

CADTH RAPID RESPONSE REPORT: SUMMARY OF ABSTRACTS
Additional Precautions for Methicillin-Resistant Staphylococcus Aureus, Vancomycin-Resistant Enterococci and/or Extended Spectrum Beta-Lactamase-Producing Organisms: Clinical Effectiveness and Guidelines

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Research Question

What is the clinical effectiveness of additional precautions for methicillin-resistant staphylococcus aureus, vancomycin-resistant enterococci and/or extended spectrum beta-lactamase-producing organisms in patients?

Key Findings

Three systematic reviews and meta-analyses, five non-randomized studies, and one evidence-based guideline were identified regarding additional precautions for Methicillin-Resistant Staphylococcus Aureus (MRSA), Vancomycin-Resistant Enterococci (VRE) and/or Extended Spectrum Beta-Lactamase(ESBL)-producing organisms.

Methods

A focused literature search (with main concepts appearing in the title or subject heading) 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, randomized controlled trials, non-randomized studies and guidelines. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2012 and January 16, 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	Pediatric and adult patients in acute care, hemodialysis, residential care / long-term care, outpatient departments, outpatient oncology units
Intervention	Additional precautions
Comparator	Usual care; any comparator; no comparator
Outcomes	Transmission of Methicillin-Resistant Staphylococcus Aureus (MRSA), Vancomycin-Resistant Enterococci (VRE) and/or Extended Spectrum Beta-Lactamase(ESBL)-producing organisms
Study Designs	Health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, non-randomized studies, 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, non-randomized studies, and evidence-based guidelines.

Three systematic reviews and meta-analyses, five non-randomized studies, and one evidence-based guideline were identified regarding additional precautions for MRSA, VRE, and ESBL-producing organisms. No relevant health technology assessments or randomized controlled trials were identified.

Additional references of potential interest are provided in the appendix.

References Summarized

Health Technology Assessments

No literature identified

Systematic Reviews and Meta-analyses

1. De Angelis G, Cataldo MA, De Waure C, et al. Infection control and prevention measures to reduce the spread of vancomycin-resistant enterococci in hospitalized patients: a systematic review and meta-analysis. *J Antimicrob Chemother*. 2014 May;69(5):1185-1192.
[PubMed: PM24458513](#)
2. Kock R, Becker K, Cookson B, et al. Systematic literature analysis and review of targeted preventive measures to limit healthcare-associated infections by methicillin-resistant *Staphylococcus aureus*. *Euro Surveill*. 2014 Jul 24;19(29).
[PubMed: PM25080142](#)
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[PubMed: PM22573360](#)

Randomized Controlled Trials

No literature identified

Non-Randomized Studies

4. Frakking FNJ, Bril WS, Sinnige JC, et al. Recommendations for the successful control of a large outbreak of vancomycin-resistant *Enterococcus faecium* in a non-endemic hospital setting. *J Hosp Infect*. 2018 Dec;100(4):e216-e225.
[PubMed: PM29475013](#)

5. Karampatakis T, Tsergouli K, Iosifidis E, et al. Impact of active surveillance and infection control measures on carbapenem-resistant Gram-negative bacterial colonization and infections in intensive care. *J Hosp Infect.* 2018 Aug;99(4):396-404.
[PubMed: PM29792971](#)
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[PubMed: PM24915209](#)
8. Worby CJ, Jeyaratnam D, Robotham JV, et al. Estimating the effectiveness of isolation and decolonization measures in reducing transmission of methicillin-resistant *Staphylococcus aureus* in hospital general wards. *Am J Epidemiol.* 2013 Jun 1;177(11):1306-1313.
[PubMed: PM23592544](#)

Economic Evaluations

No literature identified

Guidelines and Recommendations

No literature identified.

