



## Effective Health Care

### High Utilizers of Health Care

#### Results of Topic Selection Process & Next Steps

The nominator, Oregon Health Evidence Review Commission, is interested in a new evidence review on high utilizers of health care to inform recommendations to the state's Medicaid Coordinated Care Organizations (CCOs) for care of high utilizers

This topic will go forward for refinement as a new systematic review. The scope of this topic, including populations, interventions, comparators, and outcomes, will be further developed in the refinement phase. When key questions have been drafted, they will be posted on the AHRQ Web site and open for public comment. To sign up for notification when this and other Effective Health Care (EHC) Program topics are posted for public comment, please go to <https://effectivehealthcare.ahrq.gov/email-updates>.

#### Topic Brief

**Topic Number and Name:** #0790 High Utilizers of Health Care

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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

A small proportion of patients, sometimes called high utilizers of health care, account for a large proportion of healthcare costs. In the US, 1% of patients incur more than 20% of health care costs, and 5% of patients incur approximately 50% of total costs<sup>1</sup>. However, there is no consensus on the definition of patients who are high utilizers<sup>2</sup>. Researchers characterize this population differently, including by the type of utilization (e.g., the number of emergency department [ED] visits or the number of hospital admissions), by costs, or by number of chronic conditions.<sup>3,4</sup>

Patients who are high utilizers of health care are a particularly heterogeneous population. High utilizers are more likely to have multiple chronic conditions, mental health diagnoses, and risk factors for poor health including homelessness and history of recreational drug use.<sup>5</sup> Also most patients do not remain high utilizers over time, as one study found only 6% of high utilizers met criteria consistently over a two-year period.<sup>4</sup> Also patients with multiple chronic conditions and a functional limitation in their activities of daily living are even more likely to be persistent high utilizers.<sup>3</sup>

Multiple interventions have been attempted to address high utilization, but it is not clear to health systems which interventions are most effective. Interventions for these patients are diverse in their design and delivery, including case management, intensive primary care, interventions addressing social determinants of health, hotspotting,<sup>6</sup> and alerts in the ED.

### Nominator and Stakeholder Engagement

We conducted a call with the nominator from the Oregon Health Evidence Review Commission to clarify the topic. The nominator seeks an evidence product to help make recommendations to the state's Medicaid Coordinated Care Organizations (CCOs) for care of high utilizers. Ideally the nominator would like to identify evidence about interventions to reduce unnecessary utilization of health care for certain patients (while excluding those with conditions, such as cancer, with high utilization that likely cannot be modified).

Following subsequent searches and additional work with the nominator, the population of high utilizers was further clarified by excluding patients with a single health condition (such as chronic obstructive pulmonary disease [COPD] or chronic heart failure [CHF]) unless studies also focused on patients with high utilization.

### Key Questions and PICOs

The key questions for this nomination are:

- 1) What are the effective interventions for adults identified as high utilizers of health care?
  - a) Does effectiveness vary depending on who delivers the intervention (e.g. community health worker, social worker, nurse)?
  - b) Does effectiveness vary depending on the mode of intervention delivery (e.g., in-person, telehealth)?
  - c) Does effectiveness vary depending on structural characteristics of the intervention (e.g., primary care-based versus health care system-based or partnership with non-health care entities [such as housing, or transportation] versus clinic-based)?
  - d) Does the effectiveness of interventions vary by underlying comorbidities?

