

CADTH RAPID RESPONSE REPORT: REFERENCE LIST

## Blood Culture Frequency in Febrile Pediatric In-patients: Clinical Effectiveness, Cost-Effectiveness, and Guidelines

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## Research Questions

1. What is the clinical effectiveness regarding blood culture examination every 24 hours in febrile pediatric oncology or hematology patients?
2. What is the cost-effectiveness regarding blood culture examination every 24 hours in febrile pediatric oncology or hematology patients?
3. What are the evidence-based guidelines regarding the frequency and volume of blood cultures in febrile pediatric oncology or hematology patients?

## Key Findings

Two evidence-based guidelines were identified regarding the frequency and volume of blood cultures in febrile pediatric or hematology patients.

## Methods

A limited literature search was conducted by an information specialist on key resources including PubMed, CINAHL, 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 blood culture frequency and pediatric hematology/oncology patients. No filters were applied to limit the retrieval by study type. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2009 and June 5, 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**

<b>Population</b>	Hematology and oncology pediatric patients (≤18 years)
<b>Intervention</b>	Blood culture examination every 24 hours
<b>Comparator</b>	Q1-Q2: Alternative frequencies of blood culture examination Q3: No comparator
<b>Outcomes</b>	Q1: Clinical effectiveness (e.g., earlier identification of septic infection, risk versus benefit, safety, risk of anemia) Q2: Cost-effectiveness Q3: Evidence-based Guidelines
<b>Study Designs</b>	Health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, non-randomized studies, economic evaluations, 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, economic evaluations, and evidence-based guidelines.

Two evidence-based guidelines were identified regarding the frequency and volume of blood cultures in febrile pediatric or hematology patients. No relevant health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, non-randomized studies or economic evaluations were identified regarding the clinical or cost-effectiveness regarding blood culture examinations every 24 hours in febrile pediatric or hematology patients.

Additional references of potential interest are provided in the appendix.

### Health Technology Assessments

No literature identified.

### Systematic Reviews and Meta-analyses

No literature identified.

### Randomized Controlled Trials

No literature identified.

### Non-Randomized Studies

No literature identified.

### Economic Evaluations

No literature identified.

### Guidelines and Recommendations

1. Wattier RL, Dvorak CC, Auerbach AD, Weintrub PS. Repeat blood cultures in children with persistent fever and neutropenia: Diagnostic and clinical implications. *Pediatr Blood Cancer*. 2015 Aug;62(8):1421-1426.  
[PubMed: PM25728605](#)
2. Downes KJ, et al. Guidelines for management of children with fever and neutropenia. *J Ped Infect Dis Soc*. 2013 Jun;2(3):281-5.  
[PubMed: PM 26619484](#)  
Full-text available: <https://academic.oup.com/jpids/article/2/3/281/1019199>  
See: Section 1 and Section 2

## Appendix — Further Information

### Non-Randomized Studies

#### *Alternative Patient Population*

3. Kimura SI, Gomyo A, Hayakawa J, et al. Clinical significance of repeat blood cultures during febrile neutropenia in adult acute myeloid leukaemia patients undergoing intensive chemotherapy. *Infect Dis (London, England)*. 2017 Oct;49(10):748-757.  
[PubMed: PM28631944](#)
4. Woods-Hill CZ, Lee L, Xie A, et al. Dissemination of a novel framework to improve blood culture use in pediatric critical care. *Pediatr Qual Saf*. 2018 Sep-Oct;3(5):e112.  
[PubMed: PM30584639](#)

#### *Patient-Related Health Outcomes Not Specified*

5. Kee PP, Chinnappan M, Nair A, et al. Diagnostic yield of timing blood culture collection relative to fever. *Pediatr Infect Dis J*. 2016 Aug;35(8):846-850.  
[PubMed: PM27164461](#)
6. Rosenblum J, Lin J, Kim M, Levy AS. Repeating blood cultures in neutropenic children with persistent fevers when the initial blood culture is negative. *Pediatr Blood Cancer*. 2013 Jun;60(6):923-927.  
[PubMed: PM23047811](#)
7. Scheinemann K, Ethier MC, Dupuis LL, et al. Utility of peripheral blood cultures in bacteremic pediatric cancer patients with a central line. *Support Care Cancer*. 2010 Aug;18(8):913-919.  
[PubMed: PM19727845](#)