



Effective Health Care

Care Transitions for Sepsis Patients

Results of Topic Selection Process & Next Steps

The nominators, Baylor Scott & White Health and Lehigh Valley Health Network, are interested in a new evidence review on models of care transitions to reduce sepsis readmissions to inform clinical practice. Because there was limited original research addresses the nomination, a new review is not feasible at this time. No further activity on this nomination will be undertaken by the Effective Health Care (EHC) Program.

Topic Brief

Topic Number and Name: 0846 Care Transitions for Sepsis Patients

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Background

The incidence rate of sepsis rehospitalization within 90 days of discharge from the hospital, as reported in 2019, was 48%¹. The high rate of hospital readmission is a significant contributor to health care costs². Many of the readmissions are due to preventable conditions such as dehydration, urinary tract infections, and pneumonia³. Despite the high rate of hospital readmission for sepsis, there is very little evidence on the efficacy of interventions to facilitate the transition of sepsis patients from the hospital to home setting and prevent readmissions⁴.

Interventions to facilitate care transitions from the hospital to the home for any hospitalized patient include home-visiting programs, structured telephone support, telemonitoring, outpatient clinic-based interventions, and educational interventions, for example^{5, 6}. Some models of care transition interventions have been associated with decreases in the rate of hospital readmissions. A 2017 meta-analysis that incorporated data from 1990 to 2014 demonstrated that follow-up calls and home visits were associated with a decreased rate of readmission⁷. Pharmacy-supported transition-of-care, in which interventions such as patient-centered follow-ups with pharmacy personnel are implemented, have also associated with decreased incidence of readmission⁸.

In general, there is interest in reducing hospital readmissions. The Medicare and Medicaid Hospital readmissions reduction program (HRR) reduces payments to hospitals with “excess readmission ratios”⁹ and hospitals are implementing interventions to reduce readmissions⁷. Protocols for prospective care transition studies include proposals to evaluate person-patient- and family-centered interventions¹⁰, and the use of home assessments prior to hospital discharge¹¹. The i-HOPE engagement study aims to develop a research agenda to facilitate care of hospitalized patients using input from patients and families of patients¹².

Nominator and Stakeholder Engagement

The nomination originally addressed care transitions for patients from the hospital to home generally. During communication with the nominator, nominators decided to narrow the scope of the question to address care transitions from the hospital to home specifically in patients with sepsis.

Key Questions and PICOs

The key questions for this nomination are:

1. Following an index hospital admission, what is the effectiveness of models of care transition interventions in improving health outcomes and reducing hospital readmission in adult patients with sepsis?
 - a) Do models vary in effectiveness by patient characteristics (e.g. age, comorbidity, type of surgery, insurance status)?
 - b) Do models vary in effectiveness by setting (geographic)?
2. Following an index hospital admission in adult patients with sepsis, what are the harms associated with models of care transition interventions?

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

Table 1. Key Questions and PICOT

Key Questions	<p>Following an index hospital admission, what is the effectiveness of differing models of care transition interventions in improving health outcomes and reducing utilization in adult patients with sepsis?</p> <p>a) Do models vary in effectiveness by patient characteristics (e.g. age, comorbidity, type of surgery, insurance status)?</p> <p>b) Do models vary in effectiveness by setting (geographic)?</p>	<p>Following an index hospital admission in adult patients with sepsis, what are the harms associated with differing models of care transition interventions?</p>
Population	Adult patients with sepsis	Adult patients with sepsis
Interventions	Any care transition models (e.g., transitional care model; the Coleman model)	Any care transition models (e.g., transitional care model; the Coleman model)
Comparators	Usual care; other interventions/other care transition models	Usual care; other interventions/other care transition models
Outcomes	<p>Hospital readmission</p> <p>Health care utilization</p> <p>Mortality</p> <p>Quality of life</p> <p>Cost</p>	<p>Hospital readmission</p> <p>Health care utilization</p> <p>Mortality</p> <p>Quality of life</p> <p>Adverse events/Medical errors</p> <p>Cost</p>
Timing	30-days; 90-days	30-days; 90-days

Methods

We assessed nomination 0846 Care Transitions for Sepsis Patients, for priority for a systematic review or other AHRQ EHC report with a hierarchical process using established selection criteria. Assessment of each criteria determined the need to evaluate the next one. See Appendix A for detailed description of the criteria.

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.

