



# Topic Brief: Electronic Health Records and Care Transitions

**Date:** 10/19/2022

**Nomination Number:** 0974

**Purpose:** This brief summarizes the information addressing a nomination submitted on May 6, 2022, through the Effective Health Care Website. This information was used to inform the Evidence-based Practice Center (EPC) Program decisions about whether to produce an evidence report on the topic, and if so, what type of evidence report would be most appropriate.

**Issue:** Transitions of care between inpatient and emergency department services and outpatient primary care are associated with health and safety risks, either due to omissions of critical information regarding received treatment or incomplete documentation of follow-up care plans. Evidence regarding the effectiveness of different formats/components of electronic health records (EHR) in reducing duplication and errors in care and associated healthcare costs remains unclear as is the format/content of an EHR discharge summary that streamlines care transitions.

**Findings:** The EPC Program will not develop a new systematic review because we did not find enough primary studies addressing the concerns of this nomination.

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## Background

Transition of care is defined by the Centers for Medicare & Medicaid Services as the movement of a patient from one setting of care to another. Settings of care may include hospitals, ambulatory primary care practices, long-term facilities, home health, and rehabilitation facilities. Such transitions increase the risk of adverse events due to the potential for miscommunication as responsibility is given to new parties.<sup>1</sup>

Ineffective handoff of information between care providers can lead to confusion regarding treatment plans, duplicative testing, discrepancies in medications, and result in suboptimal care, hospital readmissions or other morbidity. In 2018, there were 3.8 million 30-day all-cause adult hospital readmissions, and a 14 percent readmission rate at an average readmission cost of \$15,200.<sup>2</sup> People with complex medication regimens, older people, and those with mental health problems are among those at greater risk for medication errors at transition.<sup>3</sup>

Most acute care facilities in the United States currently use electronic health records (EHRs) to generate documents intended to communicate important information about patients and their recent acute care visits to outpatient providers (discharge summaries), including skilled nursing facilities, and long-term care facilities. While The Joint Commission on Accreditation of Healthcare Organizations has mandated six components that a discharge summary must contain,<sup>4</sup> each acute care organization uses a customized EHR system to generate discharge summaries.

Consequently, discharge summaries can vary greatly in content, format, and organization since, thus increasing risk of miscommunication.<sup>5</sup>

## Scope

### Key Question:

1. What is the effectiveness of EHR discharge summaries in providing the key medical information to an outpatient provider during transitions of care?

### Contextual questions:

2. What constitutes an “ideal” EHR discharge summary?
3. What key elements (e.g., medical diagnosis, summative hospital course, medication changes, post-discharge plan of care etc.) should be included in an “ideal” EHR discharge summary?

**Table 1.** Questions and PICOs (population, intervention, comparator, and outcome)

<b>Question</b>	1. Effectiveness of EHR discharge summaries in transitions of care
<b>Population</b>	Patients discharged from hospitals and/or emergency departments
<b>Intervention</b>	Different formats/templates of EHR discharge summaries
<b>Comparator</b>	Other formats/templates of EHR discharge summaries Required or standard elements of a discharge summary
<b>Outcomes</b>	Completeness of discharge summary Duplication of care Medication errors Hospital admission or readmission Resource utilization Other medical errors Costs of care
<b>Settings</b>	Any

Abbreviations: EHR=electronic health records.

## Assessment Methods

See Appendix A.

## Summary of Literature Findings

We did not find any systematic reviews and only three primary studies addressing Key Question 1 out a review of the entire search yield. The three studies examined the relationship between updates to EHR systems and generally on completeness of information captured in the EHR/discharge summary, and, in one, case, on the proportion of discharge medication-related failures.<sup>6</sup>

**Table 2.** Literature identified for Key Question

<b>Key Question</b>	<b>Systematic reviews (5/2019-5/2022)</b>	<b>Primary Studies (5/2017-5/2022)</b>
KQ1: Effectiveness of EHR discharge summaries	Total: 0	Total: 3 Pre-post: 1 <sup>6</sup> Non-randomized: 2 <sup>7, 8</sup>

Abbreviations: EHR=electronic health records; KQ=key question.

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

## Summary of Selection Criteria Assessment

Understanding the effectiveness of transitional care information communicated through EHR-generated discharge summaries is important for improving patient care quality and avoiding patient harm. We identified only five primary studies addressing the effectiveness of different aspects of EHR generated clinical discharge summaries.

Please see Appendix B for detailed assessments of individual EPC Program selection criteria.

## Related Resources

We identified some additional resources that may be helpful to the nominator.