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

**Table 1. Key Questions and PICOS**

<b>Key Questions</b>	What are the effective interventions for adults identified as high utilizers of health care?
<b>Population</b>	Adults identified as high utilizers of health care*
<b>Interventions</b>	<ul style="list-style-type: none"> <li>- Intensive primary care support</li> <li>- Case management** (e.g., nurse, social worker)</li> <li>- Social interventions (e.g., transportation, housing)</li> <li>- Emergency department alerts</li> <li>- Hotspotting</li> </ul>
<b>Comparators</b>	Any intervention above, usual care, no comparator
<b>Outcomes</b>	Reduction in ED visits Reduction in hospitalizations All-cause mortality Disease-specific outcomes (e.g., reductions in CHF exacerbation, HbA1c, BMI) Quality of life Cost
<b>Setting</b>	All

*Abbreviations:* BMI: body-mass index; COPD: chronic obstructive pulmonary disease; CHF: congestive heart failure; ED: emergency department

\*Exclude populations with single conditions (e.g., cancer, CHF, COPD)

\*\*Case management is used to refer to both care or case management

## Methods

We assessed nomination #0790 High Utilizers of Health Care, 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**

Since some interventions were addressed adequately by recent systematic reviews (e.g., case management, intensive primary care), we conducted a targeted literature search in PubMed PsycInfo and CINAHL for social interventions, hotspotting, and ED alerts from September 2013 to September 2018. See Appendix C for the PubMed, PsycInfo, and CINAHL search strategies and links to the ClinicalTrials.gov search.

For the targeted PubMed search of social interventions, we identified 507 articles. Therefore we reviewed a random sample of 200 titles and abstracts for inclusion and classified identified studies by key question and study design, to assess the size and scope of a potential technical brief. We then calculated the projected total number of included studies based on the proportion of studies included from the random sample.

The searches in other databases (e.g., PsycInfo and CINAHL) and targeted PubMed searches for other interventions (e.g., hotspotting, emergency department alerts) yielded smaller evidence bases of less than 200 titles and abstracts. Therefore 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 report.

## **Value**

We assessed the nomination for value. We considered whether or not the clinical, consumer, or policymaking context had the potential to respond with evidence-based change; and if a partner organization would use this evidence review to influence practice.

## **Results**

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

## **Appropriateness and Importance**

This is an appropriate and important topic. This nomination focuses on effectiveness and represents a population of patients of high interest to many stakeholders including health care systems, payers, and providers.

## **Desirability of New Review/Duplication**

A new evidence review would not be duplicative of an existing evidence review. We identified 5 systematic reviews (SRs) which partially address KQ1, but none addressed all of the interventions in which the nominator is interested. These SRs could be potentially used to synthesize and present the results in the evidence map.

One 2018 SR focused exclusively on care management<sup>7</sup>, three (one 2015 SR<sup>8</sup>, one 2016 Cochrane review<sup>9</sup>, and one 2017 SR<sup>10</sup>) partially focused on case management, one 2018 SR exclusively focused on intensive primary care<sup>11</sup>, and one 2015 SR partially focused on information sharing<sup>8</sup> (including ED alerts). Only one SR<sup>8</sup> compared two interventions of interest (case management and ED alerts).

These reviews were also heterogeneous with regards to population and outcomes.

- Populations of high utilizers were defined in many ways. These definitions included frequent ED use as defined by study author<sup>10</sup>, high past or future healthcare utilizers<sup>7</sup>, high risk for hospital admission or death<sup>11</sup>, or no fixed definition of frequent ED utilizers<sup>8</sup>. We also included a 2016 Cochrane review<sup>9</sup> of patients with two or more chronic conditions, as this patient population often overlaps substantially with the high utilizers of care.
- Outcomes of interest evaluated included ED visits<sup>8,9,11</sup>, hospital admissions<sup>7,9,10</sup>, disease-specific outcomes (e.g., blood pressure and HgA1c<sup>7</sup>), and all-cause mortality<sup>10,11</sup>

See Table 2, Duplication column.

### Impact of a New Evidence Review

A new systematic review may have high impact. Currently there is not a consensus on the definition of high utilizers of health care, or a standard of care for this population.

### Feasibility of a New Evidence Review

A new evidence review is feasible.

From our targeted searches for interventions not addressed by SRs, we identified one controlled pre-post study<sup>12</sup> addressing a social intervention from our CINAHL search. We did not identify any studies on using hotspotting or ED alerts as interventions.