Impact of a New Evidence Review

The impact of a new evidence review was qualitatively assessed by analyzing the current standard of care, the existence of potential knowledge gaps, and practice variation. We considered whether it was possible for this review to influence the current state of practice through various dissemination pathways (practice recommendation, clinical guidelines, etc.).

Feasibility of New Evidence Review

We conducted a literature search in PubMed from March 2014 to March 2019. See Appendix C for the PubMed search strategy and links to the ClinicalTrials.gov search.

We reviewed all identified titles and abstracts for inclusion and classified identified studies by key question and study design to assess the size and scope of a potential evidence review.

Results

See Appendix A for detailed assessments of all EPC selection criteria.

Appropriateness and Importance

This is an appropriate and important topic. Sepsis represents a significant contributor to health care costs due to the high rate of hospital readmissions². The incidence rate of sepsis rehospitalization within 90 days, as measured in one 2019 study, was 48%¹.

Desirability of New Review/Duplication

A new evidence review would not be duplicative of an existing evidence review. No systematic reviews addressing care transitions for sepsis patients were identified.

Impact of a New Evidence Review

A new systematic review may have significant impact given the need for a reduction in the high rate of hospital readmissions for sepsis patients².

Feasibility of a New Evidence Review

A new evidence review is not feasible. One relevant RCT was identified. In the study, the chronic care model (i.e., proactive patient symptom monitoring, clinical decision support for the primary care provider, and training for both patients and their primary care providers in evidence-based care) was applied for sepsis patients following their discharge from the hospital. Measurements of mental health-related quality of life measures were taken at hospital discharge and six months post-discharge. There were no significant differences in mental health-related quality of life outcome measures were found¹³.

See Table 2, Feasibility column.

Table 2. Key Questions and Results for Duplication and Feasibility

Key Question	Duplication (3/2016-3/2019)	Feasibility (3/2014-3/2019)
KQ 1: Following an index hospital admission, what is the effectiveness of differing models of care transition interventions in improving health outcomes and reducing utilization in adult patients with sepsis? a) Do models vary in effectiveness by patient characteristics (e.g. age, comorbidity, type of surgery, insurance status)? b) Do models vary in effectiveness by setting (geographic)?	Total number of identified systematic reviews: 0	<u>Size/scope of review</u> Relevant Studies Identified: 1 • RCT: 1 ⁴
KQ 2: Following an index hospital admission in adult patients with sepsis, what are the harms associated with differing models of care transition interventions?	Total number of identified systematic reviews: 0	<u>Size/scope of review</u> Relevant Studies Identified: 0

Abbreviations: AHRQ=Agency for Healthcare Research and Quality; KQ=Key Question

Summary of Findings

- Appropriateness and importance: The topic is both appropriate and important.
- Duplication: A new review would not be duplicative of an existing product. No duplicative systematic reviews were identified.
- Impact: A new systematic review likely has high impact potential.
- Feasibility: A new review is not feasible. The evidence base is likely very small.

References

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Appendix A. Selection Criteria Assessment

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. Models of care transition interventions such as home-visiting programs, structured telephone support, telemonitoring, outpatient clinic-based interventions, primarily educational interventions ^{5, 6} are available in the U.S.
1b. Is the nomination a request for a systematic review?	Yes. The request is for a systematic review.
1c. Is the focus on effectiveness or comparative effectiveness?	Yes, the focus is on the comparative effectiveness of models of care transition interventions in sepsis patients.
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. Some models of care transition interventions have been associated with decreased rates of hospital readmission ^{7, 8} .
2. Importance	
2a. Represents a significant disease burden; large proportion of the population	Sepsis represents a significant contributor to health care costs due to the high rate of hospital readmissions ² . The incidence rate of sepsis rehospitalization within 90 days, as measured in one study in 2019, was 48% ¹ .
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	Sepsis represents a significant contributor to health care costs due to the high rate of hospital readmissions ² . The incidence rate of sepsis rehospitalization within 90 days, as measured in on study in 2019, was 48% ¹ .
2c. Represents important uncertainty for decision makers	Yes. The Medicare and Medicaid Hospital readmissions reduction program (HRR) reduces payments to hospitals with excessive readmissions ⁹ and hospitals are implementing interventions to reduce readmissions ⁷ .
2d. Incorporates issues around both clinical benefits and potential clinical harms	Yes. The nomination addresses both benefits and harms of models of care transition interventions in sepsis patients.
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	Yes. Sepsis is a leading contributor to hospital readmissions and associated costs ² .
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)	Yes. There were no redundant systematic reviews identified.
4. Impact of a New Evidence Review	
4a. Is the standard of care unclear (guidelines not available or guidelines inconsistent, indicating an information gap that may be addressed by a new evidence review)?	Yes. There are currently no guidelines for models of care transition interventions in sepsis patients ⁴ .
4b. Is there practice variation (guideline inconsistent with current practice, indicating a potential implementation gap and not best addressed by a new evidence review)?	Yes, there is practice variation.
5. Primary Research	
5. Effectively utilizes existing research and knowledge by considering: - Adequacy (type and volume) of research for conducting a systematic review	There was one relevant RCT identified measuring mental health in post-hospitalized sepsis patients. In the study, participants were provided managed follow-up with their primary care provider and

