

TITLE: Recognition and Diagnosis of Sepsis in Rural or Remote Areas: A Review of Clinical and Cost-Effectiveness and Guidelines

DATE: 11 August 2016

CONTEXT AND POLICY ISSUES

Sepsis, defined in the 2016 International Consensus Definitions for Sepsis and Septic Shock as a “*life threatening organ dysfunction caused by a dysregulated host response to infection*”¹ (p 801), accounts for 1.6 million cases annually in the United States, and is the 11th leading cause of death.²

Sepsis is usually diagnosed using parameters that assess infection (blood culture), respiration (arterial blood gas), coagulation (platelet count), cardiovascular condition (arterial pressure), central nervous system (Glasgow coma scale score), liver (bilirubin) and renal (creatinine, urine output) functions.^{1,3} Early diagnosis and optimal management of sepsis in the context of rural and remote healthcare settings is a priority because of the limitations in this setting such as increased distance from care, lack of invasive monitoring capabilities, reduced access to ambulatory services, and low primary care physician per population ratio.^{4,5} A recent US retrospective study showed that residence in a medically underserved area (MUA) had higher incidence of severe sepsis (8.6 vs 6.8 cases/1000 people; $P < 0.01$) and were more likely to die (15.5 vs 11.9 deaths/10000 people; $P < 0.01$) compared to those living in non-MUA.⁶

This Rapid Response report aims to review the clinical and cost-effectiveness of tests and processes used for the diagnosis and assessment of sepsis in adults with suspected sepsis in rural or remote areas. Guidelines associated with the use of tests and processes used for sepsis diagnosis and assessment will also be examined.

RESEARCH QUESTIONS

1. What is the clinical effectiveness of processes used for the assessment for and recognition of sepsis in adults with suspected sepsis in rural or remote areas?
2. What is the clinical effectiveness of tests used for sepsis diagnosis in adults with suspected sepsis in rural or remote areas?

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3. What is the cost-effectiveness of tests used for sepsis diagnosis in adults with suspected sepsis in rural or remote areas?
4. What are the evidence-based guidelines associated with the processes used for the assessment for and recognition of sepsis in adults with suspected sepsis in rural or remote areas?
5. What are the evidence-based guidelines associated with tests used for sepsis diagnosis in adults with suspected sepsis in rural or remote areas?

KEY FINDINGS

The literature search did not find any evidence on the clinical and cost-effectiveness of tests and processes used for the diagnosis and assessment of sepsis in adults with suspected sepsis in rural or remote areas. No guidelines associated with the use of tests and processes used for sepsis diagnosis and assessments were found.

METHODS

Literature Search Strategy

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. 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, 2011 and July 25, 2016.

Selection Criteria and Methods

One reviewer screened the titles and abstracts of the retrieved publications and examined the full-text publications for the final article selection. Selection criteria are outlined in Table 1.

Population	Adults with suspected sepsis in rural or remote areas
Intervention	Processes surrounding the assessment for and recognition of sepsis prior for official diagnosis Diagnostic tests
Comparator	Procedures, diagnostic tests used in larger, more resource intensive centers No comparator
Outcomes	Clinical effectiveness, harms, cost-effectiveness, guidelines
Study Designs	Health technology assessments (HTA), systematic reviews (SR), meta-analyses (MA), randomized controlled trials (RCTs), non-RCTs, economic evaluations, guidelines.

Exclusion Criteria

Articles were excluded if they did not meet the selection criteria in Table 1, if they were published prior to January 2011, if they were duplicate publications of the same study, or if they were referenced in a selected systematic review.

SUMMARY OF EVIDENCE

Quantity of Research Available

The literature search yielded 499 citations. After screening of abstracts from the literature search and from other sources, four potentially relevant studies were selected for full-text review. No study was included in the review. The PRISMA flowchart in Appendix 1 details the process of the study selection.

Summary of Findings

1. What is the clinical effectiveness of processes used for the assessment for and recognition of sepsis in adults with suspected sepsis in rural or remote areas?

There was no evidence found on the clinical effectiveness of processes used for the assessment for and recognition of sepsis in adults with suspected sepsis in rural or remote areas.

2. What is the clinical effectiveness of tests used for sepsis diagnosis in adults with suspected sepsis in rural or remote areas?

There was no evidence found on the clinical effectiveness of tests used for sepsis diagnosis in adults with suspected sepsis in rural or remote areas.

3. What is the cost-effectiveness of tests used for sepsis diagnosis in adults with suspected sepsis in rural or remote areas?

There was no evidence found on the cost-effectiveness of tests used for sepsis diagnosis in adults with suspected sepsis in rural or remote areas.

4. What are the evidence-based guidelines associated with the processes used for the assessment for and recognition of sepsis in adults with suspected sepsis in rural or remote areas?

There were no evidence-based guidelines associated with the processes used for the assessment for and recognition of sepsis in adults with suspected sepsis in rural or remote areas identified.

5. What are the evidence-based guidelines associated with tests used for sepsis diagnosis in adults with suspected sepsis in rural or remote areas?

There were no evidence-based guidelines associated with tests used for sepsis diagnosis in adults with suspected sepsis in rural or remote areas identified.

Limitations

There is a lack of evidence on the clinical and cost-effectiveness of tests and processes used for the diagnosis and assessment of sepsis in adults with suspected sepsis in rural or remote areas. No guidelines associated with the use of tests and processes used for sepsis diagnosis and assessments were found.

CONCLUSIONS AND IMPLICATIONS FOR DECISION OR POLICY MAKING

Studies are needed to provide evidence on the clinical and cost-effectiveness of tests and processes used for the diagnosis and assessment of sepsis in adults with suspected sepsis in rural or remote areas. Guidelines associated with the use of tests and processes used for sepsis diagnosis and assessments are also needed.