ClinicalTrials.gov identified one recruiting observational cohort study<sup>13</sup> of a case management intervention for patients predicted to be high frequency users of the ED.

Since there are multiple recent systematic reviews covering several interventions from the nomination, and relatively few original studies covering the remaining interventions for which there are no systematic reviews, we determined this topic could be feasible as an evidence map. An evidence map is an appropriate option when there are already systematic reviews but they have not been synthesized and presented in a form that facilitates decision-making.

See Table 2, Feasibility column.

**Table 2.** Key Questions and Results for Duplication and Feasibility

Key Question	Duplication (9/2015-9/2018)	Feasibility (9/2013-9/2018)
KQ 1: Effective interventions for adults identified as high utilizers of health care	Total number of identified systematic reviews: 5 <ul style="list-style-type: none"> <li>• Cochrane: 1<sup>9</sup></li> <li>• Other group: 4<sup>7,8,10,11</sup></li> </ul>	<u>Size/scope of review</u> Relevant Studies Identified: 1 (from CINAHL) <ul style="list-style-type: none"> <li>• Controlled pre-post: 1<sup>12</sup></li> </ul> For random sample of PubMed search for social interventions: Projected Total: 0  <u>Clinicaltrials.gov</u> <ul style="list-style-type: none"> <li>• Recruiting: 1<sup>13</sup></li> </ul>

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

### Value

The potential for value is high because the Health Evidence Review Commission can use a new AHRQ evidence review to inform Coordinated Care Organizations (CCOs) on most effective interventions for a population with a high cost burden.

### 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. Five systematic reviews (SRs) were identified addressing this population, but none of them address all of the interventions in which the nominator is interested.
- Impact: A new systematic review has high impact potential.
- Feasibility: A new review is feasible. The review would synthesize and present results from the 5 SRs on case management and intensive primary care, and an additional small number of studies highlighting gaps in the literature for the other interventions of interest (e.g., social interventions, emergency department alerts, hotspotting).

- Value: The potential for value is high because the Health Evidence Review Commission can use a new AHRQ evidence review to advise Coordinated Care Organizations (CCOs) on a population with a high cost burden.

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## Appendix A. 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
1b. Is the nomination a request for a systematic review?	Yes. However, after a scoping search and extensive discussion with the nominator, it was decided that an evidence map of the varied interventions for high utilizers of health care might meet their evidence needs.
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
<b>2. Importance</b>	
2a. Represents a significant disease burden; large proportion of the population	Yes, high utilizers of health care represent a significant disease burden as they often have multiple chronic conditions. <sup>3</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, high utilizers of health care represent significant costs to the health care system. In the US 5% of patients represent approximately 50% of the health care expenditures. <sup>1</sup>
2c. Represents important uncertainty for decision makers	Yes, there is uncertainty about how to best address the needs of high utilizers of health care. Furthermore the definition of patients who are high utilizers is inconsistent. <sup>2</sup>
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	Yes, high utilizers of health care have high health costs, both in terms of out-of-pocket expenses and costs to health care systems and payers. <sup>1</sup>
<b>3. Desirability of a New Evidence Review/Duplication</b>	
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)	KQ1 is partially covered by 5 SRs <sup>7-11</sup> which address some, but not all of the interventions in which the nominator is interested.  -1 SR <sup>7</sup> exclusively addresses care management -3 SRs <sup>8-10</sup> partially address case management -1 SR <sup>11</sup> exclusively addresses intensive primary care -1 SR <sup>8</sup> partially addresses information sharing (including ED alerts)
<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, the standard of care for high utilizers of health care is currently unclear. In addition this is a very heterogeneous population and there is not a consensus on the definition of high utilizers of health care. <sup>2</sup>
4b. Is there practice variation (guideline inconsistent with current practice, indicating a potential implementation gap and not best addressed by a new evidence review)?	There is no evidence that practice varies from guidance for this population.
<b>5. Primary Research</b>	