Selection Criteria	Assessment
- Newly available evidence (particularly for updates or new technologies)	managed post-hospitalization care. There was no difference in mental health-related quality of life measurements between measurements taken at hospital discharge and six months post-discharge ¹³ .

Abbreviations: AHRQ=Agency for Healthcare Research and Quality; KQ=Key Question

Appendix B. Search for Evidence Reviews (Duplication)

Listed below are the sources searched, hierarchically

Primary Search
AHRQ: Evidence reports and technology assessments https://effectivehealthcare.ahrq.gov/ ; https://www.ahrq.gov/research/findings/ta/index.html ; https://www.ahrq.gov/research/findings/evidence-based-reports/search.html
VA Products: PBM, and HSR&D (ESP) publications, and VA/DoD EBCPG Program https://www.hsr.d.research.va.gov/publications/esp/
Cochrane Systematic Reviews http://www.cochranelibrary.com/
HTA (CRD database): Health Technology Assessments http://www.crd.york.ac.uk/crdweb/
PubMed Health http://www.ncbi.nlm.nih.gov/pubmedhealth/
Secondary Search
AHRQ Products in development https://effectivehealthcare.ahrq.gov/
VA Products in development https://www.hsr.d.research.va.gov/publications/esp/
Cochrane Protocols http://www.cochranelibrary.com/
PROSPERO Database (international prospective register of systematic reviews and protocols) http://www.crd.york.ac.uk/prospero/
Tertiary Search
PubMed https://www.ncbi.nlm.nih.gov/pubmed/

Appendix C. Search Strategy & Results (Feasibility)

MEDLINE(PubMed) searched on: March 4 th , 2019	
Concept	
Post-Hospitalization Care	((("Patient Discharge"[Mesh]) OR "Postoperative Period"[Mesh]) OR "Aftercare"[Mesh]) OR (((post-hospitalization[Title/Abstract] OR "post hospitalization"[Title/Abstract])) OR (post-discharge[Title/Abstract] OR "post discharge"[Title/Abstract])) OR (post-surgical[Title/Abstract] OR post-surgery[Title/Abstract] OR post-operative[Title/Abstract])) OR (post[Title/Abstract] AND (surgical[Title/Abstract] OR surgery[Title/Abstract] OR operative)[Title/Abstract])
AND	
Sepsis	(("Systemic Inflammatory Response Syndrome"[Mesh]) OR sepsis[Title/Abstract])
Limits	Filters activated: published in the last 5 years, English.
N=330	
SR N=2	Systematic[sb]
RCT N=105	(((((groups[tiab]) OR (trial[tiab])) OR (randomly[tiab]) OR (drug therapy[sh])) OR (placebo[tiab]) OR (randomized[tiab])) OR (controlled clinical trial[pt])) OR (randomized controlled trial[pt]))
Obs N=27	observational study[Publication Type]
Other N=196	
<p>clinicalTrials.gov 104 Studies found for: Patient Discharge Recruiting, Not yet recruiting, Active, not recruiting, Completed, Enrolling by invitation Studies sepsis Adult, Older Adult First posted from 03/14/2014 to 03/30/2019 https://clinicaltrials.gov/ct2/results?cond=sepsis&term=Patient+Discharge&type=&rslt=&recrs=b&recrs=a&recrs=f&recrs=d&recrs=e&age_v=&age=1&age=2&gndr=&intr=&titles=&outc=&spons=&lead=&id=&cntry=&state=&city=&dist=&locn=&strd_s=&strd_e=&prcd_s=&prcd_e=&sfpd_s=03%2F14%2F2014&sfpd_e=03%2F30%2F2019&lupd_s=&lupd_e=&sort=</p>	