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Cost measurement in value-based healthcare – science or fiction? A systematic review.

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| Complete List of Authors: | Leusder, Maura; Erasmus University Rotterdam, Erasmus School of Health Policy and Management Porte, Petra; Erasmus University Rotterdam, Erasmus School of Health Policy and Management Ahaus, Kees; Erasmus University Rotterdam Institute of Health Policy and Management, Department Health Services Management & Organisation van Elten, Hilco; Erasmus Universiteit Rotterdam, Erasmus School of Health Policy & Management |
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| P | Authors: Maura Leusder, Petra Porte, Kees Ahaus & Hilco van Elten |
| Maura Leusde Department He The Netherlan | ealth Services Management & Organisation, Erasmus University Rotterdan |
| Petra J. Porte, Department Ho The Netherland | ealth Services Management & Organisation, Erasmus University Rotterdan |
| . , | Ahaus, Prof. Dr. Ir. ealth Services Management & Organisation, Erasmus University Rotterdan ds |
| Hilco J. van El Department Ho The Netherland | ealth Services Management & Organisation, Erasmus University Rotterdan |
| Correspondin | g author; Maura Leusder, MSc. |
| | |
| | |
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ABSTRACT

Objective Value-based health care (VBHC) considers accurate cost information to be relevant to the pursuit of value, but little is known about how costs of care should be measured. The aim of this review is to identify how costs are measured in VBHC, and which cost measurement methods can facilitate VBHC or value-based decision making.

Design We systematically screen PubMed/MEDLINE, Embase, EBSCOhost and Web of Science with two reviewers following PRISMA guidelines, including studies up to 1/1/2022.

Eligibility criteria We require studies to measure costs of an intervention, treatment, or care path and to label the study as 'value-based'. An inductive qualitative approach was used to categorize studies following management accounting to identify if or how cost information facilitated VBHC by aiding decision making.

Results We find 1,930 studies, 215 of which measured costs in a VBHC setting. Half of all studies measure hospital costs (110, 51.2%) while the remainder use reimbursements. Sophisticated costing methods that allocate both direct and indirect costs to care paths can provide valuable managerial information by facilitating care path adjustments (40), benchmarking (39), the identification of cost drivers (47), and measurement of total costs or cost savings (26) We find three best practices important to success in costing: process mapping (34), expert input (16), and observations (24).

Conclusions Cost information can facilitate VBHC. While time-driven activity-based costing (TDABC) is prized as the best method, its ability to inform decision-making depends on its implementation. Costing short or partial care paths and surgical episodes produces accurate cost information but limited decision-making information. Practitioners are advised to prioritize costing full cycles of care and to consider both direct and indirect costs through TDABC.

Strengths and limitations

- Using two independent reviewers this systematic review analyzes and all value-based healthcare studies that have measured costs to date to provide a comprehensive comparison of cost measurement methods.
- By revealing four mechanisms through with cost measurement facilitates value-based healthcare, this research operationalizes the potential benefits of cost measurement to practitioners.
- By comparing the methods used by studies to collect cost information, this study finds three best practices for practitioners and researchers.
- Due to limiting the search to studies labeled as 'value-based' in the title or abstract, this review omits studies that measure costs in healthcare but do not explicitly pursue value-based healthcare.
- Included studies may have achieved value-based healthcare without reporting this in the paper, and therefore may be underrepresented in research question 2.



INTRODUCTION

To make value-based decisions in health care, hospital practitioners and health care providers require patient-level information on the costs and outcomes achieved in hospitals and health care organizations [1]. This enables care providers to steer towards better patient-reported outcome measures, patient-reported experience measures, and clinical outcomes at equal or lower cost [2]. With detailed cost and outcome information, care paths can be optimized continuously [3]. Valuebased health care (VBHC) is therefore also considered one solution to the financial pressures our global health care system places on managers and administrators [1,4,5] based on its promise to streamline care by focusing on desirable outcomes. This is of relevance to hospital administrators and managers facing complex decisions under considerable financial pressures. Additionally, hospitals benefit from cost information by gaining insight into the sources of costs to guide costcontainment strategies. Cost information may therefore facilitate process and quality improvement initiatives pursued by management [6–10]. Furthermore, insight into patient-level or treatmentlevel costs enables hospitals to negotiate appropriate prices with insurance firms, especially as we move towards new payment models and away from fee-for-service payments [11,12]. Lastly, such treatment-level cost information is suggested to enable competition among hospitals based on outcomes and prices due to market forces [13].

Considerable research has addressed the outcome side of Porter's value equation and The Triple Aim [14]. Many studies measured patient-level outcomes from both the patient perspective (e.g., patient-reported outcome measures, patient-reported experience measures) and clinical outcome perspective [15,16]. Less is known about the cost side of this equation. Often, the term 'cost' is conflated with the price paid by insurance firms or patients to the hospital [17,18]. However, prices do not reflect the full costs incurred by hospitals [6,19–21]. Prices paid by

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insurance firms are negotiated sums that include profit margins by both the insurer and the hospital [22]. They are also impacted by political factors, such as hospital-payor mix [23], which refers to the range of private vs. public insurance firms that make up the hospital's income stream. Lastly, fee-for-service payments fail to account for patient-level differences in care required. Reimbursements are therefore a poor indicator of costs.

Some authors argue for the implementation of time-driven activity-based costing (TDABC) as the 'golden standard' of cost measurement in healthcare organizations [3,5,15]. TDABC is a method of matching direct and indirect costs to activities in a fine-grained way, based on the amount of time an activity takes. A care path is made up of many activities, each generating costs. The costs of a care path can be calculated by first identifying all relevant costs to each activity, and then adding up those costs across the activities [22]. One step of this method called 'process mapping' presents care paths visually in a flowchart.

Though initial research is growing and promising, we have relatively little empirical evidence supporting TDABC as the best costing method to enable VBHC, as studies rarely compare methods of cost measurement or simply use whichever system the investigated hospital or care provider uses. Costing methods vastly differ by how they allocate indirect costs to products or services [24]; moreover, indirect costs cannot causally be attributed to patients and need to be properly allocated. One example of indirect costs are salaries of administrative personnel, e.g., front office staff who welcomes patients, coordinates schedules, or manages equipment such as a Da Vinci surgical robot system by Intuitive Surgical (Sunnyvale, CA, USA). While some methods ignore this (e.g., direct costing), other methods average indirect costs across days or months, or systematically allocate them to patients. These methods exist on a continuum from imprecise to fine-grained, with TDABC leaning towards fine-grained. This insight is particularly relevant to

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health care, where indirect costs are high. The most fine-grained method is activity-based costing (ABC), which allocates indirect costs based on actual units of resources used per activity. In comparison, TDABC allocates indirect costs based on a per-minute cost, making it considerably easier to implement than ABC. Costing methods that do not consider the indirect costs of a care path underestimate the true costs of the care delivered.

Prior systematic reviews found that TDABC was able to facilitate VBHC, citing mostly cost savings as a result and without comparing it to alternative methods [3,4,15]. Therefore, we do not know how this compares to other cost measurement methods currently being used. While TDABC may be able to facilitate VBHC [5,15], it is unclear how these benefits compare to other costing methods currently used in practice. Therefore, the cost side of the value equation remains unclear. To address this challenge, we pose two questions:

RQ1: Which costing methods are currently being used by practitioners to facilitate VBHC?

RQ2: What are the consequences of applying one specific costing method in VBHC? Such consequences may include whether the method enables cost reduction at equal or better outcomes or provides sufficient information to further improve a care path.

This comprehensive review draws on accounting literature [24] to categorize costing methods in empirical VBHC literature published over the last two decades (January 1, 2003 to January 1, 2022). Compiling the evidence in this way reveals four ways in which cost information facilitates VBHC and three best practices.

MATERIALS AND METHODS

Literature search strategy

To identify eligible studies, we systematically searched four major databases: Embase, Medline, Web of Science, and CINAHL EBSCOhost. Our search string (online supplementary appendix)

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was developed by assessing previously identified relevant papers; it is designed to catch all studies that address VBHC and measure costs of an intervention, care path, or treatment by including the following specific terms:

cost, microcost*, macrocost* AND [meaning in combination with] value-based, value based, OR valuebased

Prior search string testing showed that restricting the search to the phrase "value-based healthcare" excluded too many relevant studies because authors use "value-based perspective," "value-based equation," or similar variations when referring to VBHC. Conversely, the term "value" alone was too broad and yielded more than 40,000 mostly non-specific results. By using wildcard terms indicated by stars we include all variations on the term 'cost'.

Study eligibility criteria, record selection, and data collection

We limited inclusions to studies that were peer-reviewed empirical research and measured or estimated costs in a VBHC context. All inclusion criteria and variables extracted are detailed in the **online supplementary appendix**. The following variables were collected, inspired by Porter [2] and the cost measurement methods defined in accounting literature:

- Cost types included (direct vs. indirect).
- Cost perspective (provider, payer, patient).
- Portion of the care path costed (full, partial).
- Cost measurement method used (as labelled by the authors of the study).
- Cost measurement method applied, e.g. direct costing, absorption costing, step-down allocation, other recognized methods [24].
- Consequences of the costing information generated.

Patient and public involvement: This study did not involve patients or the public in designing,

executing, or reporting of the research.

RESULTS

Record selection

Our four-person (ML, PP, HvE, KA) research group identified 3,275 relevant papers, of which 1,930 remained after deduplication. We conducted a trial screening of 30 papers to test and specify the screening criteria. The screening process comprised two rounds as shown in **Figure 1**. In Round 1, ML and PP screened the titles and abstracts independently. If there was uncertainty about the eligibility of the paper, it was included for the full-text screen following Bramer [25]. We admitted 674 studies based on titles and abstracts with a Cohen's kappa inter-rater reliability score of 0.78, indicating substantial agreement [26].

In Round 2, both ML and PP screened the full text of all 674 studies independently. 215 out of 674 studies were included for RQ1, with a Cohen's kappa of 0.76 between both ML and PP. HvE was included in the discussion as needed. Lastly, we assessed whether the paper discussed if or how the costing information facilitated VBHC (RQ2), yielding 49 cases in which the costing method facilitated VBHC. This review was not registered.

Figure 1 here

Figure 1. PRISMA flowchart depicting screening, exclusion, and inclusion process with 2 reviewers.

Descriptive characteristics

An overview of the included studies is provided in **Table 1**. Our earliest study is from 2005, with a spike in studies for 2017. Just under half (n=98, 45.6%) of studies were published in the last two years. An overwhelming majority is from the US (n= 178, 82.8%). Europe is the second most common continent with 22 (10.6%) studies being European, 9 (4.2%) of which are Dutch.

The three largest medical specialty groups represented are surgical (n=99; 46.0%), oncology (n=37; 17.2%) and paediatrics (n=19; 8.8%). The complete list of 215 inclusions is summarized in the **online supplementary appendix**. Extracted data is available in the **supplementary file**.

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| | Characteristic | n | % | Characteristic | n | % |
|---|----------------------|-----|--------|------------------------------------|----|-------|
| | Year published | | | Торіс | | |
| | 2005-2009 | 3 | 1.4% | Cardiology | 5 | 2.3% |
| | 2010-2013 | 6 | 2.8% | Dermatology | 1 | 0.5% |
| | 2014 | 6 | 2.8% | Emergency & acute care | 11 | 5.1% |
| | 2015 | 7 | 3.3% | Endocrinology | 3 | 1.4% |
|) | 2016 | 9 | 4.2% | Surgical, of which | 99 | 46.0% |
| | 2017 | 17 | 7.9% | Appendicitis, 2 | | |
| | 2018 | 28 | 13.0% | Abdominal, 6 | | |
| | 2019 | 41 | 19.1% | Bariatric, 2 | | |
| | 2020 | 43 | 20.0% | Cardiac/Thoracic, 12 | | |
| | 2021 | 51 | 23.7% | Colon/Rectal, 2 | | |
| | 2022 as per 1/1/2022 | 4 | 1.9% | Endocrine, 2 | | |
| | Geography | | | Ear/Nose/Throat, 2 | | |
| | Americas | | 84.3% | Gallbladder, 2 | | |
| | Brazil | 3 | | Liver, 2 | | |
| 1 | Canada | 1 | | Neurosurgical, 5 | | |
| | US of which | 178 | | Orthopaedic arthroplasty, 25 | | |
| | Boston, 8 | | | Orthopaedic fracture, 12 | | |
| | California, 18 | | | Orthopaedic rotator cuff repair, 2 | | |
| | New York, 23 | | | Orthopaedic other, 3 | | |
| | Texas, 12 | | | Plastic surgery, 2 | | |
| | Pennsylvania, 9 | | | Spine, 13 | | |
| | Other states, 108 | | | other surgical, 5 | | |
| | Asia | | 2.3% | Geriatrics | 1 | 0.5% |
| | China | 1 | =,0 | Gynaecology & obstetrics | 8 | 3.7% |
| | Iran | 1 | | Infectious disease | 1 | 0.5% |
| | Kuwait | 1 | | Internal medicine | 12 | 5.6% |
| | Lebanon | 1 | | Multiple | 3 | 1.4% |
| | Singapore | 1 | | Nephrology | 1 | 0.5% |
| | Europe | 1 | 10.6% | Neurology | 2 | 0.9% |
| | Andalusia | 1 | 10.070 | Oncology | 37 | 17.2% |
| | Germany | 1 | | Ophthalmology | 3 | 1.4% |
| | Italy | 3 | | Orthopaedic | 1 | 0.5% |
|) | Norway | 1 | | Pain medicine | 3 | 1.4% |
|) | Serbia | 1 | | Paediatrics of which | 19 | 8.8% |
| | Spain | 2 | | Appendicitis, 3 | 17 | 0.070 |
| | Netherlands | 9 | | Emergency & acute care, 2 | | |
| ; | UK | 4 | | Neonatal, 3 | | |
| ł | Oceania | 4 | 1.9% | Oncology, 1 | | |
| 5 | Australia | 4 | 1.770 | Surgical, 5 | | |
| 5 | Transcontinental | 4 | 0.9% | | | |
| , | Russia | 1 | 0.970 | Surgical, plastic surgery, 2 | | |
| 5 | | 1 | | Other paediatric, 3 | 1 | 0.50/ |
|) | Turkey | 1 | | Toxicology | 1 | 0.5% |
|) | | | | Urology | 4 | 1.9% |

Table 1. Characteristics of value-based health care studies measuring costs (n=215).

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Which cost measurement methods are currently being used to facilitate VBHC?