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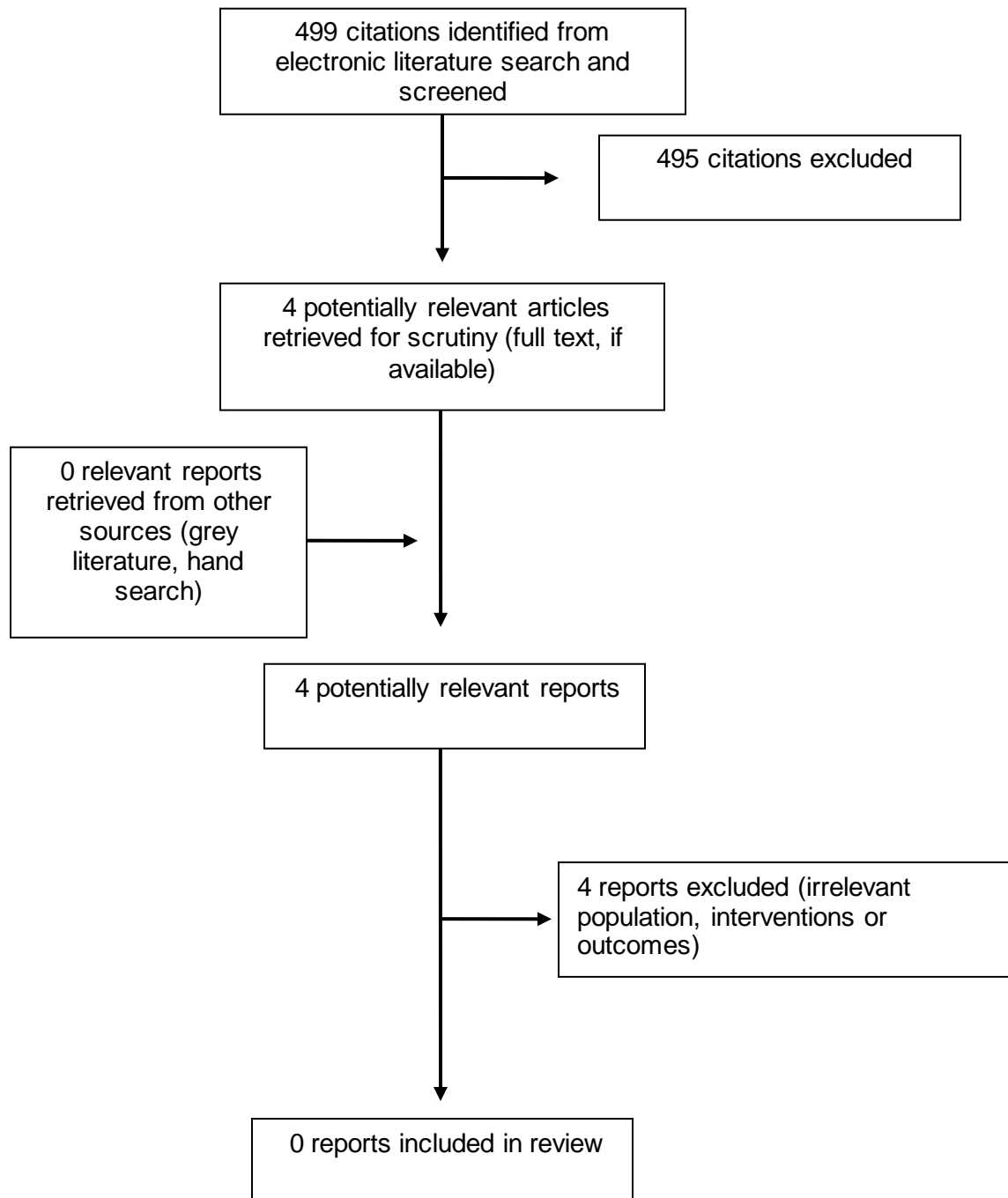
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Appendix 1: Selection of Included Studies



Appendix 2: Main Study Findings and Authors' Conclusions

Table A1: Main Study Findings and Authors' Conclusions		
First Author, Publication Year	Main Study Findings	Authors' Conclusions
	Research question 1 (clinical effectiveness of processes used for the assessment for and recognition of sepsis in adults with suspected sepsis in rural or remote areas)	
	There was no evidence found on the clinical effectiveness of processes used for the assessment for and recognition of sepsis in adults with suspected sepsis in rural or remote areas.	
	Research question 2 (clinical effectiveness of tests used for sepsis diagnosis in adults with suspected sepsis in rural or remote areas)	
	There was no evidence found on the clinical effectiveness of tests used for sepsis diagnosis in adults with suspected sepsis in rural or remote areas.	
	Research question 3 (cost-effectiveness of tests used for sepsis diagnosis in adults with suspected sepsis in rural or remote areas)	
	There was no evidence found on the cost-effectiveness of tests used for sepsis diagnosis in adults with suspected sepsis in rural or remote areas.	
	Research question 4 (evidence-based guidelines associated with the processes used for the assessment for and recognition of sepsis in adults with suspected sepsis in rural or remote areas)	
	There was no evidence found on the evidence-based guidelines associated with the processes used for the assessment for and recognition of sepsis in adults with suspected sepsis in rural or remote areas.	
	Research question 5 (evidence-based guidelines associated with tests used for sepsis diagnosis in adults with suspected sepsis in rural or remote areas)	
	There was no evidence found on the evidence-based guidelines associated with tests used for sepsis diagnosis in adults with suspected sepsis in rural or remote areas.	