

CADTH RAPID RESPONSE REPORT: REFERENCE LIST

Interventions Used to Screen for Tuberculosis: Clinical Effectiveness and Guidelines

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Research Questions

1. What is the clinical effectiveness of interventions used to screen individuals for tuberculosis?
2. What are the evidence-based guidelines regarding the screening of individuals for tuberculosis?

Key Findings

Twelve systematic reviews (eight with meta-analysis) were identified regarding the clinical effectiveness of interventions used to screen individuals for tuberculosis. In addition, four evidence-based guidelines were identified regarding the screening of individuals for tuberculosis.

Methods

A limited literature search was conducted by an information specialist 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. 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 tuberculosis and screening. Search 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, 2014 and June 19, 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	Any individual requiring screening for tuberculosis
Intervention	Any intervention used to screen for tuberculosis
Comparator	Q1: Any other intervention used to screen for tuberculosis Q2: No comparator

Outcomes	Q1: Clinical effectiveness, accuracy, safety Q2: Evidence-based guidelines
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 evidence-based guidelines.

Twelve systematic reviews (eight with meta-analysis) were identified regarding the clinical effectiveness of interventions used to screen individuals for tuberculosis. In addition, four evidence-based guidelines were identified regarding the screening of individuals for tuberculosis. No relevant health technology assessments were identified.

Additional references of potential interest are provided in the appendix.

Health Technology Assessments

No literature identified.

Systematic Reviews and Meta-analyses

1. Hasan T, Au E, Chen S, et al. Screening and prevention for latent tuberculosis in immunosuppressed patients at risk for tuberculosis: a systematic review of clinical practice guidelines. *BMJ Open*. 2018 Sep 12;8(9):e022445.
[PubMed: PM30209157](#)
2. Auguste P, Tsertsvadze A, Pink J, et al. Comparing interferon-gamma release assays with tuberculin skin test for identifying latent tuberculosis infection that progresses to active tuberculosis: systematic review and meta-analysis. *BMC Infect Dis*. 2017 Mar 9;17(1):200.
[PubMed: PM28274215](#)
3. Heuvelings CC, de Vries SG, Greve PF, et al. Effectiveness of interventions for diagnosis and treatment of tuberculosis in hard-to-reach populations in countries of low and medium tuberculosis incidence: a systematic review. *Lancet Infect Dis*. 2017 May;17(5):e144-e158.
[PubMed: PM28291722](#)
4. Doosti-Irani A, Ayubi E, Mostafavi E. Tuberculin and QuantiFERON-TB-Gold tests for latent tuberculosis: a meta-analysis. *Occup Med (Lond)*. 2016 Aug;66(6):437-445.
[PubMed: PM27121635](#)
5. Kahwati LC, Feltner C, Halpern M, et al. Primary care screening and treatment for latent tuberculosis infection in adults: evidence report and systematic review for the US Preventive Services Task Force. *JAMA*. 2016 Sep 6;316(9):970-983.
[PubMed: PM27599332](#)
6. Malhame I, Cormier M, Sugarman J, Schwartzman K. Latent tuberculosis in pregnancy: a systematic review. *PLoS One*. 2016;11(5):e0154825.
[PubMed: PM27149116](#)

7. Campbell JR, Chen W, Johnston J, et al. Latent tuberculosis infection screening in immigrants to low-incidence countries: a meta-analysis. *Mol Diagn Ther*. 2015 Apr;19(2):107-117.
[PubMed: PM25851739](#)
8. Paquette K, Cheng MP, Kadatz MJ, Cook VJ, Chen W, Johnston JC. Chest radiography for active tuberculosis case finding in the homeless: a systematic review and meta-analysis. *Int J Tuberc Lung Dis*. 2014 Oct;18(10):1231-1236.
[PubMed: PM25216838](#)

Immunocompromised and Immunosuppressed Individuals

9. Pyo J, Cho SK, Kim D, Sung YK. Systemic review: agreement between the latent tuberculosis screening tests among patients with rheumatic diseases. *Korean J Intern Med*. 2018 Nov;33(6):1241-1251.
[PubMed: PM29277097](#)
10. Yoon C, Chaisson LH, Patel SM, et al. Diagnostic accuracy of C-reactive protein for active pulmonary tuberculosis: a meta-analysis. *Int J Tuberc Lung Dis*. 2017 Sep 1;21(9):1013-1019.
[PubMed: PM28826451](#)
11. Shah M, Hanrahan C, Wang ZY, et al. Lateral flow urine lipoarabinomannan assay for detecting active tuberculosis in HIV-positive adults. *Cochrane Database Syst Rev*. 2016 May 10(5):Cd011420.
[PubMed: PM27163343](#)
12. Ferguson TW, Tangri N, Macdonald K, et al. The diagnostic accuracy of tests for latent tuberculosis infection in hemodialysis patients: a systematic review and meta-analysis. *Transplantation*. 2015 May;99(5):1084-1091.
[PubMed: PM25286055](#)

Guidelines and Recommendations

13. National Institute for Health Care and Excellence. Tuberculosis [*Quality Standard QS141*] 2017 Jan; <https://www.nice.org.uk/guidance/qs141/resources/tuberculosis-pdf-75545474469829>
See: *Quality Statements 1 and 2*
Accessed 2019 Jun 24.
14. National Institute for Health and Care Excellence. Tuberculosis [*Clinical Guideline NG33*] 2016 Jan; <https://www.nice.org.uk/guidance/ng33/resources/tuberculosis-pdf-1837390683589>
See: *Section 1.1.4*
Accessed 2019 Jun 24.
15. U.S. Preventive Services Task Force. Final recommendation statement: latent tuberculosis infection – screening. 2016 Sep;
<https://www.uspreventiveservicestaskforce.org/Page/Document/RecommendationStatementFinal/latent-tuberculosis-infection-screening>
Accessed 2019 Jun 24.