To answer RQ1, we look at how costs were measured. A summary of our findings is presented in Table 2. The literature contains many overlapping and contradicting terms, as costs can refer to insurer costs, reimbursements, hospital costs, or patient costs. About half (n=110, 51.2%) take the provider perspective, meaning costs were calculated for the hospital or care facility. Many studies use charges or payments because hospital cost data are unavailable, considering charges to be a relative proxy. Some studies use terms such as 'costs,' 'charges,' 'prices,' 'payments,' and 'reimbursements' interchangeably, making it difficult to differentiate [17,18,27–30]. For example, Jain et al, [17] stated, "The terms reimbursement, cost, and payment have been used interchangeably throughout the text to represent actual amounts paid by insurers." Similarly, Robles et al. [30] explained, "Total hospital charges were utilized in this standardized costing analysis. Hospital charge data provides a relative measure of the 'cost' of episodes of care, as actual cost data are generally not ascertainable in the healthcare setting." When calculating costs with TDABC, Ahluwalia et al, [31] called these costs 'prices.' To address this confusion, some recent studies refer to provider costs as the 'true cost' of care [6,7,9,19]. A portion of studies comparing several cost types [19,20] also differentiate 'traditional hospital accounting' costs vs. 'true costs' calculated with TDABC [6,9,20,32,33].

| | Stı | udies | Perspe | ectives | | |
|---|-----|------------|----------|---------|---------------|------------|
| Characteristic | n | % | n | % | - | |
| Cost perspective | | | | | - | |
| Provider | 110 | 51.2% | 111 | 51.6% | | |
| Insurer | 103 | 47.9% | 106 | 49.3% | | |
| Patient | 2 | 0.9% | 5 | 2.3% | | |
| N* | 215 | | 222 | | | |
| | | All studie | s (n=215 | 5) | Provider only | Payer only |
| Cost types included | | | | | | |
| Direct | 28 | | 13.0% | | 24 | 2 |
| Direct and indirect | 177 | | 81.9% | | 84 | 93 |
| Unspecified | 10 | | 4.6% | | 2 | 8 |
| Costs measurement implementation | | | | | | |
| No, costs measured for purpose of study | 34 | | 15.7% | | 33 | |
| Yes, costing method is implemented | 39 | | 17.6% | | 39 | |
| Unspecified or not applicable | 142 | | 66.2% | | 38 | 102 |
| Costs coverage | | | | | | |
| Full care path | 47 | | 21.8% | | 30 | 16 |
| Full care path (full surgical episode) | 17 | | 7.4% | | 13 | 4 |
| Partial care path (full surgical episode) | 22 | | 8.3% | | 19 | 3 |
| Partial care path | 86 | | 42.1% | | 37 | 49 |
| Unspecified | 43 | | 19.9% | | 11 | 31 |

Note: N differs between studies and perspectives because seven studies measured two cost types. **Table 2.** Characteristics of costing methods in value-based health care

We categorized studies based on the cost types they include. Both direct and indirect costs were considered by 177 (81.9%) studies, while 28 (13.0%) papers only included direct costs.

Next, we looked at whether costs were calculated for a complete care path. We found 64 (29.8%) studies measure costs for a full care path, of which 16 (7.4%) are full surgical episodes but labelled so without considering all pre- or post-surgical costs. The remaining 86 (42.1%) measures costs for a partial care path.

Table 3 categorizes studies based on their costing method used. For those papers measuring costs within the care provider, we found two clear categories in line with management

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accounting literature[24]. The first is direct costing (n=23), where direct costs of care are summed up and indirect costs are not considered. This implies that if costs cannot causally be attributed to the treatment of a specific patient, they are not considered and hence neglected when making managerial decisions [24].

Studies considering direct and indirect costs use absorption costing, whereby indirect costs are allocated to patients [31]. These include but are not limited to TDABC (n=31) and ABC (n=7), in which costs are allocated per individual care activity (e.g., a consultation or treatment step). The remaining absorption costing papers (n=47) also consider direct and indirect costs, but how indirect costs are attributed to activities are not reported. Authors of absorption costing studies state that cost information was calculated based on diagnosis-related group costs, micro costing, bottom-up clinical costing, or hospital accounting system not further classified. A full list of all terms used is presented in the **online supplementary appendix**.

| Perspective | Method | n |
|-------------|--|----|
| Provider | Direct costs only | |
| | Direct costing | 23 |
| | Absorption costing | |
| | ABC | 7 |
| | TDABC | 31 |
| | Other | 47 |
| | Not specified | 3 |
| Insurer | Charges & reimbursements | |
| | Charges, reimbursements, claims | 81 |
| | Charges adjusted with cost-to-charge ratio | 25 |
| Patient | Out-of-pocket costs to patient | 5 |

Note: Total number of studies here is 222; seven studies measure two cost types. Studies are classified based on actual costs included and methods described, not necessarily the labels used by authors.

Table 3. Overview of cost measurement methods used in value-based health care

How do these costing methods facilitate VBHC?

To answer RQ2, we extracted all consequences described by papers related to the costing method. Not all studies included to address RQ1 describe facilitating VBHC, or the consequences of the cost information generated. Here, we were looking for how the costing information facilitated VBHC, similar to Etges et al, [3]. These reported consequences were grouped inductively, revealing four categories:

- 1. Identification of cost drivers, in terms of cost items (e.g., staff costs, material costs) or activities (e.g., surgery, initial consult; n=48).
- 2. Comparison of costs across patients' groups, care providers, or procedures (n=39).
- 3. Measured cost difference, or cost saving, at equal or better care (n=26).
- 4. Suggested or measured care path improvements (n=40).

These studies are presented in Table 4. The studies reporting these facilitators used ABC (n=6),

TDABC (n=29), other absorption costing methods (n=12), or direct costing (n=3).

| Study Characteristics | | | | | | Best practices | | | | Value-Based consequences of costing information | | | | |
|-----------------------|--|----------------|--------------------|--------|---------------|----------------|-----|-----|----------------------|---|-----|---|------------------------|--|
| | Medical Specialty | Costing method | period | Centre | Study type | PM | EI | DO | CG | Compare costs across | ICD | MPS | Care path adjustmen | |
| [34] | Internal medicine | TDABC | partial | single | retro | yes | yes | | items, activities | | yes | | suggested | |
| | Surgical, orthopaedic, rotator cuff repair | TDABC | full (FSE) | single | retro | yes | | yes | items, activities | surgeons, two alternative treatments | yes | yes, ± \$727 about the mean per patient | suggested | |
| [4] | Cardiology, surgical | TDABC | full (FSE) | multi | retro | yes | yes | yes | items, activities | hospitals, procedures | yes | yes, estimate 51.0% of procedure cost | yes | |
| [10] | Oncology | TDABC | full | single | retro | yes | yes | yes | items, activities | treatment care paths | yes | \$2,302 (25.0%) difference across treatments | suggested | |
| [35] | Surgical, orthopaedic | TDABC | full (FSE) | single | retro | yes | | | items, activities | patients | yes | | suggested | |
| [36] | Surgical, orthopaedic | TDABC | full (FSE) | single | retro | yes | | | items, activities | patients | yes | | suggested | |
| [19] | Surgical, orthopaedic | TDABC | full (FSE) | single | retro | yes | | yes | items, activities | costing methods (TA and TDABC) | yes | | suggested | |
| [20] | Surgical, orthopaedic | TDABC | full (FSE) | single | retro | yes | | yes | items, activities | five treatments, cost vs. reimbursement | yes | | | |
| [37] | Paediatric, surgical, plastic surgery | TDABC | full (FSE) | multi | pro | yes | | yes | items, activities | treatment care paths | yes | up to \$8900, but long- term outcomes yet unknown | suggested | |
| [38] | Emergency & acute care | TDABC | full (multiple) | multi | retro | yes | yes | yes | items, activities | eight care paths for acute ureteral stones (patient journeys) | yes | yes, \$6614 difference across care paths | suggested | |
| [39] | Surgical, orthopaedic | TDABC | full (FSE) | single | retro | yes | | yes | items, activities | surgeons | yes | | suggested | |
| [40] | Oncology | TDABC | partial | single | pro | yes | yes | yes | items, activities | treatments and individual care paths | yes | yes, cost difference of up to 3.33 times, depending on case mix | suggested | |
| | Oncology (incl. surgery) | TDABC | full | single | retro | yes | | yes | items, activities | | yes | | suggested | |
| [42] | Oncology | TDABC | partial (FSE) | single | retro | yes | | | items | pre and post implementation | yes | yes, mean cost savings of €309 per patient | yes | |
| [43] | Cardiology | AC (other) | partial | multi | retro | | | | items | patient journeys | yes | | suggested | |
| [44] | Emergency & acute care | AC (other) | partial | single | retro | yes | | | items | surgeons | yes | | | |
| [45] | Surgical, bariatric | AC (other) | full (FSE) | single | retro | | | | items | treatment | yes | | | |
| [46] | Gynaecology & obstetrics | AC (other) | full | single | retro | yes | | | items, activities | procedures | yes | yes, \$967 per patient | suggested | |
| [47] | Emergency & acute care | AC (other) | partial | single | retro | | | | items, activities | | yes | | | |
| [48] | Surgical, colorectal | AC (other) | partial (FSE) | single | retro | | | | items | intervention | yes | yes, reduced variable cost, similar total cost | yes | |
| | Surgical, orthopaedics, fracture | | partial (FSE) | single | retro | | | | items | patients, patient groups, demographics | yes | | | |
| | Surgical, orthopaedic, arthroplasty | ABC | full (FSE) | single | both | | yes | yes | items, activities | treatment care paths | yes | estimate €2,054,000 annually | yes | |
| | Surgical, spine | ABC | Full | single | retro | yes | | | items, activities | patients, patient groups | yes | | suggested | |
| [6] | Paediatric, surgical | TDABC | full (FSE) | single | both | yes | | yes | items, activities | costing methods (TA and TDABC) | yes | 20.0% and without care path alteration | suggested | |
| [51] | Oncology | TDABC | full (FSE) | single | retro | yes | yes | yes | items, activities | treatment care paths | yes | yes, estimate for each 10.0% decrease in case duration, total costs could decrease by about 8.0%. | suggested | |
| [31] | Surgical, orthopaedic | TDABC | full (FSE) | single | pro | yes | yes | yes | items, activities | treatment care paths | yes | £2,018 per patient | suggested | |
| [52] | Paediatric, neonatal | TDABC | partial | single | retro | yes | yes | yes | items, activities | Pre and post intervention | yes | yes, 36.0% or \$92,000 per tracheostomy care cycle | yes | |
| [53] | Surgical, cardiac/thoracic | AC (other) | partial | multi | retro | yes | | | items | patients, implant devices | yes | | suggested | |

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11.0% cost reduction, and yes, several

suggested

suggested

suggested

yes

suggested

suggested

yes

yes

yes

suggested

modelled

and suggested

yes

suggested

yes, several

suggested

suggested

40

| [54]Oncol | ogy, surgical | AC (other) | partial | single | retro | | | | items | | yes | yes, multiple |
|------------------------|--------------------------|-------------------|--------------------|-----------------|-------|-----|-----|-----|----------------------|--|-----|--|
| [55]Multip | ole | TDABC | full | multi, pilot | retro | yes | yes | yes | items, activities | before and after intervention (IPUs) | yes | yes, quarterly costs declined |
| [56]Oncol | ogy | TDABC | partial (PSE) | single | pro | yes | | yes | items, activities | treatment care paths (parallel vs. induction design in OR) | yes | yes, estimate OR time reduction of 55 min, or \$,2818 missed revenue |
| [57] Surgic orthop | al, aedics fracture | TDABC | partial (FSE) | single | both | yes | | | items | | yes | |
| [58] Surgic debrid | | TDABC | partial (FSE) | single | retro | | | yes | items | before and after intervention | yes | |
| [59]Ophth | almology | TDABC | full | single | retro | yes | yes | yes | items, activities | | yes | |
| [60]Gynae | | AC | partial | single | retro | | | | items | | yes | |
| [61]Gynae | | (other) AC | (FSE) partial | single | retro | | | | items | | yes | |
| obsteti [62] Multir | rics, surgical | (other) Direct | (FSE) partial | single | retro | | | | items | | yes | |
| | | costing | | | | | | | | | 5 | 0055 |
| [63]Surgic | al, orthopaedic | Direct costing | full (FSE) | multi | retro | | | | items | intervention | | yes, £255 per patient |
| [5] Surgic tunnel | al, carpal release | TDABC | partial (FSE) | multi | retro | yes | | yes | items, activities | multiple treatment care paths | yes | yes, 70.9% (\$27,103) and 31.6% (\$178) |
| [64] Surgic | al, appendicitis | AC (other) | partial (FSE) | single | pro | | yes | yes | items | pre and post intervention (dashboard) | yes | yes, decreased by \$496 per operation |
| [65]Surgic | al, orthopaedic | Direct costing | partial (FSE) | single | retro | | yes | | items | intervention | yes | |
| [8] Urolog | зу | TDABC | · / | single | pro | yes | | yes | items, activities | | yes | yes, estimate two hours per cycle |
| [66] Paedia appeno | | TDABC | full (FSE) | single | pro | yes | yes | yes | items, activities | treatment care paths (pre and post intervention) | yes | 11.0% cost reduction, and 51.0% hospitalization time reduction |
| [67] Urolog | gy | AC (other) | partial | multi | retro | | yes | | items | | | |
| [7] Oncol 11 sur | ogy, surgical, geries | TDABC | Partial (FSEs) | single | retro | yes | | | items, activities | potential staffing ratios | yes | estimate 13.0-28.0% per surgery type |
| [9] Oncol | ogy | TDABC | full | single | retro | yes | yes | yes | items, activities | treatments (high-dose vs. low- dose brachytherapy) | yes | \$2,668 difference across treatments |
| [68]Urolog | зу | TDABC | partial (FSE) | single | retro | yes | yes | | items, activities | five treatment care paths | yes | yes, 400.0% increase from least to most expensive pathways |
| [32] Surgic neuros | al, surgery | ABC | partial (FSE) | single | retro | yes | | | items, activities | patients | yes | yes, 25.0% |
| [69] Surgic neuros | al, aurgery | ABC | partial (FSE) | single | retro | yes | | | items, activities | patients | yes | |
| [70] Paedia surger | tric plastic y | ABC | partial, 1 year | single | | | | | items | patients | yes | |
| | | | | | Count | | 11 | 24 | | 39 | 47 | 26 |

Activity-based costing

All six studies applying ABC explained that they did so because this was the provider's existing costing method. Three of these studies measured costs for a full surgical episode [21,32,69] as part of a longer care path, two measured costs for a full care path [49,50], and one measured costs of a partial care path [70]. While these studies all applied ABC, their ability to facilitate VBHC differs. Jacobs et al [50] measured costs for a complete care path for patients with adult spinal deformity, a complex care path spanning about one year. The authors compared costs across patient groups and patients, found major cost drivers, and suggested where to concentrate cost containment. Similarly, McLaughlin et al [32,69] both measured costs, identified cost drivers and evaluated targeted cost containment initiatives. In their paper [32], the cost containment initiatives were informed by the costing information—activities with the highest costs were targeted for reduction—and a 25.0% total cost reduction was achieved. While McLaughlin et al [69] identified comorbidities and demographics strongly related to the total costs in patients undergoing neurosurgery, Wise et al [21] found the opposite for geriatric hip fracture patients. This study identified cost drivers, and costs were compared across patient groups. McLaughlin et al [71] were able to measure and record costs savings of 25.0%, and Vanni et al [49] successfully predicted about $\in 2,054,000$ annual cost savings associated with an alternative enhanced recovery pathway.

Time-driven activity-based costing

The largest portion of papers included for RQ2 used TDABC. These studies were able to identify significant cost drivers linked to activities in a care path, and some suggest where to target improvement initiatives [4,6-8,10,33,40,59]. A large selection of TDABC studies was able to suggest (n=19) [6,8,10,19,33-38,40,41,51,55-59,68] or measure (n=6) [5,9,31,42,52,66] care path improvements as shown in **table 4**.

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The length and specificity of the care paths costs varies greatly. Some studies were narrow in scope and breadth, calculating costs for sub-sections of a single care path or surgical procedure [6,8,38,39,56]. Isaacson et al [8] calculated costs for cleaning a single reusable piece of equipment, while others costed single surgical days [6], compared alternative surgeons [39] or anaesthesia solutions within a care path [56]. In this group, McClintock et al [38] took the broadest perspective by mapping individual patient journeys.

The largest group of TDABC studies measured costs across care paths, within a single provider, and for a single diagnosis (n=10) [9,10,31,33,37,40–42,51,66]. Typically, these studies compared costs between a new intervention and usual care [9,10,31,51,52,66], or alternative care paths [33,37,40,42] in order to measure cost savings.

