Effective Health Care

Interventions To Prevent Blood Culture Contamination

Results of Topic Selection Process & Next Steps

The nominator is interested in a new evidence review on interventions to prevent blood culture contamination, and specifically including an initial specimen diversion device.

We identified one in-process review covering the scope of the nomination, therefore, a new review would be duplicative of an existing product. No further activity on this nomination will be undertaken by the Effective Health Care (EHC) Program.

Topic Brief

Topic Name: Interventions to Prevent Blood Culture Contamination, #791

Nomination Date: 6/8/2018

Topic Brief Date: 6/19/2018

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Conflict of Interest: None of the investigators have any affiliations or financial involvement that conflicts with the material presented in this report

Background

- Blood cultures are an important to test to identify the causative organism in people with sepsis. Results can guide and target antibiotic therapy[1].
- Contamination of blood cultures with skin flora can lead to unnecessary antibiotics, increased length of stay, and delayed diagnosis.
- Rates of blood culture contamination can be as high as 6%[2].
- According to the American Society for Microbiology (ASM) and the Clinical Laboratory Standards Institute (CLSI) overall blood culture contamination rates should not exceed 3%[3]. Facilities are actively employing interventions and strategies to decrease rates.
- Interventions vary and can include standardized protocols, minimizing blood draws from catheters, staff education, use of dedicated phlebotomy staff, and initial blood diversion devices[4].
- Contaminated blood cultures can add $7500-$10,000 to a hospitalization[5].

The key question for this nomination is: What is the effectiveness of interventions for reducing blood culture contamination?

To define the inclusion criteria for the key questions we specify the population, interventions, comparators, and outcomes (PICO) of interest (Table 1).

Table 1. Key Question and PICO

Key Question	PICO
Population	Patients who have a blood culture specimen collected
Interventions	Interventions to reduce blood culture contamination, including prep kits, venipuncture, and specimen diversion devices
Comparators	Usual care
Outcomes	False positive blood culture, cost

Methods

We assessed this nomination for priority for a systematic review or other AHRQ EHC report with a hierarchical process using established selection criteria (Appendix A). Assessment of each criteria determined the need for evaluation of the next one.

1. Determine the *appropriateness* of the nominated topic for inclusion in the EHC program.
2. Establish the overall *importance* of a potential topic as representing a health or healthcare issue in the United States.
3. Determine the *desirability of new evidence review* by examining whether a new systematic review or other AHRQ product would be duplicative.
4. Assess the *potential impact* a new systematic review or other AHRQ product.
5. Assess whether the *current state of the evidence* allows for a systematic review or other AHRQ product (feasibility).
6. Determine the *potential value* of a new systematic review or other AHRQ product.

Appropriateness and Importance

We assessed the nomination for appropriateness and importance.

Desirability of New Review/Duplication

We searched for high-quality, completed or in-process evidence reviews published in the last three years on the key questions of the nomination. See Appendix B for sources searched.

Results

Appropriateness and Importance

This is an appropriate and important topic. See Appendix A for more details.

Desirability of New Review/Duplication

A new evidence review would be duplicative of an existing product. We identified one in-process review[6]. See Appendix A for more details.

Summary of Findings

- Appropriateness and importance: The topic is both appropriate and important.
- Duplication: A new review would be duplicative of an existing product.

References

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Appendix A. Selection Criteria Summary

Selection Criteria	Assessment
1. Appropriateness	
1a. Does the nomination represent a health care drug, intervention, device, technology, or health care system/setting available (or soon to be available) in the U.S.?	Yes
1b. Is the nomination a request for a systematic review?	Yes
1c. Is the focus on effectiveness or comparative effectiveness?	Yes
1d. Is the nomination focus supported by a logic model or biologic plausibility? Is it consistent or coherent with what is known about the topic?	Yes
2. Importance	
2a. Represents a significant disease burden; large proportion of the population	According to a survey of hospital infection professionals, 14% of sites had blood culture contamination rates higher than 3%[4].
2b. Is of high public interest; affects health care decision making, outcomes, or costs for a large proportion of the US population or for a vulnerable population	Yes
2c. Represents important uncertainty for decision makers	Yes. There are a variety of approaches to decreasing blood culture contamination, and practices employed by healthcare organizations vary[4].
2d. Incorporates issues around both clinical benefits and potential clinical harms	Yes
2e. Represents high costs due to common use, high unit costs, or high associated costs to consumers, to patients, to health care systems, or to payers	Contaminated blood cultures can add $7500-10,000 to a hospitalization[5].
3. Desirability of a New Evidence Review/Duplication	
3. Would not be redundant (i.e., the proposed topic is not already covered by available or soon-to-be available high-quality systematic review by AHRQ or others)	We identified one in-process systematic review that will cover the scope of the nomination[6]. We confirmed with the investigators that the scope of the review includes initial specimen diversion devices (ISDD). The scope of this review is broad and includes a range of interventions such as simple feedback and ISDD. They indicated that they anticipate publication later this year.

Abbreviations: AHRQ=Agency for Healthcare Research and Quality; ISDD=initial specimen diversion device

Appendix B. Search for Evidence Reviews (Duplication)

Listed are the sources searched.

Search date: June 2015 to June 2018
AHRQ: Evidence reports and technology assessments, USPSTF recommendations
VA Products: PBM, and HSR&D (ESP) publications, and VA/DoD EBCPG Program
Cochrane Systematic Reviews and Protocols http://www.cochranelibrary.com/
PubMed
PROSPERO Database (international prospective register of systematic reviews and protocols) http://www.crd.york.ac.uk/prospero/
Systematic Reviews (Journal) : protocols and reviews http://systematicreviewsjournal.biomedcentral.com/