16. Gilpin C, Korobitsyn A. The use of lateral flow urine lipoarabinomannan assay (LF-LAM) for the diagnosis and screening of active tuberculosis in people living with HIV: policy guidance. Geneva, Switzerland: World Health Organization; 2015 Mar: https://apps.who.int/iris/bitstream/handle/10665/193633/9789241509633_eng.pdf?sequence=1
See: Policy Recommendation 3, page 2
Accessed 2019 Jun 24.

Appendix — Further Information

Systematic Reviews and Meta-analyses

Alternative Comparator

17. Hamada Y, Lujan J, Schenkel K, Ford N, Getahun H. Sensitivity and specificity of WHO's recommended four-symptom screening rule for tuberculosis in people living with HIV: a systematic review and meta-analysis. *Lancet HIV*. 2018 Sep;5(9):e515-e523.

[PubMed: PM30139576](#)

No Comparator

18. Curtis J. Impact of x-ray screening programmes for active tuberculosis in homeless populations: a systematic review of original studies. *J Pub Health (Oxford, England)*. 2016 Mar;38(1):106-114.

[PubMed: PM25717042](#)

Unclear Comparator

19. Greenaway C, Pareek M, Abou Chakra CN, et al. The effectiveness and cost-effectiveness of screening for active tuberculosis among migrants in the EU/EEA: a systematic review. *Euro Surveill*. 2018 Apr;23(14).

[PubMed: PM29637888](#)

Alternative Outcomes

20. Garner-Purkis A, Hine P, Gamage A, Perera S, Gulliford MC. Tuberculosis screening for prospective migrants to high-income countries: systematic review of policies. *Public Health*. 2019 Mar;168:142-147.

[PubMed: PM30771630](#)

21. Faust L, McCarthy A, Schreiber Y. Recommendations for the screening of paediatric latent tuberculosis infection in indigenous communities: a systematic review of screening strategies among high-risk groups in low-incidence countries. *BMC Public Health*. 2018 Aug 6;18(1):979.

[PubMed: PM30081879](#)

22. Parriott A, Malekinejad M, Miller AP, Marks SM, Horvath H, Kahn JG. Care cascade for targeted tuberculosis testing and linkage to care in homeless populations in the United States: a meta-analysis. *BMC Public Health*. 2018 Apr 12;18(1):485.

[PubMed: PM29650047](#)

23. Seedat F, Hargreaves S, Nellums LB, Ouyang J, Brown M, Friedland JS. How effective are approaches to migrant screening for infectious diseases in Europe? A systematic review. *Lancet Infect Dis*. 2018 Sep;18(9):e259-e271.

[PubMed: PM29778396](#)

24. Kunst H, Burman M, Arnesen TM, et al. Tuberculosis and latent tuberculosis infection screening of migrants in Europe: comparative analysis of policies, surveillance systems and results. *Int J Tuberc Lung Dis*. 2017 Aug 1;21(8):840-851.

[PubMed: PM28786791](#)

25. Mhimbira FA, Cuevas LE, Dacombe R, Mkopi A, Sinclair D. Interventions to increase tuberculosis case detection at primary healthcare or community-level services. *Cochrane Database Syst Rev.* 2017 Nov 28;11:Cd011432.
[PubMed: PM29182800](#)

Guidelines and Recommendations

26. Tuberculosis screening. Vancouver (BC): BC Centre for Disease Control; 2018 May:
http://www.bccdc.ca/resource-gallery/Documents/Communicable-Disease-Manual/Chapter%204%20-%20TB/TB_DST.pdf
 Accessed 2019 Jun 24.
27. Tuberculosis program guideline, 2018. Toronto (ON): Ministry of Health and Long-Term Ontario; 2018:
http://health.gov.on.ca/en/pro/programs/publichealth/oph_standards/docs/protocols_guidelines/Tuberculosis_Program_Guideline_2018.pdf
 See: Chapters 5.2, 8, and Appendix 4
 Accessed 2019 Jun 24.
28. Tuberculosis screening and targeted testing of college and university students. Hanover (MD): American College of Health Association; 2017 May:
https://www.acha.org/documents/resources/guidelines/ACHA_Tuberculosis_Screening_2017.pdf
 Accessed 2019 Jun 24.
29. Krause V, National Tuberculosis Advisory Committee. Policy recommendation: latent tuberculosis infection screening and treatment in children in immigration detention., Australian Government, Department of Health. 2015 Dec;
<https://www.health.gov.au/internet/main/publishing.nsf/Content/cda-cdi3904e.htm>
 Accessed 2019 Jun 24.

Review Articles

30. Zenner D, Hafezi H, Potter J, Capone S, Matteelli A. Effectiveness and cost-effectiveness of screening migrants for active tuberculosis and latent tuberculous infection. *Int J Tuberc Lung Dis.* 2017 Sep 1;21(9):965-976.
[PubMed: PM28826445](#)
31. Miller C, Lönnroth K. Chest radiography in tuberculosis detection: summary of current WHO recommendations and guidance on programmatic approaches. Geneva, Switzerland: World Health Organization; 2016:
<https://apps.who.int/iris/bitstream/handle/10665/252424/9789241511506-eng.pdf?sequence=1>
 Accessed 2019 Jun 24.