Some studies were broader in scope, costing multiple care paths or treatments within one specialty [5,7,20,68], an entire department [34,59], or multiple practice units [55] or providers [4]. Some compared 'true costs' calculated with TDABC across care providers within specialties or care paths [4,37], while others argued TDABC costs are too subjective to be compared across hospitals [10,38]. While most identified studies compared costs across care paths, some also compared costs across patient groups [19,35,36] or even individual patient journeys [38,40].

Technology played a large role in studies aiming to reduce costs. One study was able to suggest how to use technology more efficiently [6], and some show how technology can reduce costs [37,40,51] by integrating technological investments in the TDABC cost calculated. Conversely, studies using unspecified absorption methods did not include investments in technology such as a Da Vinci robot mentioned above [60,61]. This is surprising because absorption costing methods require indirect costs to be allocated.

Analyses enabled by activity-based and time-driven activity-based costing

Several ABC and TDABC studies compared costs calculated with traditional accounting costs [6,19,20] or reimbursements [20,21], finding that prices do not equal costs. Some conducted quantitative analyses using the cost information generated with ABC or TDABC. These include regression analyses to identify correlations [7,33,35,36,40], compare patient groups [20,35,36], and compare costs and outcomes across a matched patient sample [40].

Two recent studies conducted patient-level value-analysis (PLVA)[33,40], comparing patient-reported outcomes with patient-level TDABC costs. Wise et al [33] did so for rotator cuff repair surgeries over the span of one year, while McCreary et al [57] analyzed ankle fractures. Both studies found costs to be unrelated to patient-reported outcome measures.

Other absorption costing methods and direct costing

Other absorption costing methods used by studies were labelled as micro costing (n=5), bottomup clinical costing [47], or were described but not labelled (n=6). Most were able to find cost drivers (n=12, for details see **table 4**) and some could compare costs within providers. Notably, Robinson et al,[64] used the cost information to build and evaluate a dashboard that provides realtime feedback to surgeons during operations and monthly, decreasing costs significantly. Some studies omitted cost categories, e.g., equipment [61]. Direct costing enabled cost driver identification [62,63,65], and in some instances granular cost measurement.

Best practices

After finding these four facilitators, we compared studies to find common practices. This is of particular importance because costing methods are not labelled consistently. For example, many studies refer to ABC as 'bottom-up costing.' To look beyond labels, we compared the exact methods used to measure costs. We found that studies able to facilitate VBHC used process

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Studies that made specific care path improvement suggestions used process mapping, and especially those with a multidisciplinary team reported great benefits [4,9,10,19]. This enables experts (doctors, care professionals, administrators) with the required knowledge and experience to reflect critically on the process [4,9,10,19] which resulted in actionable suggestions. In comparison, studies that did not use process mapping could suggest minimizing high-cost items (e.g., total operating time, nursing costs) but could not couple these suggestions to activities, or chronological points in the care path. Only commenting on cost items, instead of chronological time points, limits the ability of cost information to inform management on where to focus process improvement initiatives.

Expert input while creating process maps or measuring costs was often cited by authors as being valuable, especially for estimating preparation time or other behind-the-scenes activities that do not involve the patient but are critical to delivering care. Some studies unable to use expert input cited this as a limitation of their work. Rare cases also evaluated the impact of costing information, for example by involving experts in evaluating a dashboard [64].

Lastly, direct observations were used by some studies, particularly those calculating process times down to the minute or those measuring costs for individual patient journeys.

DISCUSSION

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This review focused on VBHC studies measuring or estimating costs, and on identifying which costing methods can facilitate VBHC. By assessing the consequences of the costing methods used, we were able to identify the characteristics of costing methods that facilitate VBHC.

Previous research found that TDABC can facilitate VBHC through cost containment and process improvements [3,15]. We build on these by comparing value-based consequences across costing methods. While the field is young and alternatives seem scarce, we have found considerable evidence that TDABC and ABC can indeed facilitate VBHC. As previously mentioned, TDABC is considerably easier to implement than ABC, which leads us to recommend it over ABC. We found no well-documented alternatives to TDABC or ABC in our review. Not all TDABC studies were able to achieve the facilitating factors we describe here. We emphasize the need for future studies to follow TDABC guidelines properly and to document the methods used explicitly. Several included studies in this review simply stated that TDABC was applied, outsourced, used with incomplete costs, or used without listing exact cost rates.

Care path start and endpoints are well-documented by authors, but remain inconsistent. To view costs in relation to outcomes as suggested by Porter [2], total costs from start to finish of a trajectory must be considered [72]. Many studies chose the start and endpoints to their cost measurement windows ad hoc and labelled this a full care path. Consequently, this results in inconsistencies across studies, limiting comparisons. A selection of more recent studies measured costs for a true full care path from beginning to end. Future research should do the same, and explicitly define start and endpoints. This would allow for consistent comparison across providers. Like ICHOM standard outcome sets produced by the International Consortium for Health Outcomes Measurement, costs could be catalogued and compared for full care paths. In a recent expert consensus study, experts reached consensus on the need for focusing on full care paths [72].

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Furthermore, we see a trade-off in the specificity and length of the care path costed. Studies measuring costs for parts of a care path (e.g., a surgery) can provide detailed costs for that portion of the care path, but not total costs of care per patient because the remainder of that patient's care path is not included. Some surgical studies measured costs for partial care paths, and often concluded that operating theatre time should be minimized due to high surgeon and operating theatre costs.

This is a conclusion with limited impact for the value agenda [13] because it does not provide cost information for an entire care path, or advice for how to circumvent the surgery. Yet, studies measuring costs for complete care paths presented less detailed costing methods (due to the sheer length of the care path) but were able to compute total costs of care per patient. This enabled cost benchmarking across providers, as well as cost comparisons of new vs. standard care, or treatment alternatives. This allowed providers to steer towards outcomes at lowest costs to maximize value. Future research should focus on measuring costs for full care paths, and on comparing costs to outcomes as demonstrated by some of the more recently published studies included in our review [33,40,57].

Our review highlights the need to involve medical professionals in this process, both when implementing costing methods as well as when evaluating the results. Future cost measurement studies, and hospitals looking to implement TDABC, should do so with multidisciplinary teams. Studies that have involved medical professionals in the process of cost measurement and usage were able to improve care paths via improvement initiatives and/or dashboards. This suggests that generating and using costing information can be viewed as a process. Future qualitative research should follow this process to better understand the mechanisms through which this happens, and

the impact of staff involvement on cost containment success. Previous research suggests that staff involvement is critical as it builds trust in the model [73].

Limitations and future research

We acknowledge several limitations related to the scope, breadth, and quality of the included studies. Firstly, our search strategy does not capture studies that measure costs but do not label the study as VBHC-oriented. Not all TDABC studies make value-based claims or contributions and may therefore be underrepresented in our review. Additionally, not all studies explicitly discuss the impact or consequence of the costing method applied, which may impact our findings. Future qualitative research should implement TDABC and evaluate whether the facilitating factors found in this review are achieved. Secondly, sophisticated methods such as TDABC are currently used in predictable and/or short care paths such as orthopaedic surgeries. Further research testing the feasibility and practicality of TDABC in different settings, such as emergency on-call care, or long care paths such as fertility treatments, is warranted. Our findings may have limited generalizability across medical specialties as indicated in **Table 1**. Finally, we rely on the reporting of authors which differs in style and quality across disciplines and journals. We partially circumvented this limitation by looking beyond the cost measurement labels used by authors, and extracting the costs included and methods used. However, we cannot exclude the potential for error, or lack of explicit reporting, in the studies reviewed.

Conclusion

This systematic review reveals that cost information at the treatment or patient level, for complete care paths, enables value-based decision making through several mechanisms. Such cost information directs quality and process improvement initiatives, next to informing reimbursement

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amounts. Practitioners and academics should apply process mapping, expert input and observations when implementing absorption costing systems such as ABC or TDABC. Hospital cost measurement is strongly advised.

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Patient and public involvement: This study did not involve patients or the public in designing, executing, or reporting of the research.

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Contributors ML: study design, screening of titles and abstracts for inclusion, data analysis and interpretation, writing. PP: screening of titles and abstracts for inclusion, assisted in writing. KA: study design, assisted in interpretation of results, assisted in writing. HvE: study design, screening of titles and abstracts for inclusion, data analysis and interpretation, assisted in writing.

ORCID ID

Maura Leusder 0000-0001-7134-1003 Petra Porte 0000-0003-0228-1013 Kees Ahaus 0000-0001-9973-3746 Hilco van Elten 0000-0003-3909-5521

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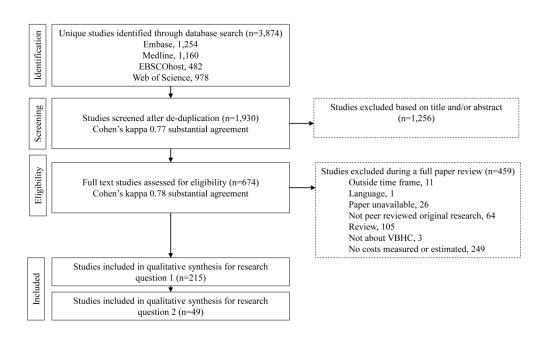
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PRISMA flowchart depicting screening, exclusion, and inclusion process with 2 reviewers.

1428x873mm (96 x 96 DPI)

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 Inclusions RQ1 (215) extracted data to be shared with Erasmus Data Repository (FigShare)

| Authors | Year Pub | Title paper (see full reference in manuscript) | Geography (country) of study | Geography, state of country, if N/A country | | unit of analysis | disease/topic labels provided by study (overlapping tags, can be multiple) | (man another all and | Medical Specialty sub category, where applicable | Care path studied | Costs included | Costs perspectiv e (all) | Primary Cost perspective | Secondary Cost perspective if applicable | Costing method used as described in study | Primary Costing method classification | Secondary Costing method classification, if applicable | Implementation of costing method (N/A if reimbursements or charges, unspecified if not discussed in study) | if reimbursement; actual measurement used for estimation | RQ2 include discuss consequences impact of co information study |
|---|-------------|---|------------------------------------|---|----------------------------------|---|---|----------------------|--|--|---------------------|--------------------------------|-----------------------------|--|--|---|---|--|---|--|
| Gálvez, A. C. M. Sánchez, F. J. Moreno, C. A. | | | | | | | | | | | | | | | | | | | | |
| Pérez Fernández, A. J. García, R. B. | | Value-based healthcare in ostomies | | | | | | | | | | | | | | | | | | |
| López, M. C. Romíroz, M. P. R | 2020 | | Andalusia | Andalusia | | 71 surgical ostopmy patients | digestive, urology, surgical | Urology | | partial care path (full surgical episode) | Direct and indirect | provider | provider | | unspecified | Absorption costing - unspecified/generic | | Paper only | | no |
| McLaughlin, N. | | | | | | | neurosurgical, | | | | | | | | | | | | | |
| Upadhyaya, P. Buxey, F. | | Value-based neurosurgery: Measuring and reducing the cost of | | | | | microvascular | | | | | | | | | | | | | |
| Martin, N. A. | | microvascular decompression surgery | | | | | decompression, trigeminal neuralgia | | | | | | | | | | | | | |
| | 2014 | | US | US; California | single center, retrospective | 44 neurosurgical patients | (TN) or hemifacial spasm (HFS) | Surgical | Neurosurgery | partial care path (full surgical episode) | Direct and indirect | provider | provider | | ABC | Absorption costing - ABC | | implemented | | yes see secor sheet |
| Hennink, S. D. Hofland, N. | | | | | | | | | | | | | | | | | | | | |
| Gopie, J. P. | | | | | | | | | | | | | | | | | | | | |
| Van Der Kaa, C. De Koning, K. | | Value-based healthcare in Lynch syndrome | | | | | oncology, lynch | | | | | | | | | | | | | |
| Nielsen, M. | 2016 | | The Netherlands | The Netherlands | | 64 Lynch Syndrome patients | syndrome, colorectal cancer | Oncology | | full care path | Direct and indirect | providar | providar | | unspecified | Absorption costing - unspecified/generic | | uneposified | | 80 |
| French, K. E. | 2010 | | The Netherlands | The ivenicitation | | patients | cancer | Chicology | | iun care patri | Direct and maneer | provider | provider | | unspeemed | unspectited generic | | unspectried | | |
| Guzman, A. B. Rubio. A. C. | | | | | | | | | | | | | | | | | | | | |
| Frenzel, J. C. | | Value based care and bundled payments: Anesthesia care costs for outpatient oncology surgery using time-driven activity-based costing | | | single center, retrospective, | 5,357 outpatient anesthesia cases | | | | | | | | | | | | | | |
| Feeley, T. W. | | | | | | across 11 procedure | | | | partial care path (full | | | | | | Absorption costing - | | | | yes see secor |
| fan. R. Y. C. | 2016 | | US | US; Virginia | paths | groups | oncology | Oncology | | surgical episode) | Direct and indirect | provider | provider | | TDABC | TDABC | | implemented | | sheet |
| Met-Domestici, M. | | | | | | | | | | | | | | | | | | | | |
| ^r hou, K. Guzman, A. B. | | Using quality improvement methods and time-driven activity-based costing to improve value-based cancer care delivery at a Cancer Genetics | | | single center, retrospective, | 251 Patients with | | | | | | | | | | | | | | |
| Lim, S. T. | | clinic | | | process | high-risk features | | | | | | | | | | | | | | |
| Soo, K. C. | 2016 | | Singapore | Singapore | mapping, observation | suggestive ofhereditarycancer | oncology, genetics, Cancer genetics | Oncology | | partial care path | Direct | provider | provider | | TDABC | Direct costing | | unspecified | | no |
| Danilyants, N. | | | | | | | | | | | | | | | | | | | | |
| IacKoul, P. axi. R. | | | | | | | | | | | | | | | | | | | | |
| an der Does, L. Q. | | Value-based assessment of hysterectomy approaches | | | | | gynecology, vaginal | | | | | | | | Microcosting | | | | | |
| laworth, L. R. | | | | | | 2689 patients, | hysterectomy, robot, | gynecology & | | partial care path (full | | | | | supplemented | Absorption costing - | | | | yes see secon |
| Iernandez, A. | 2019 | | US | US; Maryland | retrospective | female, 18 or over | robot-assisted | obstetrics | | surgical episode) | Direct and indirect | provider | provider | | with charges | unspecified/generic | | Paper only | | sheet |
| Kaplan, R. S. | | | | | single center, | | | | | | | | | | | | | | | |
| Witkowski, M. L. Forrest Faison, C. | | Navy medicine introduces value-based health care | | | retrospective, | | | | | | | | | | | | | | | |
| Porter, M. E. | | | | | multiple care paths, pilot | | pregnancy, osteoarthritis diabetes, lower back | | | | | | | | | Absorption costing - | | | | yes see secon |
| | 2019 | | US | US; Florida | project | 22877 patients total | | obstetrics | | full care path | Direct and indirect | provider | provider | | TDABC | TDABC | | implemented | | sheet |
| Parra, E. Arenas, M. D. | | | | | | | | | | | | | | | | | | | | |
| Alonso, M. | | | | | | | | | | | | | | | | | | | | |
| Martínez, M. F. Gamen, Á | | Assessing value-based health care delivery for haemodialysis | | | | 5 haemodialysis | | | | | | | | | | | | | | |
| Aguarón, J. | 2017 | | Spain | Spain | multi center, retrospective | treatment centers, | haemodialysis, renal | Uralam | | partial care path | Direct and indirect | providar | nrouidar | | Microcosting | Absorption costing - unspecified/generic | | Paper only | | yes see secon sheet |
| Brown, G. C. | 2017 | | Span | Span | renospective | patients unspectfied | naemodiarysis, renar | Clology | | partial care paul | Direct and multech | provider | provider | | Microcosing | unspectited generic | | raper only | | sileet |
| Brown, M. M. Brown, H. C. | | | | | | | | | | | | | | | | | | | | |
| Kindermann, S. | | A Value-Based Medicine Comparison of Interventions for Subfoveal Neovascular Macular Degeneration | | | | 233 patients with | Orbiteleselese | | | | | | | | | | | | | |
| Sharma, S. | | | | | | | Neovascular, macular | | | | | | | | none, | Charges/Reimbursemen | | | average medicare | |
| Medbery, R. L. | 2007 | | US | US; Pennsylvania | | degeneration | degeneration | opthalmology | | partial care path | Direct | payer | payer | | | t-based | | N/A | reimbursements | no |
| chadid, T. S. | | | | | | 105 patients total, | | | | | | | | | | | | | | |
| Sweeney, J. F. Knechtle, S. J. | | Laparoscopic vs open right hepatectomy: A value-based analysis | | | | elective laparoscopic liver | | | | | | | | | unspecified; Hospital | | | | | |
| Kooby, D. A. | | and an order of the other other of the other | | | | resection surgery or | Surgical, Hepatectomy, | | | | | | | | accounting data | | | | | |
| daithel, S. K. | 2014 | | US | US; Georgia | | open right hepatectomy | Laparoscopic liver resections | Surgical | Liver | partial care path | Direct and indirect | provider | provider | | not otherwise specified | Absorption costing - unspecified/generic | | implemented | | no |
| in E Danilyants, N. | | | | | | | | | | | | | | | | | | | | |
| MacKoul, P. van der Does, L. | | | | | | | | | | | | | | | | | | | | |
| Haworth, L. | | A value-based evaluation of minimally invasive hysterectomy approaches | | | | | gynecology, vaginal | | | | | | | | | | | | | |
| Baxi, R. | | | | | single center, | 2689 patients, | hysterectomy, robot, | gynecology & | | partial care path (full | | | | | | Absorption costing - | | | | yes see secon |
| Gabriel, L. | 2019 | | US | US; Maryland | retrospective | female, 18 or over | robot-assisted | obstetrics | | surgical episode) | Direct and indirect | provider | provider | | Microcosting | unspecified/generic | | Paper only | | sheet |
| Casey, J. | | | | | | | | | | | | | | | Patient Level | | | | | |
| Gee, M. Palmer, C. | | Value-based healthcare analysis of joint replacement surgery for patients | | | | | orthopedics, joint | | | | | | | | Information | | | | | |
| Sinha, J. | | with primary hip osteoarthritis | | | | 50 patients pri | replacement, total hip | | Orthopedic, | | | | | | Costing System | Absorption costing - | | | | |
| Moxham, J. Cologata Stone, T. J. | 2019 | | UK | UK; London | | 50 patients primary hip osteoarthritis | osteoarthritis | Surgical | arthroplasty | full care path | Direct and indirect | provider | provider | | methodology (PLICS) | Absorption costing - unspecified/generic | | implemented | | no |
| /an Deen, W. K. | | | | | | - | | | | | | | | | | | - | - | | |
| Spiro, A. Burak Ozbay, A. | | The impact of value-based healthcare for inflammatory bowel diseases on | | | | | | | | | | | | | | | | | Medicare | |
| Skup, M. | | healthcare utilization: A pilot study | | | | 60 patients with | | | | | | | | | | | | | reimbursements based on | |
| Centeno, A. Duran, N. E. | | | | | | inflamatory bowel | IBS, bowel, Inflamatory | | | | | | | | none, | Charges/Reimbursemen | | | DRG/HCPS | |
| | 2017 | | US | US; California | | disease | bowel disease | Internal Medicine | | full care path | Direct and indirect | payer | payer | | reimbursements | t-based | | N/A | codes | no |