The following resources addressing contextual questions 2 and 3 on defining key elements of a discharge summary:

- Optimizing the quality of hospital discharge summaries – a systematic review and practical tools<sup>9</sup>
- Informing best practice in writing discharge summaries- Rapid Literature Review<sup>10</sup>
- Key characteristics of a successful EHR-supported e-handoff tool: A systematic review<sup>11</sup>
- Transitions of Care Consensus Policy Statement American College of Physicians-Society of General Internal Medicine-Society of Hospital Medicine-American Geriatrics Society-American College of Emergency Physicians-Society of Academic Emergency Medicine<sup>12</sup>

The following resources are pilot studies and quality improvement projects on discharge summaries:

- Usability of Electronic Health Record–Generated Discharge Summaries: Heuristic Evaluation<sup>5</sup>
- Implementation, spread and impact of the Patient Oriented Discharge Summary (PODS) across Ontario hospitals: a mixed methods evaluation<sup>13</sup>
- A Quality Improvement Approach to Improving Discharge Documentation<sup>14</sup>
- Evaluation of an enhanced discharge summary template: Building a better handoff document<sup>15</sup>
- ECRI Institute Usability Project: EHR-Generated Discharge Documents<sup>16</sup>

## References

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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.

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## Appendix A: Methods

We assessed nomination for priority for a systematic review or other AHRQ Effective Health Care report with a hierarchical process using established selection criteria. Assessment of each criteria determined the need to evaluate the next one. See Appendix B for detailed description of the criteria.

### Appropriateness and Importance

We assessed the nomination for appropriateness and importance.

### Desirability of New Review/Absence of Duplication

We searched for high-quality, completed or in-process evidence reviews published in the last three years between May 24, 2019, and May 24, 2022, on the questions of the nomination from these sources:

- AHRQ: Evidence reports and technology assessments
  - AHRQ Evidence Reports <https://www.ahrq.gov/research/findings/evidence-based-reports/index.html>
  - EHC Program <https://effectivehealthcare.ahrq.gov/>
  - US Preventive Services Task Force <https://www.uspreventiveservicestaskforce.org/>
  - AHRQ Technology Assessment Program <https://www.ahrq.gov/research/findings/ta/index.html>
- US Department of Veterans Affairs Products publications
  - Evidence Synthesis Program <https://www.hsrd.research.va.gov/publications/esp/>
  - VA/Department of Defense Evidence-Based Clinical Practice Guideline Program <https://www.healthquality.va.gov/>
- Cochrane Systematic Reviews <https://www.cochranelibrary.com/>
- University of York Centre for Reviews and Dissemination database <https://www.crd.york.ac.uk/CRDWeb/>
- PROSPERO Database (international prospective register of systematic reviews and protocols) <http://www.crd.york.ac.uk/prospero/>
- PubMed <https://www.ncbi.nlm.nih.gov/pubmed/>
- Campbell Collaboration <http://www.campbellcollaboration.org/>
- Joanna Briggs Institute <http://joannabriggs.org/>
- WHO Health Evidence Network <http://www.euro.who.int/en/data-and-evidence/evidence-informed-policy-making/health-evidence-network-hen>

### 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 limited literature search in pub med for the last 5 years between my 24, 2017 and May 25, 2022. We retrieved all identified studies and evaluated titles and abstracts for inclusion. The classified identified studies by key question and study designed to estimate the size and scope of a potential evidence review.

## Search strategy

**Ovid MEDLINE(R) ALL 1946 to May 23, 2022**

Date searched: May 24, 2022

1 electronic health records/ or health information exchange/ (25856)  
2 (EHR or EHRs or EMR or EMRs or HIE or HIEs or "electronic health record\*" or "electronic medical record\*" or "health information exchange\*" or "medical information exchange\*" or "computerized medical record\*").ti,kf. (19305)  
3 or/1-2 (34830)  
4 "Continuity of Patient Care"/ or Aftercare/ or Patient Discharge/ or Patient Handoff/ or Patient Transfer/ (72333)  
5 (discharg\* or (care adj5 (continuity or coordinat\* or path or paths)) or interorganization\* or interfacilit\* or postdischarg\* or transfer or transportabilit\* or transition\*).ti,ab,kf. (1269171)  
6 or/4-5 (1299600)  
7 Patient Discharge Summaries/ (283)  
8 (EDS or PDS or ((discharg\* or guidance or guideline or guidelines or standard\* or template or templates) adj5 (communication or communications or documentation or information or instruction or instructions or letter or letters or note or notes or summary or summaries or usability))).ti,ab,kf. (68988)  
9 or/7-8 (69097)  
10 and/3,6,9 (554)  
11 limit 10 to english language (543)  
12 limit 11 to yr="2017 -Current" (282)  
13 meta-analysis/ or "systematic review"/ or (meta-analy\* or metaanaly\* or ((evidence or qualitative or scoping or systematic) adj3 (review or synthesis))).ti,ab,kf. (441648)  
14 12 and 13 (4)

