. CADTH [Internet]. Human papillomavirus screening for cervical cancer: use as a primary screening test [Rapid Response Report]. Ottawa (ON): CADTH; 2008 [cited 2016 Oct 06]. Available from:
<https://www.cadth.ca/sites/default/files/pdf/htis/Human%20Papillomavirus%20Screening%20for%20Cervical%20Cancer%20Use%20as%20a%20Primary%20Screening%20Test.pdf>

Clinical Practice Guidelines – Methodology Not Specified

11. Sawaya GF, Kulasingam S, Denberg TD, Qaseem A, Clinical Guidelines Committee of American College of Physicians. Cervical cancer screening in average-risk women: best practice advice from the Clinical Guidelines Committee of the American College of Physicians. *Ann Intern Med.* 2015 Jun 16;162(12):851-9.
[PubMed: PM25928075](#)

Economic Evaluation

12. Sroczyński G, Schnell-Inderst P, Muhlberger N, Lang K, Aidelsburger P, Wasem J, et al. Cost-effectiveness of primary HPV screening for cervical cancer in Germany--a decision analysis. *Eur J Cancer.* 2011 Jul;47(11):1633-46.
[PubMed: PM21482103](#)

Systematic Reviews – Combination Testing

13. Li T, Li Y, Yang GX, Shi P, Sun XY, Yang Y, et al. Diagnostic value of combination of HPV testing and cytology as compared to isolated cytology in screening cervical cancer: A meta-analysis. *J Cancer Res Ther.* 2016 Jan;12(1):283-9.
[PubMed: PM27072252](#)
14. Bouchard-Fortier G, Hajifathalian K, McKnight MD, Zacharias DG, Gonzalez-Gonzalez LA. Co-testing for detection of high-grade cervical intraepithelial neoplasia and cancer compared with cytology alone: a meta-analysis of randomized controlled trials. *J Public Health (Oxf).* 2014 Mar;36(1):46-55.
[PubMed: PM23735961](#)

Non-Randomized Studies

15. Kitchener C, Canfell K, Gilham C, Sargent A, Roberts C, Desai M, et al. The clinical effectiveness and cost-effectiveness of primary human papillomavirus cervical screening in England: extended follow-up of the ARTISTIC randomised trial cohort through three screening rounds. *Health Technol Assess.* 2014 Apr;18(23):1-196. Available from:
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4781243>
[PubMed: PM24762804](#)

Qualitative Studies

16. Frederiksen ME, Lynge E, Rebolj M. What women want. Women's preferences for the management of low-grade abnormal cervical screening tests: a systematic review. *BJOG*. 2012 Jan;119(1):7-19.
[PubMed: PM21895959](#)

Review Articles

17. Peirson L, Fitzpatrick-Lewis D, Ciliska D, Warren R. Screening for cervical cancer: a systematic review and meta-analysis. *Syst Rev*. 2013;2:35. Available from:
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3681632>
[PubMed: PM23706117](#)