| And any | Isaacson, D. | | | | | | | | | | | | | | | | |
|---|------------------------------|---|----------------|------------------|----------------|---------------------|--|--------------|--------------------|--------------------------|--------------------------------|----------|------------------------------|----------------------|-------------|----------------|----------------|
| Name | Ahmad, T. Metzler, I. | | | | single center, | | | | | | | | | | | | |
| Main and Market and Market and Mark and | Tzou, D. T. | Defining the Costs of Reusable Flexible Ureteroscope Reprocessing Using Time-Driven Activity-Based Costing | 5 | | | | | | | | | | | | | | |
| Marting Marti | Taguchi, K. | The birter rearry base cosing | | | | | Uralam | | | | | | | Abcorption costing | | | was san sanond |
| | | 2017 | US | US: California | | 10 Uteroscopes | Ureterorenoscopy | Urology | | partial care path | Direct and indirect provider | provider | TDABC | TDABC | Paper only | | |
| | Ionov, M. V. | | | | | | | | | | | | | | | | |
| | Zhukova, O. V. | | | | | | Blood pressure | | | | | | | | | | |
| Martial < | Yudina, Y. S. | Value-based approach to blood pressure telemonitoring and remote | | | | | | | | | | | | | | | |
| ng la | Emelyanov I V | counseling in hypertensive patients | | | | | pressure telemonitoring | | | | | | | | | | |
| $ \frac{1}{100} Dr = 10 Dr = 10 Dr = 100 Dr = 100 Dr = 1000 Dr = 1000 Dr = 100 Dr = 1000 Dr = 10000 Dr = 1000 Dr = 1000 Dr = 1000 Dr = 1000 Dr = 1000$ | Kurapeev, D. I. | | | | | | and remote counselling | | | | | | | | | | |
| | Zwartau N F | 2020 | Russia | Russia | | patients | (BPIM) | Cardiology | | partial care path | Direct and indirect provider | provider | unspecified | unspecified/generic | unspecified | | no |
| | Annabathula, K. Dugan, A. | | | | | | | | | | | | | | | | |
| And any or | Bhalla, V. | Value-based assessment of implementing a Pulmonary Embolism | | | | (24 | | | | | | | | | | | |
| | Davis, G. A. | Response Team (PERT) | | | | | | | | | | | | | | | |
| Cal Dip Dip <td>Smyth, S. S.</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Cardiology, pulmonary</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>none.</td> <td>Charges/Reimbursemen</td> <td></td> <td>total</td> <td></td> | Smyth, S. S. | | | | | | Cardiology, pulmonary | | | | | | none. | Charges/Reimbursemen | | total | |
| | | 2020 | US | US; Kentucky | | Embolism | embolism | Cardiology | | unspecified | Direct and indirect payer | payer | reimbursements | t-based | N/A | reimbursements | no |
| | Goretti, G. | | | | | | | | | | | | | | | | |
| Michae with the stand of | Marinari, G. M. | | | | | | | | | | | | | | | | |
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| 10 10 10 10 100 100 100 100 10000 1000 1000 1000< | renari, e. | Implementation in a High-volume Bariatric Center in Italy | | | | | | | | | | | | | | | |
| | | 2020 | Itali | Italia | | | | | Deviateia | | Discussion disclinate annuidan | | | | Denservale | | |
| | Vanda S P | 2020 | Italy | naiy | | bariatric surgery | Obesity | Surgical | Bartautic | unspectned | Direct and indirect provider | provider | unspectned | unspectried generic | raper only | | no |
| | Lott, A. | | | | | | | | | | | | | | | | |
| | Egol, K. A. | Development of a Value-based Algorithm for Inpatient Triage of Elderly | | | | | | | | | | | unspecified; | | | | |
| | | Hip Fracture Patients | | | | | | | | | | | riospital accounting data | | | | |
| No. N | | | | | | 361 operative hip | Geriatrics, trauma, hip | | Orthopedic | | | | not otherwise | Absorption costing - | | | |
| | | 2020 | US | US; New York | | | | Surgical | | partial care path | Direct and indirect provider | provider | | | implemented | | no |
| Name of the properties of the structure of | Ennis, R. D. | | | | | - | | | - | - | | | - | | | - | |
| M. or procession: Note: Status: Statu | Parikh, A. B. | | | | | | | | | | | | | | | | |
| N.1Prime the prime the prime | Sanderson, M. | Interpreting oncology care model data to drive value-based care: A | | | | | | | | | | | | | | | |
| j G U <td>Isola, L.</td> <td>prostate cancer analysis</td> <td></td> | Isola, L. | prostate cancer analysis | | | | | | | | | | | | | | | |
| | | 2010 | 110 | | | | | | | e 11 - 11 | No. 1. 10 10 1 | | | | | | |
| | Demonstra L C | 2019 | | US; New York | | episodes of care | prostate cancer | Uncology | | full care path | Direct and indirect payer | payer | reimbursements | t-based | N/A | reimbursements | no |
| unit approx instant or proving a set of the set | Cyr, D. D. | | | | | | | | | | | | | | | | |
| | Witsell, D. L. | A pathway to value-based care of chronic rhinosinusitis using a claims | | | | | | | | | | | | | | | |
| ML ML Note Note <th< td=""><td>Brereton, J.</td><td></td><td></td><td></td><td></td><td>7400192 patients</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<> | Brereton, J. | | | | | 7400192 patients | | | | | | | | | | | |
| 39 ² 0.5 (3.8 Mark (bark < | Schulz, K. | | | | | 18-64 acute | Rhinosinusitis Typical | | | | | | none | Charges/Reimbursemen | | | |
| | | 2019 | US | US; Maryland | | | | Surgical | ENT | partial care path | Direct and indirect payer | payer | reimbursements | | N/A | claims | no |
| | Peele, P. | | | | | | | | | | | | | | | | |
| ng n | Keyser, D. | | | | | | | | | | | | | | | | |
| main constrained | | Provider Partnershins: Improving Outcomes for Children with Complex | | | | | | | | | | | | | | | |
| All Control Address Main | Moss, D. | Conditions | | | | | | | | | | | | | | | |
| we de de la contra de la contr | | | | | | | | | | | | | | Charges/Reimbursemen | | | |
| | | 2018 | US | US; Pennsylvania | | under 21, | conditions | Pediatrics | Pediatric other | partial care path | Direct and indirect payer | payer | reimbursements | t-based | N/A | reimbursements | no |
| Ni.L. Algebraic Maching and gring find find find find find find find find | | | | | | | | | | | | | | | | | |
| 1.1 Partoneous | | A Value Recad Medicine Analysis of Panihimumah for the Treatment of | | | | | | | | | | | | | | | |
| Image Image Participant Parit Parit | Peet, J. | Subfoveal Neovascular Macular Degeneration | | | | | | | | | | | | | | | |
| $\partial 0$ <th< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>none</td><td>Charges/Reimbursemen</td><td></td><td></td><td></td></th<> | | | | | | | | | | | | | none | Charges/Reimbursemen | | | |
| there | | 2008 | US | US; Pennsylvania | | | | opthalmology | | partial care path | Direct and indirect payer | payer | | | N/A | reimbursements | no |
| ring M | Burnhope, E. | | | | | | - | | | | | | | | | | |
| manual Indue Underzandange methodes (main etage dash services (main etage da | Waring, M. | | | | | Implantable | | | | | | | unspecified: | | | | |
| data and a constraint of the co | Guilder, A. | A systematic approach towards implementing value-based health care in heart failure: Understandings from retrognective analysis methods in | | | | | | | | | | | | | | | |
| $ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \$ | | South London | | | | Defibrillator (ICD) | | | | | | | | | | | |
| $ \frac{1}{10000000000000000000000000000000000$ | Cardoso, J. M. Razavi, R. | | | | | or Cardiac | | | | | | | | | | | |
| rg. R. so and an or even strain and and and and and and and and and an | Corr-White G | 2020 | UK | UK; London | | Resynchronization | Cardiology, heart failure | Surgical | Cardiac/Thoracic | partial care path | Direct and indirect provider | provider | specified | unspecified/generic | implemented | | sheet |
| ver, Lo and and ever even grander and even grander | Khullar, O. V. | | | | | | | | | | | | | | | | |
| km, A of lower coplages: A value-based comprision viel lower coplage: A value-based coplage: A value-based coplage: A valu | nang, K. Force S D | | | | | | | | | | | | | | | | |
| chart state state <t< td=""><td>Pickens, A.</td><td>I ranstnoracic versus transhiatal resection for esophageal adenocarcinoma</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<> | Pickens, A. | I ranstnoracic versus transhiatal resection for esophageal adenocarcinoma | | | | | | | | | | | | | | | |
| $\frac{1}{10000000000000000000000000000000000$ | Sancheti, M. S. | or the lower esophagus. A value-based comparison | | | | | | | | | | | | (1 D) 1 | | | |
| inger inger <td< td=""><td>Ward, K.</td><td>2015</td><td>US</td><td>US: Georgia</td><td></td><td></td><td>Uncology, esophageal</td><td>Oncology</td><td></td><td>full care path</td><td>Direct and indirect newsr</td><td>paver</td><td></td><td></td><td>N/A</td><td></td><td>no</td></td<> | Ward, K. | 2015 | US | US: Georgia | | | Uncology, esophageal | Oncology | | full care path | Direct and indirect newsr | paver | | | N/A | | no |
| Line | Gillognio T Ebinger I E | - Viv | | oo, ocorgia | | | cancer | Oncorogy | | ran care path | sheet and multeet payer | payer | rembursements | e oused | iva | remoursements | |
| there is the set of sequencise vision movement in finite rate may may be interesting may be int | Strauss, C. E. | | | | | receiving primary | | | | | | | | | | | |
| | Garberich, R. R. | Value-based ST-segment-elevation myocardial infarction care using risk- | | | | percutaneous | | | | | | | unspecified; | | | | |
| dh interaction dender start interaction dender start interaction | Bradley, S. M. | guided triage and early discharge | | | | | | | | | | | | | | | |
| $2 \times 1 = 0$ ($1 \times 1 + 0$) (1 | Rush, P. | | | | | between 2009 and | Cardiology, heart failure. | | | full care path (surgical | I | | not otherwise | | | | |
| dar, Y. L. J. J. L. J | Poulose A K | 2018 | US | US; Minnesota | | 2011 | myocardial infarction | | Cardiac/Thoracic | episode) | Direct provider | provider | specified | Unspecified | implemented | | no |
| h, A, S Im-Drive activity-based costing identifies opportunities for process single center | Bodar, Y. J. L. | | | | | | | | | | | | | | | | |
| mail T efficiency and coordination for look-assisted lapance ope single central | Srinivasan, A. K. | Time Driven estivity based costing identifies on erturities for more | | | | | | | | | | | | | | | |
| Wail in the stand of all point with a stand of all po | Shah, A. S. | efficiency and cost ontimization for robot-assisted laparoscopic | | | single center. | | | | | | | | | | | | |
| And A. A. Die Alle Arte diest diest diest full care path (sergical partice) The path (sergi | Kawai, T. Shukla A R | pyeloplasty | | | retrospective, | | | | | | | | | | | | |
| heme, W. R. Kes, J. der, J. C. value-based evaluation of dialysis versus conservative care in older der, S. D. M. patients with advanced chronic kidney disease: A cohort study teme, W. T. patients with advanced chronic kidney disease: A cohort study advanced chronic Nephrology, kidney, with H. H. advanced chronic Nephrology, kidney, broth H. H. broth H. broth H. H. broth H. H. broth H. H. broth H. H. broth H. b | smakid, A. R. | | | | direct | laparoscopic | | | | | l | | | Absorption costing - | | | |
| kers, J unspecified; unspecified; ider, J. C Value-based evaluation of dialysis versus conservative care in older 366 patients aged s, A. B. patients with advanced chronic kidney disease: A cohort study 270 years with advanced chronic kidney disease: A cohort study 270 years with advanced chronic kidney disease: A cohort study 270 years with advanced chronic kidney disease: A cohort study Absorption costing - | | 2020 | US | US; Pennsylvania | observation | pyeloplasties | robotics, robot | Pediatrics | Pediatric surgical | episode) | Direct and indirect provider | provider | TDABC | TDABC | Paper only | | sheet |
| der, J. C. Value-based evaluation of dialysis versus conservative care in older 366 patients aged Hospital tema, W. T. patients with advanced chronic kidney disease: A cohort study 270 years with advanced chronic Neptrology, kidney, accounting data | | | | | | | | | | | | | | | | | |
| ers, A. B. M. patients with advanced chronic kidney disease: A cohort study 200 years with ad | Dijkers, J. Kelder, J. C. | Value level contention of distor' | | | | | | | | | | | | | | | |
| Image With advanced cinone kaney useas: A conort suny 270 years with advanced cinone kaney useas: A conort suny advanced cinone kaney | Geers, A. B. M. | | | | | | | | | | | | | | | | |
| | Jellema, W. T. | patients with advanced enrome kidney disease: A conort study | | | | | | | | | | | | | | | |
| spalon I M source many specified generic inspectified generic inspectified generic inspectified generic inspecified not | Vincent, H. H. | 2018 | The Netherla | The Netherlar 4- | | | Nephrology, kidney, dialusis, abronia | Nanhralagu | | full core path | Direct and indirect provider | provider | | | implemented | | 20 |
| | Von Doldon I I M | 2010 | rine inernands | rne ivemenands | | kidney disease | utarysis, chronic | rephrotogy | | iun care path | inter and indirect provider | provider | specifieu | anspectfied generic | implemented | | 110 |