## **Epistemonikos**

Date searched: May 24, 2022

(title:(title:(("electronic health records" OR "electronic medical records" OR EHR OR EHRs OR EMR OR EMRs OR "health information exchange" OR "medical information exchange") OR abstract:(("electronic health records" OR "electronic medical records" OR EHR OR EHRs OR EMR OR EMRs OR "health information exchange" OR "medical information exchange"))) AND (title:(discharg\* OR continuity OR coordinat\* OR path OR paths OR interorganization\* OR interfacilit\* OR postdischarg\* OR transfer OR transportabilit\* OR transition\*) OR abstract:(discharg\* OR continuity OR coordinat\* OR path OR paths OR interorganization\* OR interfacilit\* OR postdischarg\* OR transfer OR transportabilit\* OR transition\*)) AND (title:(EDS OR PDS OR guidance OR guideline OR guidelines OR standard\* OR template\*) OR abstract:(EDS OR PDS OR guidance OR guideline OR guidelines OR standard\* OR template\*))) OR abstract:(title:(("electronic health records" OR "electronic medical records" OR EHR OR EHRs OR EMR OR EMRs OR "health information exchange" OR "medical information exchange") OR abstract:(("electronic health records" OR "electronic medical records" OR EHR OR EHRs OR EMR OR EMRs OR "health information exchange" OR "medical information exchange"))) AND (title:(discharg\* OR continuity OR coordinat\* OR path OR paths OR interorganization\* OR interfacilit\* OR postdischarg\* OR transfer OR transportabilit\* OR transition\*) OR abstract:(discharg\* OR continuity OR coordinat\* OR path OR paths OR interorganization\* OR interfacilit\* OR postdischarg\* OR transfer OR transportabilit\* OR transition\*)) AND (title:(EDS OR PDS OR guidance OR guideline OR guidelines OR standard\* OR template\*) OR abstract:(EDS OR PDS OR guidance OR guideline OR guidelines OR standard\* OR template\*))))

## Appendix B. Selection Criteria Assessment

Selection Criteria	Assessment
<b>1. Appropriateness</b>	
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. Effective care coordination is a critical component of high quality and safe patient care and involves communicating accurate clinical information to support medical decisions by patients and providers.
1b. Is the nomination a request for an evidence report?	Yes.
1c. Is the focus on effectiveness or comparative effectiveness?	Yes. The nomination concerns the effectiveness of EHR-generated discharge records for facilitating transitions of care.
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.
<b>2. Importance</b>	
2a. Represents a significant disease burden; large proportion of the population	Yes. In 2018, there were 3.8 million 30-day all-cause adult hospital readmissions, a 14 percent readmission rate. <sup>2</sup>
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. In 2018, there were 3.8 million 30-day all-cause adult hospital readmissions, a 14 percent readmission rate at an average readmission cost of \$15,200. <sup>2</sup> People with complex medication regimens, older people, and those with mental health problems are among those at greater risk for medication errors at transition. <sup>3</sup>
2c. Incorporates issues around both clinical benefits and potential clinical harms	Yes.
2d. 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. Failing to make adequate discharge arrangements can lead to costly and unnecessary hospital readmissions, preventable adverse events, and drug-related errors. For example, in 2008 nearly one-fifth of Medicare beneficiaries had an unplanned hospital readmission within 30 days of discharge, which together totaled nearly \$15 billion; more than 75 percent of those readmissions (costing about \$12 billion) were potentially preventable.
<b>3. Desirability of a New Evidence Review/Absence of Duplication</b>	
3. A recent high-quality systematic review or other evidence review is not available on this topic	Yes.
<b>4. Impact of a New Evidence Review</b>	
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 no guidelines for this issue.
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. Since each acute care organization has a customized EHR system to generate these discharge summary documents, outpatient providers who receiving patients must extract information from discharge summaries that can vary greatly in content, format, and organization, increasing risk of miscommunication. <sup>5</sup>
<b>5. Primary Research</b>	

<p>5. Effectively utilizes existing research and knowledge by considering:</p> <ul style="list-style-type: none"> <li>- Adequacy (type and volume) of research for conducting a systematic review</li> <li>- Newly available evidence (particularly for updates or new technologies)</li> </ul>	<p>We only identified three studies addressing KQ1 out a review of the entire search yield.</p>
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Abbreviations: AHRQ=Agency for Healthcare Research and Quality; EHR=electronic health record; KQ=key question.

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