Topic Brief: Bundled Payment Models

Date: 08/23/2019
Nomination Number: 0865

Purpose: This document summarizes the information addressing a nomination submitted on June 28, 2019 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 suitable.

Issue: In 2013 the Centers for Medicare and Medicaid Services (CMS) implemented the Bundled Payments for Care Improvement (BPCI) initiative to test whether linking payments for all providers that furnish Medicare-covered items and services during an episode of care could reduce Medicare payments while maintaining or improving the quality of care. Health systems are uncertain about whether to participate in voluntary bundled payment models due to uncertainty about the impact of bundled payments on quality and spending. The nominator is interested in a new evidence review on bundled payment models to inform health systems about whether bundled payments are effective in improving quality and patient outcomes and reducing costs.

Program Decision: The scope of this topic met all EHC Program selection criteria and was considered for a systematic review. However, it was not selected.

Key Findings

- No systematic reviews were identified which covered the scope of this topic. A new evidence review on bundled payment models would not be duplicative of an existing review
- A new evidence review examining bundled payment models is feasible. From our limited assessment of the size of the evidence base, we estimate that there would be approximately 43 primary studies reporting the impact of bundled payments.
- Decision makers are unclear about whether to take part in voluntary bundled payment models. Therefore, a new systematic review on the effects of bundled payments may have a high impact. The impact on health systems of bundled payment models compared to usual payment models in terms of cost and quality is unclear. There is also variation in payment models (e.g. clinical conditions, financial and non-financial incentives, organizational, market and patient characteristics) across payers and health systems due to limited study designs and outcome data. The optimal configuration for bundled payments is unknown.
- The value of a new evidence review on bundled payments is potentially high. Members of the AHRQ Learning Health System panel could use the review to inform their decisions about whether to implement bundled payment models.

Background

In an attempt to decrease health care costs and improve the value of health care provided, bundled payment models have been proposed as an alternative to traditional fee-for-service health care. In 2013, the CMS began the BPCI Initiative, which offers a finite budget for the management of certain conditions over a specific period or episode of care. This intends to shift Medicare payments from quantity of services to quality of care by creating strong incentives for hospitals to deliver better care at a lower cost.

The most recent bundled payment iteration, BPCI-Advanced, was launched in 2018. BPCI-Advanced is a voluntary model that links physician, hospital and post-acute care payments into a bundled clinical episode for the hospital stay, or outpatient procedure, and 90 days post discharge. The quality and cost of care provided is assessed for each clinical episode. Providers are rewarded financially for reducing Medicare payments for an episode of care relative to a target price. This model covers 33 inpatient clinical episodes and 4 outpatient clinical episodes.

This topic was nominated by the Learning Health System Panel. A previous AHRQ evidence report on bundled payments was published in 2012[1]. However, healthcare systems still face many uncertainties regarding bundled payments, including:

- Decisions on whether to participate in bundled payment models
- What factors are associated with successful bundled payment models
- Which disease specific models to implement,
- How to define the bundle,
- How to implement them, how to structure payments,
- Which providers and institutions to include (i.e. single vs. multiple)
- Whether payments should be retrospective or prospective
- How to handle gain (risk) sharing (e.g. “upcoding” and “unbundling”)

Scope

1) What is the effectiveness of bundled payment models versus usual payment on clinical outcomes, access to care, and costs?
2) Does the evidence show differences in the effects of bundled payment models by key design features?
3) Does the evidence show differences in the effects of bundled payment models by contextual factors?

Table 1. Questions and PICOTS (population, intervention, comparator, outcome, timing and setting)

Questions	1) Bundled payment models in healthcare 2) Key design features 3) Contextual factors
Population	People, providers, health systems enrolled in Medicare, Medicaid or private payer - Subgroup by clinical condition, clinical episode, public vs private insurance
Interventions	Bundled payment models
Comparators	Usual (fee-for-service) payment models

	Other bundled payment models
Outcomes	- Health care spending per episode - Utilization rates for specific services including length of stay - Cost/resource use to deliver episode (by provider, health system, CMS) - Quality of care - Clinical outcomes e.g. 30 day and 90 day mortality, morbidity - Average risk/disease severity of patients treated - Access to care - Harms
Timing	90 days after hospital discharge
Setting	Acute Care

Abbreviations: CMS=Centers for Medicare and Medicaid Services

Assessment Methods

See Appendix A.