 BMJ Open

| Scotti, D. J. de Lissovoy, G. Palacios, I. | A value-based analysis of hemo- heart failure patients undergoing | lynamic support strategies for high-risk a percutaneous coronary intervention | | | 427 patients enrolled in trial, | | | | | | | | none; charges, transformed wit | | | | |
|--|--|---|--------------------|---|--|---|-------------------|-----------------------------|--|---------------------|------------|--------------|-----------------------------------|--|-------------|------------------------------------|-----------------|
| Dixon, S. Maini, B. | | | | | mean age 68, 80.6% | | | | | | provider | | cost-to-charge | Charges/Reimbursemen | | none, charges, | |
| O'Neill W Ravikumar, T. S. | 2013 | US | US; various states | | male | Cardiology, heart failure | e Surgical | Cardiac/Thoracic | partial care path | Direct and indirect | t (proxy) | payer | ratio | t-based proxy | N/A | cost to charges | no |
| Sharma, C. | | | | | | | | | | | | | | | | | |
| Marini, C. Steele, G. D. | A validated value-based model t | improve hospital-wide perioperative | | | | | | | | | | | direct variable | | | | |
| Ritter, G. D. | outcomes: Adaptability to comb | ned medical/surgical inpatient cohorts | | | | | | | | | | | costs as an | | | | |
| Barrera, R. | | | | | >100,000 hospital | | | | | | | | estimation of | | | | |
| Kim M Ning, M. S. | 2010 | US | US; New York | | admissions | Surgical | Surgical | other | partial care path | Direct | provider | provider | total costs | Direct costing | Paper only | | no |
| Venkatesan, A. M. | | | | single center, | | | | | | | | | | | | | |
| Stafford, R. J. | Developing an intraoperative 3T | MRI-guided brachytherapy program :: Methods, process workflow, and value- | | retrospective, direct | | | | | | | | | | | | | |
| Bui, T. P. Carlson, R. | based analysis | . Methods, process worknow, and value- | | observation, | | | | | | | | | | | | | |
| Bailard, N. S. | | | | process | | Oncology, Gynecology, | | | full care path (surgical | | | | | Absorption costing - | | | yes se |
| Vedam S | 2020 | US | US; Texas | mapping | 10 female patients 338 female patients, | gynecologic pelvic tume | or Oncology | | episode) | Direct and indirect | t provider | provider | TDABC | TDABC | Paper only | | sheet |
| Sun, L. L. Cao, D. Y. | | | | | 18-65, colposcopic- | | | | | | | | | | | | |
| Yang, J. X. | | n loop electrosurgical excision procedure | | | histopathologically | | | | | | | | | | | | |
| Bian, M. L. | and CO2 laser vaporization for t neoplasia 2 | ne treatment of cervical intraepithelial | | | confirmed CIN2, intact uterus, no pas | | | | | | | | | | | | |
| Wei, L. H. Shen K | neopiasia 2 | | | | history of cervical | Obstetrics, Gynecology, | gynecology & | | | | | | | | | | |
| | 2012 | China | China | | neoplasia, and had a | cervical neoplasia | obstetrics | | partial care path | unspecified | provider | provider | unspecified | Unspecified | unspecified | | no |
| Fortmann, A. L. Walker, C. | | | | | | | | | | | | | | | | | |
| Barger, K. | Cara Taam Integration in Driver | y Care Improves One-Year Clinical and | | | 236 treated patients, | , | | | | | | | | | | | |
| Robacker, M. | Financial Outcomes in Diabetes | | | | 239 usual care patients. All | | | | | | | | direct variable costs as an | | | | |
| Morrisey, R. | | | | | diagnosed with type | | | | | | | | costs as an estimation of | | | | |
| Ortwine, K. | 2020 | US | US; California | | 1 or 2 diabetes. | Diabetes | Internal Medicine | | partial care path | Direct | provider | provider | total costs | Direct costing | implemented | | no |
| Ramirez, M. M. | | | | | | | | | | | | | | | | | |
| Brennan, G. P. | Line the sector have ' | | | | | | | | | | | | | | | | |
| | Using the value-based care para to care models in cervical spine | ligm to compare physical therapy access adjculopathy: a case report | | | | | | | | | | | | | /Reimbur | | |
| | | * ··· * · · · · · · · · · · · | | | case study; 39 yo | | | | | | payer, | | none, | Charges Charges/Reimbursemen sement-l | | cost to patient, | |
| | 2020 | US | US; Florida | | female | Physiotherapy | Neurology | | partial care path | Direct and indirect | | payer patier | nt reimbursements | | | reimbursement | no |
| Ryan, S. P. | | | | | | | | | | | | | | | | | |
| Plate, J. F. Black, C. S. | | | | | | | | | | | | | | | | | |
| Howell, C. B. | Value-Based Care Has Not Resu of a Single Center's Experience | Ited in Biased Patient Selection: Analysis n the Care for Joint Replacement Bundle | | | | | | | | | | | direct variable | | | | |
| Jiranek, W. A. | or a single center's Experience | a are care to Joint Replacement Bunute | | | 1248 total knee arthroplasty | orthopedics, joint replacement, total knee | | Orthopedic, | | | | | costs as an estimation of | | | | |
| Bolognesi, M. P. | 2019 | US | US; North Carolin | а | patients, | arthroplasty | Surgical | arthroplasty | full care path | Direct | provider | provider | total costs | Direct costing | implemented | | no |
| Plate, J. F. | | 4/68 | | | | | | | | | | | | | | | |
| Ryan, S. P. | No Changes in Patient Colorian | and Value-Based Metrics for Total Hip | | | | | | | | | | | | | | | |
| Black, C. S. Howell, C. B. | Arthroplasty After Comprehensi | and Value-Based Metrics for Total Hip ve Care for Joint Replacement Bundle | | | | | | | | | | | direct variable | | | | |
| Jiranek, W. A. | Implementation at a Single Cent | r i | | | 751 total hip | orthopedics, joint | | | | | | | costs as an | | | | |
| Bolognesi, M. P. | 2019 | Tie | US; North Carolin | | arthroplasty patients, | replacement, total hip arthroplasty | Surgical | Orthopedic, arthroplasty | full care path | Direct | provider | provider | estimation of total costs | Direct costing | implemented | | ne |
| Soudar T M Abbott, M. M. | / | 05 | co, norm carolin | | Parrento, | munopassy | Jungious | annopulaty | cure patit | | provider | Province. | 10141 00515 | | mysellieneu | | |
| Meara, J. G. | | | | | | | | | | | | | | | | | |
| | A microcosting approach for iso | ated, unilateral cleft lip care in the first | | | | | | | | | | | | | | | |
| | year of life | | | | | | | | | | | | | | | | |
| | 2011 | US | US; Massachusetts | single center, | 12 children, cleft lip | Pediatrics, cleft palate, plastic surgery | Pediatrics | | partial care path (full | Direct and indirect | monitor | providar | Microcosting | Absorption costing - ABC | Paper only | | yes se sheet |
| Regan, D. K. | 2011 | US | US; Massachusetts | retrospective | repair | piastic surgery | rediatrics | surgery | surgical episode) | Direct and indirect | provider | provider | Microcosting | ADU | Paper only | | sneet |
| Manoli, A. | | | | | | | | | | | | | | | | | |
| Hutzler, L. | Impact of Diabetes Mellitus on S | urgical Quality Measures After Ankle or "Value-Based" Compensation and "Pay | | | | | | | | | | | | | | | |
| Konda, S. R. | Fracture Surgery: Implications f for Performance" | n value-Based" Compensation and "Pay | | | 58,748 patients, | | | | | | | | | | | | |
| Egol, K. A. | | | | | 7501 with Diabetes | | | | | | | | none, | Charges/Reimbursemen | | mean total | |
| | 2015 | US | US; New York | | Mellitus | Diabetes | Internal Medicine | | unspecified | Direct and indirect | t payer | payer | reimbursements | t-based | N/A | hospital charges | no |
| Yu, Y. R. Abbas, P. I. | | | | single center, | | | | | | | | | | | | | |
| Smith, C. M. | Time-driven activity-based costi | ng: A dynamic value assessment model in | | retrospective, | | | | | | | | | | | | | |
| Carberry, K. E. | pediatric appendicitis | | | direct observation. | | | | | | | | | | | | | |
| Ren, H. Patel B | | | | process | 207 patients total, 6 | Pediatrics, appendicitis, | | Pediatric | full care path (surgical | | | | | Absorption costing - | | | yes se |
| Nuchtern I G | 2017 | US | US; Texas | mapping | phases of care | simple appendicitis | Pediatrics | appendicitis | episode) | Direct and indirect | t provider | provider | TDABC | TDABC | Paper only | | sheet |
| Rice-Townsend, S. | | | | | | | | | | | | | | | | | |
| Barnes, J. N. Hall, M. | Variation in practice and resource | e utilization associated with the diagnosis | | | 13,328 patients, 34 | | | | | | | | | | | | |
| Baxter, J. L. | and management of appendicitis | at freestanding children's hospitals: | | | children's hospitals, | | | | | | | | | | | charges | |
| Rangel, S. J. | Implications for value-based cor | parative analysis | | | 25 states in US, acute appendicitis, | | | Pediatric | | | | | none, | Charges/Reimbursemen | | transformed with cost-to-charge | |
| | 2014 | US | US; Massachusetts | | age 3-18 | Pediatrics, appendicitis | Pediatrics | appendicitis | unspecified | Direct and indirect | t payer | payer | reimbursements | t-based | N/A | ratio | no |
| Ahluwalia, R. | | | | | | | | | | | | | | | | | |
| Cook, J. Raheman, F. | | | | | | | | | | | | | | | | | |
| Raheman, F. Karuppaiah, K. | Improving the efficiency of ankl | e fracture care through home care and day- rgery on a value-based healthcare model | | single center, | | | | | | | | | | | | | |
| Colegate-Stone, T. | surgery units: Delivering safe su | igery on a value-based healthcare model | | prospective, | | | | | | | | | | | | | |
| Tavakkolizadeh, A. | 2020 | LIK | UK; London | process | 53 traume notion to | trauma, orthopedics, surgical ankle fracture | Sumical | Orthopedic fracture | full care path (surgical episode) | Diract and indire+ | t nrovidar | provider | TDABC | Absorption costing - TDABC | Paper only | | yes se sheet |
| Kayarthanu V | 2020 | UK | UN, LORION | mapping | 55 trauma patients | surgical, ankle fracture | Surgical | nacture | episode) | Direct and indirect | provider | provider | IDADC | IDABL | Paper only | | sneet |
| Basto, I. Chabal, P. | | | | | | | | | | | | | | | | | |
| Basto, J. Chahal, R., Riedel, B. | | | | | | | | | | | | | | | | | |
| Basto, J. Chahal, R., Riedel, B. | Time-driven activity-based costi | ng to model the utility of parallel | | cingle cont | | | | | | | | | | | | | |
| Basto, J. Chahal, R., Riedel, B. | Time-driven activity-based costi induction redesign in high-turno | ng to model the utility of parallel /er operating lists | | single center, prospective, | 19 all-dav surgerv | | | | partial care path | | | | | | | | |
| Basto, J. Chahal, R., Riedel, B. | Time-driven activity-based costi induction redesign in high-turno 2019 | ng to model the utility of parallel ver operating lists | | single center, prospective, process | 19 all-day surgery lists, patients | | | | partial care path (partial surgical episode) | | | | TDABC | Absorption costing - TDABC | | | yes se |