Selection Criteria	Assessment
<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><i>Size/scope of review:</i> (Note: We conducted targeted feasibility searches for interventions not addressed by SRs)</p> <p>We identified one controlled pre-post study<sup>12</sup> which focused on a social intervention.</p> <p><i>ClinicalTrials.gov.</i> We identified one trial<sup>13</sup> of an observational cohort evaluating the effect of care management on patients predicted to be high frequency utilizers of the ED.</p>
6. Value	
6a. The proposed topic exists within a clinical, consumer, or policy-making context that is amenable to evidence-based change	Yes, interventions for high utilizers of health care are amenable to evidence-based change.
6b. Identified partner who will use the systematic review to influence practice (such as a guideline or recommendation)	Yes, the nominator is from the Oregon Health Evidence Review Commission which will use the evidence product to make policy recommendations for care of the state's Medicaid patients in Coordinated Care Organizations.

*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

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

Listed below are additional topic-specific sources, searched when appropriate.

<b>Psychology or Behavioral Health</b>
PsycINFO <a href="http://www.apa.org/pubs/databases/psycinfo/index.aspx">http://www.apa.org/pubs/databases/psycinfo/index.aspx</a>
<b>Sociological, Public Health, Education, and Social Determinants of Health</b>
Campbell Collaboration Systematic Review Library <a href="http://www.campbellcollaboration.org/">http://www.campbellcollaboration.org/</a>
<b>Nursing or Allied Healthcare</b>
CINAHL (Cumulative Index of Nursing and Allied Health) <a href="https://www.ebscohost.com/nursing/products/cinahl-databases/cinahl-complete">https://www.ebscohost.com/nursing/products/cinahl-databases/cinahl-complete</a>

## Appendix C. Search Strategy & Results (Feasibility)

MEDLINE (PubMed) searched on September 19, 2018	
High Utilizers	((("utilization" [Subheading]) OR super-utilizers[Title]) OR ("frequent users"[Title] OR "frequent utilizers"[Title])) OR (((use[Title] OR utilization[Title]) AND (((("health care services"[Title] OR ("health service"[Title] OR "health services"[Title])) OR hospital[Title] OR "health care"[Title]))
AND	
Social Determinants of Health	((("Social Determinants of Health"[Mesh] OR "Health Status Disparities"[Mesh] OR "socioeconomic status"[Title/Abstract] OR ((social[Title] AND (determinants[Title] OR inequality[Title] OR disparity[Title] OR disparities[Title] OR equity[Title] OR complexity[Title] OR prescribing[Title]))
Limits, 5 years, adult, English	Filters activated: published in the last 5 years, English, Adult: 19+ years.
SR: N=12	Systematic[sb]
RCT: N=48	(((((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])
Other: N=359	
Health Information Exchanges (Emergency Department Alerts)	("Health Information Exchange"[Mesh] OR "health information exchange"[Title/Abstract]
Limits, 5 years, English	Filters activated: published in the last 5 years, English.
SR: N=16	
RCT: N=14	
Other: N=90	
Hotspotting N=25	((hotspotting[Title/Abstract] OR hotspotter[Title/Abstract] OR hotspotters[Title/Abstract])) OR (("hot spotting" OR "hot spotter" OR "hot spotters"))
<b>PsycINFO (OVID)</b> Searched on September 19, 2018	
High Utilizers N=9	

<b>CINAHL(EBSCO)</b> Searched on September 19, 2018	
High Utilizers	( TI super OR TI frequent OR TI high OR TI over ) AND ( TI utilization OR TI utilize OR TI utilizer )
Limits	Published Date: 20130101-; English Language; Peer Reviewed; Age Groups: All Adult
N=68	

### CLINICALTRIALS.GOV Single Result:

<https://clinicaltrials.gov/ct2/show/NCT03293160?term=NCT03293160&rank=1>