Appendix — Further Information

Previous CADTH Reports

9. Single-bed versus multi-bed rooms for the prevention of hospital acquired infections: clinical effectiveness and guidelines. (*CADTH rapid response report: summary of abstracts*. Ottawa (ON): CADTH; 2016: <https://www.cadth.ca/sites/default/files/pdf/htis/2016/RB1039%20Single%20vs%20Multi-Bed%20Rooms%20Final.pdf>. Accessed 2019 Jan 21.
10. Contact isolation precautions for ambulatory oncology patients positive for antibiotic resistant organisms: a review of clinical effectiveness and guidelines. (*CADTH rapid response report: summary with critical appraisal*). Ottawa (ON): CADTH; 2015: <https://www.cadth.ca/sites/default/files/pdf/htis/oct-2015/RC0712%20Contact%20Isolation%20Precautions%20for%20Oncology%20Final.pdf>. Accessed 2019 Jan 21.
11. Contact precautions for patients previously positive for antibiotic resistant organisms: guidelines. (*CADTH rapid response report: summary of abstracts*). Ottawa (ON): CADTH; 2015: <https://www.cadth.ca/sites/default/files/pdf/htis/jan-2015/RB0768%20ARO%20Screening%20Final.pdf>. Accessed 2019 Jan 21.
12. Frequency of rescreening of patients positive for antibiotic resistant organisms: clinical evidence and guidelines. (*CADTH rapid response report: summary of abstracts*). Ottawa (ON): CADTH; 2015: <https://www.cadth.ca/sites/default/files/pdf/htis/jan-2015/RB0766%20ARO%20rescreening%20Final.pdf>. Accessed 2019 Jan 21.
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14. Single-bed versus multi-bed rooms for the prevention of hospital acquired infections: clinical effectiveness and guidelines. (*CADTH rapid response report: summary of abstracts*. Ottawa (ON): CADTH; 2013: <https://www.cadth.ca/sites/default/files/pdf/htis/2016/RB1039%20Single%20vs%20Multi-Bed%20Rooms%20Final.pdf>. Accessed 2019 Jan 21.
15. Screening, isolation, and decolonization strategies for vancomycin-resistant enterococci or extended spectrum beta-lactamase-producing organisms: a systematic review of the clinical evidence and health services impact. (*CADTH Technology overview number 3 issue 1*). Ottawa (ON): CADTH; 2013: <https://www.cadth.ca/sites/default/files/producing-organisms-a-systematic-review-of-the-clinical-evidence-and-health-services-impact.pdf>. Accessed 2019 Jan 21.
16. Screening, isolation and decolonization strategies for methicillin-resistant *Staphylococcus aureus*: a review of the clinical evidence. (*CADTH rapid response report: summary with critical appraisal*). Ottawa (ON): CADTH; 2012: <https://www.cadth.ca/sites/default/files/pdf/htis/oct-2012/MRSA%20Final.pdf>. Accessed 2019 Jan 21.

17. Screening, isolation, and decolonization strategies for vancomycin-resistant enterococci or extended spectrum beta-lactamase producing organisms: a systematic review of the clinical evidence and health services impact. (*CADTH rapid response report: systematic review*). Ottawa (ON): CADTH; 2012: https://www.cadth.ca/sites/default/files/pdf/htis/sept-2012/RE0028_VREReport_e.pdf. Accessed 2019 Jan 21.

Non-Randomized Studies

Alternative Population

18. Jackson SS, Harris AD, Magder LS, et al. Bacterial burden is associated with increased transmission to health care workers from patients colonized with vancomycin-resistant Enterococcus. *Am J Infect Control*. 2019 Jan;47(1):13-17.
[PubMed: PM30268592](#)

Alternative Outcome

19. Nelson MU, Bizzarro MJ, Baltimore RS, Dembry LM, Gallagher PG. Clinical and molecular epidemiology of methicillin-resistant Staphylococcus aureus in a neonatal intensive care unit in the decade following implementation of an active detection and isolation program. *J Clin Microbiol*. 2015 Aug;53(8):2492-2501.
[PubMed: PM26019206](#)
20. Masse V, Valiquette L, Boukhoudmi S, et al. Impact of methicillin resistant Staphylococcus aureus contact isolation units on medical care. *PLoS One*. 2013;8(2):e57057.
[PubMed: PM23451144](#)

Clinical Practice Guidelines – Methodology Unclear

21. Infection prevention and control vancomycin resistant enterococci (VRE). Macclesfield (UK): East Cheshire NHS Trust; 2017: <http://www.eastcheshire.nhs.uk/About-The-Trust/policies/IIC%20VRE%20Vancomycin%20Resistant%20Enterococci%20Policy%20ECT2697.pdf>. Accessed 2019 Jan 21.
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[PubMed: PM25986165](#)

Modeling Studies

23. Domenech de Celles M, Zahar JR, Abadie V, Guillemot D. Limits of patient isolation measures to control extended-spectrum beta-lactamase-producing Enterobacteriaceae: model-based analysis of clinical data in a pediatric ward. *BMC Infect Dis*. 2013 Apr 24;13:187.
[PubMed: PM23618041](#)

Qualitative Studies

24. Russell D, Beekmann SE, Polgreen PM, Rubin Z, Uslan DZ. Routine Use of Contact Precautions for methicillin-resistant *Staphylococcus aureus* and vancomycin-resistant enterococcus: which way is the pendulum swinging? *Infect Control Hosp Epidemiol*. 2016 Jan;37(1):36-40.
[PubMed: PM26486272](#)

Review Articles

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[PubMed: PM27391565](#)
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[PubMed: PM25150745](#)
30. Should we continue to isolate patients with vancomycin-resistant enterococci in hospitals? *Med J Aust*. 2015;202(5):234-235.
<https://www.mja.com.au/journal/2015/202/5/should-we-continue-isolate-patients-vancomycin-resistant-enterococci-hospitals>. Accessed 2019 Jan 21.
31. Orsi GB, Ciorba V. Vancomycin resistant enterococci healthcare associated infections. *Ann Ig*. 2013 Nov-Dec;25(6):485-492.
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