Summary of Literature Findings

No recent good quality systematic reviews were identified based on our sample of the available literature. A new evidence review on bundled payment models would not be duplicative of an existing product.

From our PubMed search we identified 12 studies[2-13] for bundled payments. Most studies reported on the impact of bundled payment models on clinical specialties, including joint replacement, spine surgery, oncology and dialysis. As these studies were identified from a random sample of 200 references, we project there may be 43 studies relevant to this nomination published since November 2017. A previous 2017 topic brief assessing the same questions about bundled payment estimated the total size of relevant literature to be approximately 100 studies (from a PubMed search of literature published between 2011-2017).

A majority of the studies identified related to Question 1[2-10, 12, 13]. Six studies explored the impact of the BPCI payment model on outcomes including Medicare payment per episode, 30- and 90-day readmission, mortality, hospital costs, and service utilization. One study compared patient-reported measures of quality between beneficiaries treated by BPCI Model 2 and comparison hospitals[12]. One study looked at the impact of a comprehensive prospective payment system that makes a single payment for dialysis services[13]. Only one study looked at contextual factors, by comparing characteristics of hospitals in Medicare's voluntary and mandatory bundled payment models.

The studies identified are therefore heterogenous with respect to the population (e.g. clinical specialty), the comparison (e.g. bundled payment hospital vs non-bundled payment hospital, or comparing pre-and post-implementation of bundled payments in the same setting) and the outcomes measured[11].

From our search of Clinicaltrials.gov we identified two ongoing studies. Including one nationwide randomized evaluation of bundled payments for lower joint replacement[14], and one study evaluating the effect of participation in BPCI Model 2 on quality and cost of care for common medical and surgical conditions[15].

Table 2. Literature identified for each Question

Question	Systematic reviews (08/2016-08/2019)	Primary studies (01/2017-08/2019)
Questions 1: Bundled payment models in healthcare	Total: 0	Total: 12 • RCT: 0 • Observational: 12[2-10, 12, 13] Clinicaltrials.gov • Active: 2[14, 15]
Question 2: Design features	Total: 0	Total:0
Question 3: Contextual factors	Total: 0	Total:1 • RCT: 0 • Observational: 1[11]

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

Summary of Selection Criteria Assessment

This nomination meets all selection criteria. We found no systematic reviews and estimate 43 primary studies about bundled payment, although these were heterogenous observational studies. An AHRQ systematic review addressing these questions was published in 2012. A new systematic review that updates the evidence base could potentially provide health systems with updated findings to better inform decision making about whether to participate in bundled payment models. The topic was nominated through the Learning Health Systems Panel and a systematic review would inform health systems about the effects of bundled payment models. .

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

Related Resources

We identified additional information during our assessment that might be useful. CMS has commissioned independent evaluations of the BPCI program. The most recent evaluation, published in October 2018, covers Models 2, 3, and 4 and reports on the cost and quality implications of BPCI[16]. There will also be a formal evaluation of BPCI Advanced to assess the impact on quality of care and Medicare savings as well as any unintended consequences. This further evaluation will provide information about the impact of the current iteration of the BPCI program.

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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 from August 2016 – August 2019 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/
  - 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/
- Epistemonikos https://www.epistemonikos.org
- PDQ Evidence https://www.pdq-evidence.org
- 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/
- McMaster Health System Evidence https://www.healthsystemsevidence.org/

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

To assess the feasibility of an evidence product, we updated a PubMed search for a previous bundled payments topic nomination that was developed in November 2017[17]. The PubMed search from the 2017 nomination covered 2011 to November 2017 and identified 21 relevant studies (estimating approximately 100 studies for the total size of relevant literature). We conducted a literature search in PubMed from November 2017 August 2019. Because a large number of abstracts (n=725) were identified we reviewed a random sample of 200 titles and abstracts for inclusion and classified identified studies by study design, to assess the size and scope of a potential evidence review. We then calculated the projected total number of included studies based on the proportion of studies included from the random sample. We also searched

Clinicaltrials.gov for recently completed or in-process unpublished studies (See Table A for the PubMed search strategy and link to the Clinicaltrials.gov search).