| B.M., Tenenbaum, S., Bariteau, J.T. | Costs Associated With Geriatric Ankle Fractures, Operative Versus | | | | | | | | | | | | | | | | | | |
|--|---|----------------------|---|---|--|---|--|------------------------|---|---|-------------------------------------|----------------------------|----------------|--|--|-----------------|--------------------|--|--|
| | Nonoperative Management 2017 | US | US; Georgia | | 19648 ankle fractur patients | e trauma, orthopedics, geriatrics, ankle fracture | Surnical | Orthopedic fracture | partial care path | Direct and indirect | ngver | paver | | none, reimbursements | Charges/Reimbursemen t-based | , | N/A | medicare reimbursement | s no. |
| arkley, R. | 2017 | 03 | 03, Georgia | | patients | genatries, ankie fracture | Surgical | nacture | partial care path | Direct and multeet | payer | payer | | rennoursements | roased | | vA. | rennoursement | 5 110 |
| oobader, M. J. | | | | | | | | | | | | | | | | | | | |
| 'ang, J. lau, S. | Reducing Cancer Costs Through Symptom Management and Triage | | | | | | | | | | | | | | | | | | |
| age, R. D. | Pathways | | | | 10417 57 5 | | | | | | | | | | ci n : 1 | | | | |
| | 2019 | US | US; Florida | | 10417 ER Events, 1879 unique patien | Emergency care, Acute | Oncology | | partial care path | Direct and indirect | naver | payer | | none, reimbursements | Charges/Reimbursemen t-based | , | N/A | medicare claim | 16 NO |
| fcLaughlin, N. | 2017 | 03 | 03, 110110a | | 1879 unique parien | s care, oncology | Oneology | | partial care paul | Direct and indirect | payer | payer | | remoursements | roased | | va. | incurcare claim | 15 110 |
| lartin, N. A. | | | | | | | | | | | | | | | | | | | |
| lpadhyaya, P. | Assessing the cost of contemporary pituitary care | | | | | | | | | | | | | | | | | | |
| Bari, A. A. Buxey, F. | Assessing the cost of contemporary pitultary care | | | | | | | | | | | | | | | | | | |
| Vana M B | | | | single center, | 27 neurosurgical | Neurosurgical, pituitary | | | partial care path (full | | | | | | Absorption costing - | | | | yes see s |
| Icanev A P | 2014 | US | US; California | retrospective | patients | adenoma | Surgical | Neurosurgery | surgical episode) | Direct and indirect | provider | provider | | ABC | ABC | i | mplemented | | sheet |
| Hersh, E. H. raeger, K. A. | | | | | | | | | | | | | | | | | | | |
| leifert, S. N. | Patterns of Health Care Costs Due to External Ventricular Drain | | | | | | | | | | | | | | | | | | |
| Kim, J. | Infections | | | | External ventricula | | | | | | | | | | | | | | |
| Dangayach, N. S. | | | | | drain (EVD) | | | | | | | | | | Absorption costing - | | | | |
| | 2019 | US | US; New York | | infection patients | Neurosurgery | Surgical | Neurosurgery | partial care path | Direct and indirect | provider | provider | | unspecified | unspecified/generic | i | mplemented | | no |
| Aeara, J. G. | | | | | | | | | | | | | | | | | | | |
| Hughes, C. D. Sanchez, K. | | | | | 94 patients were | | | | | | | | | | | | | | |
| atallozzi, L. | Optimal Outcomes Reporting (OOR): A New Value–Based Metric for Outcome Reporting Following Cleft Palate Repair | | | | identified who | | | | | | | | | | | | | | |
| Clark, R. | Outcome Reporting Following Cieft Patate Repair | | | | underwent primary | Cleft palate, Palatoplasty | | | | | | | | Deletion Melon | Absorption costing - | | | | |
| Kummer, A. W. | 2020 | US | US: Massachusetts | | s the same surgeon | | , Surgical | Plastic surgery | full care path | Direct and indirect | provider | provider | | Units | unspecified/generic | F | aper only | | no |
| akovljevic, M. | | | | | | | - | | | | | | | | | | | | |
| Zugic, A. | | | | | | | | | | | | | | | | | | | |
| Rankovic, A. | Radiation therapy remains the key cost driver of oncology inpatient | | | | | | | | | | | | | | | | | | |
| Dagovic, A. | treatment | | | | | | | | | | | | | | | | | | |
| | 2015 | Serbia | Serbia | | 2544 complex | o 1 | Oncology | | | Direct | provider | | | Microcosting direct costs only | D : | | inspecified | | |
| Suidan, R. S. | 2015 | Serbia | Serbia | | oncology patients | Oncology | Oncology | | partial care path | Direct | provider | provider | | direct costs only | Direct costing | i | inspecified | | no |
| Ie, W. | | | | | | | | | | | | | | | | | | | |
| Sun, C. C. | Total and out-of-pocket costs of different primary management strategies | | | | | | | | | | | | | | | | | | |
| chao, H. | in ovarian cancer | | | | | | | | | | | | | | Chare | es/Reimbur | | | |
| Rauh-Hain, J. A. Fleming, N. D. | | | | | | Gynecology, oncology, | gynecology & | | | | Payer, | | | none, | Charges/Reimbursemen semen | nt-based | | | |
| W V U | 2019 | US | US; Texas | | 127(1 | ovarian cancer | obstetrics | | | | | | | | t bacad nation | | N/A | charges | |
| | | | 03, 10,45 | | 12761 patients | orunan cuncer | obstearies | | unspecified | Direct and indirect | patient | payer | patient | reimbursements | t+based Mattern | t OoO 1 | | charges | no |
| Lenfant, L. | | | 03, 10,45 | | 12761 patients | ovarian curcer | obsteines | | unspecified | Direct and indirect | patient | payer | oatient | reimbursements | Poaseu parten | it OoO _ ! | | charges | по |
| Sawczyn, G. | Single institution Constructions Single and Versus Multiple Roberts | | 03, 10,45 | | 12/61 patients | ovarian cancer | obsterres | | unspecified | Direct and indirect | patient | payer | patient | reimbursements | paren paren | t OoO _ ! | | charges | no |
| Sawczyn, G. Kim, S. | Single-institution Cost Comparison: Single-port Versus Multiport Robotic Prostatectomy | | 03, 10,43 | Bataanatiaa | 12701 patients | orunan career | obsteries | | unspecified | Direct and indirect | patient | payer | patient | reimbursements | paren paren | t OoO _ ? | | charges | 10 |
| Sawczyn, G. Kim, S. Aminsharifi, A. | Single-institution Cost Comparison: Single-port Versus Multiport Robotic Prostatectomy | | 0.3, rexas | Retrospective, | 12761 patients | | obstetrics | | unspecified | Direct and indirect | patient | payer | oatient | reimbursements | | <u>t OoO </u> ? | | charges | ves see se |
| Sawezyn, G. Kim, S. Aminsharifi, A. Kaouk, J. | Single-institution Cost Comparison: Single-port Versus Multiport Robotic Prostatectomy 2020 | | US; Ohio | Retrospective, single-center cohort | 12761 patients | Oncology, prostate cancer, surgical | Oncology | | partial care path | Direct and indirect | | provider | batient | reimbursements | Absorption costing - unspecified/generic | | inspecified | charges | yes see se sheet |
| Sawczyn, G. Kim, S. Aminsharifi, A. Kaouk, J. Hemmila, M. R. | Prostatectomy | | | single-center | | Oncology, prostate | | | | | | payer | atient | | Absorption costing - | | | citarges | |
| iawczyn, G. (im, S. minsharifi, A. (aouk, J. Jemmila, M. R. (ain-Nielsen, A. H. | Prostatectomy 2020 | | | single-center | | Oncology, prostate | | | | | | payer | aatient | | Absorption costing - | | | | |
| Sawczyn, G. Kim, S. Aminsharifi, A. Kaouk, J. Hemmila, M. R. Cain-Nielsen, A. H. Wahl, W. L. | Prostatectomy 2020 Regional collaborative quality improvement for trauma reduces | | | single-center | | Oncology, prostate | | | | | | payer provider | satient | | Absorption costing - | | | price- standardized | |
| sawczyn, G. (im, S. minisharifi, A. (aouk, J. Hemmila, M. R. 2ain-Nielsen, A. H. Vahl, W. L. /ander Kolk, W. E. akubus, J. L. | Prostatectomy 2020 | | | single-center | 175 patients | Oncology, prostate | Oncology | | | | | provider | <u>vatient</u> | unspecified | Absorption costing - unspecified/generic | | | price- standardized payments, | |
| sawczyn, G. (im, S. minisharifi, A. (aouk, J. Hemmila, M. R. 2ain-Nielsen, A. H. Vahl, W. L. /ander Kolk, W. E. akubus, J. L. | Prostatectomy 2020 Regional collaborative quality improvement for trauma reduces complications and costs | US | US; Ohio | single-center | 175 patients 72084 episodes of | Oncology, prostate cancer, surgical | Oncology emergency care & | | partial care path | Direct and indirect | provider | | atient | | Absorption costing - unspecified/generic | t | inspecified | price- standardized payments, claims, DRG | |
| awezyn, G. Sim, S. minsharifi, A. Caouk, J. Hemmila, M. R. Cain-Nielsen, A. H. Vahl, W. L. Sander Kolk, W. E. skubus, J. L. Michail, J. N. Vietneuer, N. J. | Prostatectomy 2020 Regional collaborative quality improvement for trauma reduces | | | single-center | 175 patients | Oncology, prostate | Oncology | | | | provider | payer provider payer | atient | unspecified | Absorption costing - unspecified/generic | t | | price- standardized payments, | yes see se sheet no |
| awezyn, G. Gim, S minsharifi, A. acouk, J. Jernmila, M. R. Sain-Nielsen, A. H. Yahl, W. L. ander Kolk, W. E. akubus, J. L. Mikhail, J. N. Mikhail, J. N. Mikhail, J. N. Mohan, A. Joktapen, M. E. | Prostatectomy 2020 Regional collaborative quality improvement for trauma reduces complications and costs | US | US; Ohio | single-center | 175 patients 72084 episodes of | Oncology, prostate cancer, surgical | Oncology emergency care & | | partial care path | Direct and indirect | provider | | atient | unspecified | Absorption costing - unspecified/generic | t | inspecified | price- standardized payments, claims, DRG | |
| awezyn, G. Gim, S. winisharifi, A. Gaouk, J. Lian-Nielsen, A. H. Vahl, W. L. Jander Kolk, W. E. akubus, J. L. dikhait, J. N. Jidemana, N. I. Mashqar, A. Joktope, M. E. Gike, G. S. | Prostatectomy 2020 Regional collaborative quality improvement for trauma reduces complications and costs 2014 | US | US; Ohio | single-center | 175 patients 72084 episodes of | Oncology, prostate cancer, surgical | Oncology emergency care & | | partial care path | Direct and indirect | provider | | atient | unspecified | Absorption costing - unspecified/generic | t | inspecified | price- standardized payments, claims, DRG | |
| awezyn, G. Gim, S. winisharifi, A. Gaouk, J. Lian-Nielsen, A. H. Vahl, W. L. Jander Kolk, W. E. akubus, J. L. dikhait, J. N. Jidemana, N. I. Mashqar, A. Joktope, M. E. Gike, G. S. | Prostatectomy 2020 Regional collaborative quality improvement for trauma reduces complications and costs | US | US; Ohio | single-center | 175 patients 72084 episodes of acute trauma care 1847 female | Oncology, prostate cancer, surgical Acute care | Oncology emergency care & acute care | | partial care path | Direct and indirect | provider | | atient | unspecified | Absorption costing - unspecified generic Charges/Reimbursemen t-based | t | inspecified | price- standardized payments, claims, DRG | |
| awczyn, G. tim, S. minisharifi, A. acouk, J. lemmila, M. R. ain-Nicksen, A. H. Vahl, W. L. akubus, J. L. dichail, J. N. Iichaus, N. I. Mashari, A. Joktope, M. E. Joktepe, M. E. | Prostatectomy 2020 Regional collaborative quality improvement for trauma reduces complications and costs 2014 Predictors of the cost of hysterectomy for benign indications | US | US; Ohio US; Texas | single-center | 175 patients 72084 episodes of acute trauma care 1847 female hysterectomy | Oncology, prostate cancer, surgical Acute care | Oncology emergency care & acute care gynecology & | | partial care path | Direct and indirect | provider | payer | atient | unspecified none, reimbursements | Absorption cotting - unspecified generic Charges Reimbursemen t-based | t | unspecified N/A | price- standardized payments, claims, DRG prices | |
| Sawezyn, G. Sim, S. Aminisharifi, A. Kaouk, J. Hernmila, M. R. Liain-Nieken, A. H. Wahl, W. L. Wader Kolk, W. E. Bakuba, J. L. Mikhahi, J. N. Bakuba, J. L. Mikhahi, J. N. Bakuba, N. H. Sickieg, G. S. Sorahay, M. A. | Prostatectomy 2020 Regional collaborative quality improvement for trauma reduces complications and costs 2014 | US | US; Ohio | single-center | 175 patients 72084 episodes of acute trauma care 1847 female | Oncology, prostate cancer, surgical Acute care | Oncology emergency care & acute care | | partial care path | Direct and indirect | provider | | atient | unspecified none, reimbursements | Absorption costing - unspecified generic Charges/Reimbursemen t-based | t | inspecified | price- standardized payments, claims, DRG | |
| Sawezyn, G. Kim, S. Wminsharifi, A. Gaouk, J. Lian-Nielsen, A. H. Wahl, W. L. Jakubus, J. L. Mikhail, J. N. Bithmaor N. I. Mishail, A. Soktepe, M. E. Soktepe, M. E. | Prostatectomy 2020 Regional collaborative quality improvement for trauma reduces complications and costs 2014 Predictors of the cost of hysterectomy for benign indications | US | US; Ohio US; Texas | single-center | 175 patients 72084 episodes of acute trauma care 1847 female hysterectomy | Oncology, prostate cancer, surgical Acute care | Oncology emergency care & acute care gynecology & | | partial care path | Direct and indirect | provider | payer | atient | unspecified none, reimbursements | Absorption cotting - unspecified generic Charges Reimbursemen t-based | t | unspecified N/A | price- standardized payments, claims, DRG prices | |
| siwaczyn, G. im, S. hminsharift, A. acouk, J. Henmila, M. R. ain-Nielsen, A. H. Wahl, W. L. Mander Koll, W. E. akubus, J. L. Hichaul, J. N. Mashage, M. E. Glie, G. S. Sarahay, M. A. Saghavi, A. O. Sonta, R. J. | Prostatectomy 2020 Regional collaborative quality improvement for trauma reduces complications and costs 2014 Predictors of the cost of hysterectomy for benign indications 2021 | US | US; Ohio US; Texas | single-center | 175 patients 72084 episodes of acute trauma care 1847 female hysterectomy | Oncology, prostate cancer, surgical Acute care | Oncology emergency care & acute care gynecology & | | partial care path | Direct and indirect | provider | payer | añent | unspecified none, reimbursements | Absorption cotting - unspecified generic Charges Reimbursemen t-based | t | unspecified N/A | price- standardized payments, claims, DRG prices | |
| siwaczyn, G. sim, S. minisharff, A. Gaouk, J. Semmith, M. R. Sain-Nicken, A. H. Wahl, W. L. Wahl, W. L. Machar, J. L. Mikhai, J. N. Kohenson, M. E. Gile, G. S. Sorahay, M. A. Saphavi, A. O. Jonzalez, R. J. Scott, J. G. sim, Y. | Prostatectomy 2020 Regional collaborative quality improvement for trauma reduces complications and costs 2014 Predictors of the cost of hysterectomy for benign indications | US | US; Ohio US; Texas | single-center | 175 patients 72084 episodes of acute trauma care 1847 female hysterectomy | Oncology, prostate cancer, surgical Acute care | Oncology emergency care & acute care gynecology & | | partial care path | Direct and indirect | provider | payer | aisent | unspecified none, reimbursements | Absorption cotting - unspecified generic Charges Reimbursemen t-based | t | unspecified N/A | price- standardized payments, claims, DRG prices | |
| siwaczyn, G. im, S. hminsharff, A. kaonk, J. ternmla, M. R. ternmla, M. R. S. ternmla, M. R. S. | Prostatectomy 2020 Regional collaborative quality improvement for trauma reduces complications and costs 2014 Predictors of the cost of hysterectomy for benign indications 2021 Staged reconstruction brachytherapy has lower overall cost in recurrent soft-tissue surcoma | US US US | US; Ohio US; Texas US; Maryland | single-center | 175 patients 72084 episodes of acute trauma care 1847 female hysterectomy | Oncology, prostate cancer, surgical Acute care gynecology, obstetrics, Vaginal hysterectomy Oncology, soft-tissue | Oncology emergency care & acate care gynecology & obstetrics | | partial care path partial care path unspecified | Direct and indirect Direct and indirect Direct and indirect | provider | payer | a di cent | unspecified none, reimbursements none; charges | Absorption costing - unspecified generic Charges/Reimbursemen -based Charges/Reimbursemen -based | | nspecified | price- standardized payments, claims, DRG prices | |
| Sarvezyn, G. Sim, S. Hminika, M. R. Zian-Neisken, A. H. Wahl, W. L. Wahl, W. L. Wahl, W. L. Mader Kolk, W. E. Jakabus, J. L. Wikhah, J. N. Lickshap, M. E. Sickipe, M. E. Sickipe, M. E. Sickipe, M. E. Sickipe, R. J. Socut, J. G. Socuta, G. S. Socuta, V. J. Wandhevi, A. O. Sicota, J. G. Sicota, J. G. Sicota, J. S. Stor, J. J. Stor, J | Prostatectomy 2020 Regional collaborative quality improvement for trauma reduces complications and costs 2014 Predictors of the cost of hysterectomy for benign indications 2021 Staged reconstruction brachytherapy has lower overall cost in recurrent | US | US; Ohio US; Texas | single-center | 175 patients 72084 episodes of acute trauma care 1847 fomale hysterectomy patients | Oncology, prostate cancer, surpical Acute care gynecology, obstetrics, Vaginal hysterectomy | Oncology emergency care & acute care gynecology & | | partial care path | Direct and indirect | provider | payer | añen | unspecified none, reimbursements | Absorption costing - umpecified genetic Charges/Reimbursemen t-based Charges/Reimbursemen t-based | | unspecified N/A | price- standardized payments, claims, DRG prices | |
| sinceyn, G. sim, S. Mminsharifi, A. Saouki, J. Zim-Nicken, A. H. Zim-Nicken, A. H. Zim-Nicken, A. H. Wander Kolk, W. E. Sakuba, J. L. Mahali, J. N. Sakuba, J. L. Sakuba, J. S. Sakuba, J. S. | Prostatectomy 2020 Regional collaborative quality improvement for trauma reduces complications and costs 2014 Predictors of the cost of hysterectomy for benign indications 2021 Staged reconstruction brachytherapy has lower overall cost in recurrent soft-tissue surcoma | US US US | US; Ohio US; Texas US; Maryland | single-center | 175 patients 72084 episodes of acute trauma care 1847 female hysterectomy patients 22 soft-tissue | Oncology, prostate cancer, surgical Acute care gynecology, obstetrics, Vaginal hysterectomy Oncology, soft-tissue | Oncology emergency care & acate care gynecology & obstetrics | | partial care path partial care path unspecified | Direct and indirect Direct and indirect Direct and indirect | provider payer | payer | ation | unspecified none, reimbursements none; charges | Absorption costing - unspecified generic Charges/Reimbursemen -based Charges/Reimbursemen -based | | nspecified | price- standardized payments, claims, DRG prices | |
| Savezyn, G. Sim, S. Minisharff, A. Soak, J. Henmila, M. R. Zian-Niehen, A. H. Wahl, W. L. Wahl, W. L. Wahl, W. L. Wahl, W. L. Mikhail, J. N. Mikhail, J. N. Mikhail, J. N. Mikhail, J. N. Sokapen, M. E. Sikapen, M. J. Sikapen, M. J. Sikape | Prostatectomy 2020 Regional collaborative quality improvement for trauma reduces complications and costs 2014 Predictors of the cost of hysterectomy for benign indications 2021 Staged reconstruction brachytherapy has lower overall cost in recurrent soft-sizes surroma 2017 | US US US | US; Ohio US; Texas US; Maryland | single-center | 175 patients 72084 episodes of acute trauma care 1847 female hysterectomy patients 22 soft-tissue | Oncology, prostate cancer, surgical Acute care gynecology, obstetrics, Vaginal hysterectomy Oncology, soft-tissue | Oncology emergency care & acate care gynecology & obstetrics | | partial care path partial care path unspecified | Direct and indirect Direct and indirect Direct and indirect | provider payer | payer | ation | unspecified none, reimbursements none; charges | Absorption costing - unspecified generic Charges/Reimbursemen -based Charges/Reimbursemen -based | | nspecified | price- standardized payments, claims, DRG prices | |
| Sawezyn, G. Kim, S. Minisharff, A. Gook, J. Henmiha, M. R. Zian-Nieben, A. H. Wah, W. L. Wah, W. L. Wah, W. L. Wah, W. L. Wah, W. L. Makhur, J. N. Kieben, A. H. Makhur, A. Sidae, G. S. Soronlay, M. A. Soronlay, M. A. Sionzalez, R. J. Scott, J. G. Kim, Y. Y. Nunosen, J. J. Yuanosen, J. K. Yuanosen, J. K. Yuanosen, J. J. Yuanosen, J. J. Yuanosen, J. J. Yuanosen, J. K. Yuanosen, Yuanosen, Yu. Yu. Yuanosen, J. K. Yuanosen, Yu. Yu. Yuanosen, Yu. | Prostatectomy 2020 Regional collaborative quality improvement for trauma reduces complications and costs 2014 Predictors of the cost of hysterectomy for benign indications 2021 Staged reconstruction brachytherapy has lower overall cost in recurrent soft-tissue surcoma | US US US | US; Ohio US; Texas US; Maryland | single-center | 175 patients 72084 episodes of acute trauma care 1847 female hysterectomy patients 22 soft-tissue | Oncology, prostate cancer, surgical Acute care gynecology, obstetrics, Vaginal hysterectomy Oncology, soft-tissue sarcoma | Oncology emergency care & acate care gynecology & obstetrics | | partial care path partial care path unspecified | Direct and indirect Direct and indirect Direct and indirect | provider payer | payer | ation | unspecified none, reimbursements none; charges | Absorption costing - unspecified generic Charges/Reimbursemen -based Charges/Reimbursemen -based | | nspecified | price- standardized payments, claims, DRG prices | |
| swezyn, G. sim, S. minisharff, A. sook, J. fernmila, M. R. Jin-Nieben, A. H. Yath, W. L. Yander Kok, W. E. Makhus, J. L. Mikhai, J. N. Edeanser, N. J. Makhus, J. L. Mikhai, J. N. Edeanser, N. J. Makhus, J. C. Stephen, M. E. Stephen, M. Stephen, M. E. Stephen, M. Stephen, M. Stephe | Prostatectomy 2020 Regional collaborative quality improvement for trauma reduces complications and costs 2014 Predictors of the cost of hysterectomy for benign indications 2021 Staged reconstruction brachytherapy has lower overall cost in recurrent 2017 Cost Variation of Anterior Cervical Fusions in Elderly Medicare | US US US | US; Ohio US; Texas US; Maryland | single-center | 175 patients 72084 episodes of acute trauma care 1847 female hysterectomy patients 22 soft-tissue | Oncology, prostate entert, surgical Acute care gynecology, obstetrics, Vaginal hysterectomy Oncology, soft-tissue sarcoma | Oncology emergency care & acate care gynecology & obstetrics | | partial care path partial care path unspecified | Direct and indirect Direct and indirect Direct and indirect | provider payer | payer | | unspecified none, reimbursements none; charges | Absorption costing - umpecified generic Charges/Reimbursemen t-based Charges/Reimbursemen t-based | | nspecified | price- standardized payments, claims, DRG prices | |
| awezya, G. im, S. minsharfi, A. acouk, J. Henmila, M. R. ain-Nelene, A. H. ain-Nelene, A. H. ain-Nelene, A. H. Mohsu, J. L. Makhay, J. L. Hahaya, A. M. Katana, J. N. Makana, J. M. Makana, | Prostatectomy 2020 Regional collaborative quality improvement for trauma reduces complications and costs 2014 Predictors of the cost of hysterectomy for benign indications 2021 Staged reconstruction brachytherapy has lower overall cost in recurrent 2017 Cost Variation of Anterior Cervical Fusions in Elderly Medicare | US US US | US; Ohio US; Texas US; Maryland | single-center | 175 patients 72084 episodes of acute trauma care 1847 female hysterectomy patients 22 soft-tissue | Oncology, prostate cancer, surgical Acute care gynecology, obstetrics, Vaginal hysterectomy Oncology, soft-tissue sarcoma | Oncology emergency care & acate care gynecology & obstetrics | Otthopedic fncture | partial care path partial care path unspecified | Direct and indirect Direct and indirect Direct and indirect | provider payer payer | payer | | unspecified none, reimbursements none; charges | Absorption costing - unspecified generic Charges/Reimbursemen -based Charges/Reimbursemen -based | 2 | nspecified | price- standardized payments, claims, DRG prices | no no no |
| werzyn, G. im, S. minisharff, A. iarowleiden, A. H. vall, W. L. ander Kolk, W. E. kalobas, J. L. fakhari, J. N. Ideanauer, N. L. Hakharf, A. Sickepe, M. E. Sicher, M. R. Sickepe, M. E. Sicher, A. G. Sorrahay, M. A. Storahay, M. A. Storahay, M. A. Storahay, V. J. Storahay, V. J. Storahay, V. S. Storahay, S. S | Prostatectomy 2020 Regional collaborative quality improvement for trauma reduces complications and costs 2014 Predictors of the cost of hysterectomy for benign indications 2021 Staged reconstruction brachytherapy has lower overall cost in recurrent soft-tissue sarcoma 2017 Cost Variation of Anterior Cervical Fusions in Elderly Medicare Beneficiaries | US US US | US; Ohio US; Texas US; Maryland US; Florida | single-center | 175 patients 72084 episodes of acute trauma care 1847 female hysterectomy patients 22 soft-tissue sarcoma patients | Oncology, prostate cancer, surgical Acute care gynecology, obstetrics, Vaginal hysterectomy Oncology, soft-tissue sarcoma orthopedics, geriatrics, elective anterior cervical | Oncology emergency care & acute care gynecology & obstetrics | Orthopedic | partial care path partial care path unspecified full care path | Direct and indirect Direct and indirect unspecified | provider payer payer | payer | | unspecified none, reimbursements none; charges none; charges | Absorption costing - umpecified generic Charges/Reimbursemen -based Charges/Reimbursemen -based Charges/Reimbursemen -based Charges/Reimbursemen | 2 | Inspecified | prize- standardized psyments, claims, DRG prices charges charges | no no no |
| siwecyn, G. im, S. hminshaff, A. kannik, J. ternnik, M. R. ain-Nielsen, A. H. Walt, W. L. Madre, K. H., W. E. Macher, M. W. E. Macher, J. L. Hikhand, J. N. Mashar, A. Sicherge, M. E. Gille, G. S. Jorahay, M. A. Sighavi, A. O. Simzalez, R. J. Second, J. G. Simzalez, R. J. Second, J. | Prostatectomy 2020 Regional collaborative quality improvement for trauma reduces complications and costs 2014 Predictors of the cost of hysterectomy for benign indications 2021 Staged reconstruction brachytherapy has lower overall cost in recurrent soft-tissue sarcoma 2017 Cost Variation of Anterior Cervical Fusions in Elderly Medicare Beneficiaries 2017 | US US US | US; Ohio US; Texas US; Maryland US; Florida | single-center | 175 patients 72084 episodes of acute trauma care 1847 female hysterectomy patients 22 soft-tissue sarcoma patients | Oncology, prostate cancer, surgical Acute care gynecology, obstetrics, Vaginal hysterectomy Oncology, soft-tissue sarcoma orthopedics, geriatrics, elective anterior cervical | Oncology emergency care & acute care gynecology & obstetrics | Orthopedic | partial care path partial care path unspecified full care path | Direct and indirect Direct and indirect unspecified | provider payer payer | payer | | unspecified none, reimbursements none; charges none; charges | Absorption costing - umpecified generic Charges/Reimbursemen -based Charges/Reimbursemen -based Charges/Reimbursemen -based Charges/Reimbursemen | 2 | Inspecified | prize- standardized psyments, claims, DRG prices charges charges | no no no |
| wezya, G. im, S. minsharfi, A. aroak, J. Henmila, M. R. ain-Nelene, A. H. ain-Nelene, A. H. ain-Nelene, A. H. Mohsu, J. L. Mohsu, J. L. Mohsu, J. L. Mohsu, J. L. Mohsu, J. L. Mohsu, J. L. Mohsu, J. J. Mohsu, J. M. Mohsu, J. | Prostatectomy 2020 Regional collaborative quality improvement for trauma reduces complications and costs 2014 Predictors of the cost of hysterectomy for benign indications 2021 Staged reconstruction brachytherapy has lower overall cost in recurrent soft-tissue surcoma Cost Variation of Anterior Cervical Fusions in Elderly Medicare Beneficiaries 2017 A Cost Analysis of Regional Versus General Anesthesia for Carotid | US US US | US; Ohio US; Texas US; Maryland US; Florida | single-center | 175 patients 72084 episodes of acute trauma care 1847 female hysterectomy patients 22 soft-tissue sarcoma patients | Oncology, prostate cancer, surpical Acute care gynecology, obstetrics, Vaginal hysterectomy Oncology, soft-tissue sarroma orthopedics, geriatrics, elective anterior cervical fusions | Oncology emergency care & acute care gynecology & obstetrics | Orthopedic | partial care path partial care path unspecified full care path | Direct and indirect Direct and indirect unspecified | provider payer payer | payer | | unspecified none, reimbursements none; charges none; charges | Absorption costing - umpecified generic Charges/Reimbursemen -based Charges/Reimbursemen -based Charges/Reimbursemen -based Charges/Reimbursemen | 2 | Inspecified | prize- standardized psyments, claims, DRG prices charges charges | no n |
| sweezyn, G. sim, S. minisharff, A. sonk, J. femmila, M. R. "inn-Nieben, A. H. 'win-Nieben, A. H. 'winkens, J. L. fikhail, J. N. Idashar, A. Sokape, M. E. Sikhar, M. A. Sigflawi, A. O. Somalae, R. J. Sokape, M. E. Sigflawi, A. O. Somalae, R. J. Sokape, M. E. Sokape, M. E. Sigflawi, A. O. Somalae, R. J. Sokape, M. E. Sokape, M. E | Prostatectomy 2020 Regional collaborative quality improvement for trauma reduces complications and costs 2014 Predictors of the cost of hysterectomy for benign indications 2021 Staged reconstruction brachytherapy has lower overall cost in recurrent soft-tissue sarcoma 2017 Cost Variation of Anterior Cervical Fusions in Elderly Medicare Beneficiaries 2017 | US US US | US; Ohio US; Texas US; Maryland US; Florida | single-center | 175 patients 72084 episodes of acute trauma care 1847 female hysterectomy patients 22 soft-tissue sarcoma patients | Oncology, prostate enterer, surgical Acute care gynecology, obstetrics, Vaginal hysterectomy Oncology, soft-issue arcoma orthopedies, geriatrics, elective anterior cervical fusions | Oncology emergency care & acute care gynecology & obstetrics | Orthopedic | partial care path partial care path unspecified full care path | Direct and indirect Direct and indirect unspecified | provider payer payer | payer | | unspecified none, reimbursements none; charges none; charges | Absorption costing - umpecified generic Charges/Reimbursemen -based Charges/Reimbursemen -based Charges/Reimbursemen -based Charges/Reimbursemen | 2 | Inspecified | prize- standardized psyments, claims, DRG prices charges charges | no n |
| weezyn, G. im, S. minsbarff, A. aoak, J. emmila, M. R. ain-Nelenen, A. H. ain-Nelenen, A. H. ain-Nelenen, A. H. Makhusu, J. L. Hikhail, J. N. tainsauer, N. J. Hakhugar, A. Sokepe, M. E. Jike, G. S. oranhay, M. A. Makhura, A. Sokepe, M. E. Jike, G. S. oranhay, M. A. Mashani, A. O. oranhay, M. A. Dauder, J. J. Mashani, J. J. Mashani, J. J. Mashani, J. M. Mashani, J. M. M. M. Mashani, J. | Prostatectomy 2020 2020 Regional collaborative quality improvement for trauma reduces complications and costs 2014 Predictors of the cost of hysterectomy for benign indications 2021 Staged reconstruction brachytherapy has lower overall cost in recurrent soft-siste sarcoma 2017 Cost Variation of Anterior Cervical Fusions in Elderly Medicare Beneficiaries 2017 A Cost Analysis of Regional Versus General Anesthesia for Carotid Endarterectomy | US US US US | US; Ohio US; Texas US; Maryland US; Florida US; unspecified | single-center | 175 patients 72084 episodes of acute trauma care 1847 fomale hysterectomy patients 22 soft-tissue sarcoma patients 21,853 patients | Oncology, prostate cancer, surpical Acute care gynecology, obstetrics, Vaginal hysterectomy Oncology, soft-tissue sarcoma orthopedics, geriatrics, elective anterior cervical fusions | Oncology emergency care & acute care gynocology & obstetries Oncology Surgical | Orthopedie fracture | partial care path partial care path unspecified unspecified unspecified | Direct and indirect Direct and indirect Unspecified Direct and indirect | provider payer payer payer | payer | | unspecified none, reimbursements none; charges none; charges | Absorption costing - umpecified genetic Charges/Reimbursemen t-based Charges/Reimbursemen t-based Charges/Reimbursemen t-based | 2 | Inspecified | prize- standardized psyments, claims, DRG prices charges charges | no no no |
| awezya, G. im, S. minisharfi, A. acouk, J. teamilia, M. R. teamilia, M. teamilia, | Prostatectomy 2020 2020 Regional collaborative quality improvement for trauma reduces complications and costs 2014 Predictors of the cost of hysterectomy for benign indications 2021 Staged reconstruction brachytherapy has lower overall cost in recurrent soft-siste sarcoma 2017 Cost Variation of Anterior Cervical Fusions in Elderly Medicare Beneficiaries 2017 A Cost Analysis of Regional Versus General Anesthesia for Carotid Endarterectomy | US US US | US; Ohio US; Texas US; Maryland US; Florida | single-center | 175 patients 72084 episodes of acute trauma care 1847 female hysterectomy patients 22 soft-tissue sarcoma patients | Oncology, prostate enterer, surgical Acute care gynecology, obstetrics, Vaginal hysterectomy Oncology, soft-issue arcoma orthopedies, geriatrics, elective anterior cervical fusions | Oncology emergency care & acute care gynecology & obstetrics | Orthopedic | partial care path partial care path unspecified full care path | Direct and indirect Direct and indirect unspecified | provider payer payer payer | payer | | unspecified none, reimbursements none; charges none; charges | Absorption costing - umpecified generic Charges/Reimbursemen -based Charges/Reimbursemen -based Charges/Reimbursemen -based Charges/Reimbursemen | 2 | Inspecified | prize- standardized psyments, claims, DRG prices charges charges | no n |
| sawezyn, G. im, S. Munisharff, A. Sonk, J. Henmila, M. R. Jin-Nichen, A. H. Vall, W. L. Yander Kolk, W. E. Makuba, J. L. Makhuba, J. L. Makhuba, J. L. Makhuba, J. L. Makhuba, J. L. Makhuba, J. M. Sakabuba, J. M. Sakabubababababab | Prostatectomy 2020 2020 Regional collaborative quality improvement for trauma reduces complications and costs 2014 Predictors of the cost of hysterectomy for benign indications 2021 Staged reconstruction brachytherapy has lower overall cost in recurrent soft-siste sarcoma 2017 Cost Variation of Anterior Cervical Fusions in Elderly Medicare Beneficiaries 2017 A Cost Analysis of Regional Versus General Anesthesia for Carotid Endarterectomy | US US US US | US; Ohio US; Texas US; Maryland US; Florida US; unspecified | single-center | 175 patients 72084 episodes of acute trauma care 1847 fomale hysterectomy patients 22 soft-tissue sarcoma patients 21,853 patients | Oncology, prostate cancer, surpical Acute care gynecology, obstetrics, Vaginal hysterectomy Oncology, soft-tissue sarcoma orthopedics, geriatrics, elective anterior cervical fusions | Oncology emergency care & acute care gynocology & obstetries Oncology Surgical | Orthopedie fracture | partial care path partial care path unspecified unspecified unspecified | Direct and indirect Direct and indirect Unspecified Direct and indirect | provider payer payer payer | payer | | unspecified none, reimbursements none; charges none; charges | Absorption costing - umpecified genetic Charges/Reimbursemen t-based Charges/Reimbursemen t-based Charges/Reimbursemen t-based | 2 | Inspecified | prize- standardized psyments, claims, DRG prices charges charges | no no no |
| siwaczyn, G. im, S. huninsharff, A. kaonk, J. Hennula, M. R. Jim-Nieben, A. H. Vall, W. L. Mahar, K. W. E. Mahar, K. W. E. Mahar, A. N. Katawasan, N. L. Mahara, A. Storahay, M. A. Storahay, M. A. Simon, T. J. Soman, J. G. Simon, T. J. Soman, J. G. Simon, J. J. Simon, J. J. Si | Prostatectomy 2020 2020 Regional collaborative quality improvement for trauma reduces 2014 Predictors of the cost of hysterectomy for benign indications 2017 Staged reconstruction brachytherapy has lower overall cost in recurrent Staged reconstruction brachytherapy has lower overall cost in recurrent 2017 Cost Variation of Anterior Cervical Fusions in Elderly Medicare Beneficiaries 2017 A Cost Analysis of Regional Versus General Anesthesia for Canotid Endurrence 2017 2017 2017 2017 2017 2017 2017 2017 | US US US US | US; Ohio US; Texas US; Maryland US; Florida US; unspecified | single-center | 175 patients 72084 episodes of acute trauma care 1847 fomale hysterectomy patients 22 soft-tissue sarcoma patients 21,853 patients | Oncology, prostate cancer, surpical Acute care gynecology, obstetrics, Vaginal hysterectomy Oncology, soft-tissue sarcoma orthopedics, geriatrics, elective anterior cervical fusions | Oncology emergency care & acute care gynocology & obstetries Oncology Surgical | Orthopedie fracture | partial care path partial care path unspecified unspecified unspecified | Direct and indirect Direct and indirect Unspecified Direct and indirect | provider payer payer payer | payer | | unspecified none, reimbursements none; charges none; charges | Absorption costing - umpecified genetic Charges/Reimbursemen t-based Charges/Reimbursemen t-based Charges/Reimbursemen t-based | 2 | Inspecified | prize- standardized psyments, claims, DRG prices charges charges | no no no |
| swezyn, G. im, S. minisharff, A. iaonk, J. Lemniha, M. R. ain-Nielsen, A. H. Jan-Nielsen, A. H. Jander Kolt, W. E. Jander K. R. J. Josepher, M. E. Josepher, M. E. Josepher, M. E. Josepher, M. J. Josepher, M. J. Josepher, M. J. Josepher, M. J. Jander, J. M. Jander, J. M. Jasanzadeh, H. Sasanzadeh, H. Jasanzadeh, H. Jasanzadeh, H. Jasanzadeh, J. Jasanzadeh, J. Jasanzade | Prostatectomy 2020 2020 Regional collaborative quality improvement for trauma reduces complications and costs 2014 Predictors of the cost of hysterectomy for benign indications 2021 Staged reconstruction brachytherapy has lower overall cost in recurrent soft-siste sarcoma 2017 Cost Variation of Anterior Cervical Fusions in Elderly Medicare Beneficiaries 2017 A Cost Analysis of Regional Versus General Anesthesia for Carotid Endarterectomy | US US US US | US; Ohio US; Texas US; Maryland US; Florida US; unspecified | single-center | 175 patients 72084 episodes of acute trauma care 1847 fomale hysterectomy patients 22 soft-tissue sarcoma patients 21,853 patients | Oncology, prostate encer, suspical Acute care gynocology, obstetrics, Vaginal hysterectomy Oncology, soft-tissue sarcoma orthopodics, geriatrics, elective anterior cervical fusions Neurosurgery, anashesia, carotid endarterecisony | Oncology emergency care & acute care gynocology & obstetries Oncology Surgical | Orthopedie fracture | partial care path partial care path unspecified unspecified unspecified | Direct and indirect Direct and indirect Unspecified Direct and indirect | provider payer payer payer | payer | | unspecified none, reimbursements none; charges none; charges | Absorption costing - umpecified genetic Charges/Reimbursemen t-based Charges/Reimbursemen t-based Charges/Reimbursemen t-based | 2 | Inspecified | prize- standardized psyments, claims, DRG prices charges charges | no no no |
| wezyn, G. im, S. minsharff, A. aouak, J. emmilia, M. R. ain-Nichen, A. H. ain-Nichen, A. H. ain-Nichen, A. H. ain-Nichen, A. H. ain-Nichen, A. H. Mabus, J. L. kikaus, J. M. demanar, N. J. Ashqur, A. Subasovich, M. S. Santon, J. J. Santon, J. J. Santon, J. J. Santon, J. M. Santon, J. M. | Prostatectomy 2020 2020 2021 Regional collaborative quality improvement for trauma reduces 2014 Predictors of the cost of hysterectomy for benign indications 2021 2017 Staged reconstruction brachytherapy has lower overall cost in recurrent 2017 Cost Variation of Anterior Cervical Fusions in Elderly Medicare Beneficiaries 2017 Acost Analysis of Regional Versus General Anesthesia for Carotid Endurterectomy Acost Analysis of Regional Versus General Anesthesia for Carotid Endurterectomy 2017 Cost Variation of Positive Airway Pressare Use With Acute Care Utilization | US US US US | US; Ohio US; Texas US; Maryland US; Florida US; unspecified | single-center | 175 patients 72084 episodes of acute trauma care 1847 fomale hysterectomy patients 22 soft-tissue sarcoma patients 21,853 patients | Oncology, prostate cancer, surpical Acute care gynecology, obstetrics, Vaginal hysterectomy Oncology, soft-tissue sarcoma orthopedics, geriatrics, elective anterior cervical fusions | Oncology emergency care & acute care gynecology & obstetrics Oncology Surgical | Orthopedie fracture | partial care path partial care path unspecified unspecified unspecified | Direct and indirect Direct and indirect Unspecified Direct and indirect | provider payer payer payer | payer | | unspecified none, reimbursements none; charges none; charges | Absorption costing - umpecified genetic Charges/Reimbursemen t-based Charges/Reimbursemen t-based Charges/Reimbursemen t-based | 2 | Inspecified | prize- standardized psyments, claims, DRG prices charges charges | no no no |