Table A: Search strategy

MEDLINE(PubMed) searched on August 15, 2019	
Concept	
Bundled Payments (search used in 2017 topic brief)	(bundl*[tiab] OR episode[tiab] OR "prospective payment"[tiab] OR warranty[tiab] OR warranti*[tiab] OR global[tiab]) AND (payment[tiab] OR finance*[tiab] OR reimburse*[tiab] OR incentive*[tiab] OR fees[tiab]) AND (trial[tiab] OR compare*[tiab] OR effect*[tiab] OR impact[tiab] OR outcome*[tiab] OR result*[tiab])
Limits (date taken from search date in 2017 topic brief)	Filters activated: Publication date from 2017/12/01, English
Total N=725	
SR N=21	systematic[sb]
RCT N=148 (Cochrane sensitive search strategy for randomized controlled trials)	((((((((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=556	
clinicalTrials.gov	
5 Studies found for: bundled payments | Recruiting, Not yet recruiting, Active, not recruiting, Completed, Enrolling by invitation Studies https://clinicaltrials.gov/ct2/results?cond=&term=bundled+payments&type=&rslt=&recrs=b&recrs=a&recrs=f&recrs=d&recrs=e&age_v=&gndr=&intr=&titles=&outc=&spons=&lead=&id=&cntry=&state=&city=&dist=&locn=&strd_s=&strd_e=&prcd_s=&prcd_e=&sfpd_s=&sfpd_e=&lupd_s=&lupd_e=&sort=	

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.

Appendix B. 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, this topic represents a health care payment model available in the U.S.
1b. Is the nomination a request for an evidence report?	Yes, this topic is a request for a systematic review.
1c. Is the focus on effectiveness or comparative effectiveness?	The focus of this review is on both effectiveness and comparative effectiveness.
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, a logic model supports it. Yes, it is consistent with what is known about the topic.
2. Importance	
2a. Represents a significant disease burden; large proportion of the population	Yes, this topic represents a significant economic and quality of health care burden. CMS projects that national health spending in the U.S. will grow at an average rate of 5.5% per year 2018-27 and to reach $6.0 trillion by 2027. Therefore, systems to reduce spending and increase quality are needed.
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, this topic affects heath care financing decisions for a large, vulnerable population including people covered by Medicare and Medicaid.
2c. Incorporates issues around both clinical benefits and potential clinical harms	Yes, this topic represents important uncertainty for decision makers. Health systems are unclear about whether participating in bundled payment models will reduce their costs whilst maintaining or improving quality of care
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, this nomination addresses both benefits and potential harms (i.e. reduced quality of care) of bundled payment models.
3. Desirability of a New Evidence Review/Absence of Duplication	
3. A recent high-quality systematic review or other evidence review is not available on this topic	No recent high-quality systematic reviews were 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, the effect of bundled payment models compared to usual payment models (e.g. fee for service, capitation) in terms of cost and quality is unclear.
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 variation in payment models (e.g. clinical conditions, financial and non-financial incentives, organizational, market and patient characteristics) across payers and health systems due to limited study designs and outcome data. The optimal configuration for bundled payments is unknown.
5. Primary Research	
5. Effectively utilizes existing research and knowledge by considering: - Adequacy (type and volume) of research for conducting a systematic review	*Size/scope of review:* We estimate the total size of the relevant literature may be approximately 40-50 studies published since November 2017. Additionally, a feasibility search from the previous

- Newly available evidence (particularly for updates or new technologies)	bundled payments topic nomination was conducted between 2011-2017 and estimated 100 studies. Five out of the 12 studies identified in the current feasibility search related to major joint replacement, two for spine surgery, one for oncology, one for dialysis, one for heart failure, and two for a range of medical conditions. 11 studies related to question 1 and one of the identified studies related to question 3. *ClinicalTrials.gov:* We identified one ongoing randomized trial exploring the impact of BPCI Model 2 for major joint replacement and one observational study.
6. Value	
6a. The proposed topic exists within a clinical, consumer, or policy-making context that is amenable to evidence-based change	Yes, this topic will inform health systems on the effects of bundled payments in terms of cost and quality of care.
6b. Identified partner who will use the systematic review to influence practice (such as a guideline or recommendation)	Yes, the nomination came from the AHRQ Learning Health Systems Panel who will disseminate the findings of the review to inform their health system on whether and how best to implement bundled payment models.

Abbreviations: AHRQ=Agency for Healthcare Research and Quality; BCPI=bundled payments for care improvement; CMS=Centers for Medicare and Medicaid Services