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| Poorman, G. W. Bortz, C. A. | Predictors of adverse discharge disposition in adult spinal deformity an | d | | | | | | | | | | | | | | | |
|---|--|--|---|----------------|---|--|---|--------------------------|--|---|-------------------------|----------------------------|---|---|--------------------------|---------------------------|------|
| Qureshi, R. Diebo B. G | associated costs | | | | | | | | | | | | | | | | |
| Paul, J. C. | | | | | | | | | | | | | none, | Charges/Reimbursemen | | | |
| Horn S P Monroe, G. R. | 2018 | US | US; New York | | 2408 patients | orthopedic, surgical | Surgical | Spine | partial care path | unspecified | payer | payer | reimbursements | t-based | N/A | reimbursemer | ent |
| Frederix, G. W. | | | | | | | | | | | | | | | | | |
| Savelberg, S. M. C. | Effectiveness of whole-exome sequencing and costs of the traditional | | | | | | | | | | | | | | | | |
| De Vries, T. I. Duran, K. J. | diagnostic trajectory in children with intellectual disability | | | | | | | | | | | | bottom-up | | | | |
| Van Der Smagt, J. J. | 2016 | The Netherland | ds The Netherlands | | 17 patients | Genetics, Pediatrics, Intellectual disability | Pediatrics | Pediatric other | full care path | Direct | provider | provider | elinical costing approach | Direct costing | implemented | | |
| Terhal P A Manrriquez, E. | 2010 | The ivenierand | s The ivenienands | | 17 patients | | rediatries | rediatric other | iun care patri | Direct | provider | provider | approach | Direct costing | implemented | | - |
| Mandelbaum, A. | | | | | | Geriatrics, oncology, ovarian cancer, anterior | | | | | | | | | | | |
| Aguayo, E. Zakhour, M. | Factors associated with high-cost hospitalizations in elderly ovarian | | | | | cervical discectomy and | 1 | | | | | | | | | | |
| Karlan, B. | cancer patients | | | | | fusion, anterior cervical fusion, cervical spine, | | | | | | | none, | Charges/Reimbursemen | | | |
| Benharash, P. | 2020 | US | US; Virginia | | 21853 patients | cervical spondylosis | Oncology | | partial care path | Direct and indirect | payer | payer | | t-based | N/A | reimbursemer | ent |
| Cohen L G Wise, K. | | | | | | | | | | | | | | | | - | _ |
| Blaschke, B. L. Parikh, H. R. | Variation of the Investment Cost of Cost in the Transment of Indexed | | | | | | | | | | | | | | | | |
| Gorman, T. | Variation of the Inpatient Cost of Care in the Treatment of Isolated Geriatric Intertrochanteric Hip Fractures | | | | | | | | | | | | | | | | |
| Casnovsky, L. McMilan, L. J. | | | | single center, | | orthopedics, geriatrics, | | Orthopedic | partial care path (full | | | | | Absorption costing - | | | |
| Elegeted J Rocque, G. B. | 2020 | US | US; Minnesota | retrospective | 287 patients | hip fracture, surgical | Surgical | fracture | surgical episode) | Direct and indirect | provider | provider | ABC | ABC | implemented | | |
| Rocque, G. B. Williams, C. P. | | | | | | | | | | | | | | | | | |
| Jackson, B. E. | Resource Use and Medicare Costs During Lay Navigation for Geriatric | ; | | | | | | | | | | | | | | | |
| Ingram, S. A. Halilova, K. I. | Patients With Cancer | | | | | Geriatrics, oncology, D | e | | | | | | | | | | |
| Pisu, M. | 2010 | 110 | | | 000 | Novo Metastatic Breast | | | | | | | none, | Charges/Reimbursemen | | | |
| Konzik V M Schwartz, D. A. | 2018 | US | US; Alabama | | 988 patients | Cancer | Oncology | | partial care path | Direct and indirect | payer | payer | reimbursements | t-based | N/A | reimbursemer | ent |
| Shah, A. A. | | | | | | | | | | | | | | | | | |
| Zogg, C. K. Nicholas I. H | Operative delay to laparoscopic cholecystectomy: Racking up the cost of | əf | | | | Surgical, acute care, | | | | | | | none; charges, | | | charges, | |
| Velopulos, C. G. | health care | | | | 101022 | acute cholecystitis, | | | | | | | transformed with | Charrent Davies | | transformed v | |
| Efron, D. T. | 2015 | US | US; Massachusetts | s | 191032 patient records | aparoscopic cholecystectomy | Surgical | Gallbladder | unspecified | Direct and indirect | provider (proxy) | payer | cost-to-charge ratio | Charges/Reimbursemen t-based proxy | N/A | cost-to-charge ratio | ge |
| Schneider E B Brixner, D. | | | | - | | , | | | | | | 1.75 | | | | | |
| Rubin, D. T. | | | | | | | | | | | | | | | | | |
| Mease, P. Mittal, M. | Patient support program increased medication adherence with lower tot health care costs despite increased drug spending | al | | | | | | | | | | | | | | | |
| Liu, H. | and care costs acopice mercased using spending | | | | | | | | | | | | | Charges/Reimbursemen | | | |
| Davis, M. Ganguli | 2019 | US | US; various states | | 1134 patients | Multiple | multiple | | unspecified | Direct and indirect | payer | payer | none; charges | t-based | N/A | charges | |
| Aguayo, E. Sanaiha, Y. | | | | | | | | | | | | | | | | | |
| Seo, Y. J. | Heparin-induced thrombocytopenia in cardiac surgery: Incidence, costs | à. | | | | Cardialas | | | | | | | | | | -1 | |
| Mardock, A. | and duration of stay | 2 | | | | Cardiology, surgical, thrombocytopenia, | | | | | | | none; charges, transformed with | | | charges, transformed v | 1 wi |
| Bailey, K. Dobaria, V. | | | | | | Heparin-induced | | | | | | | cost-to-charge | Charges/Reimbursemen | | cost-to-charge | |
| Ronharach P Cronin, K. J. | 2018 | US | US; California | | 13943 patients | thrombocytopenia | Surgical | Cardiac/Thoracic | unspecified | Direct and indirect | payer | payer | ratio | t-based proxy | N/A | ratio | |
| Mair, S. D. | | | | | | | | | | | | | | | | | |
| Hawk, G. S. | Increased Health Care Costs and Opioid Use in Patients with Anxiety a | nd | | | | | | | | | | | | | | | |
| Thompson, K. L. Hettrich, C. M. | Depression Undergoing Rotator Cuff Repair | | | | | orthopedic, surgical, | _ | | | | | | | | | | |
| Jacobs, C. A. | | | | | | depression, Rotator Cut | II . | Orthopedic rotate | r | | | | | | | | |
| Jacobs, C. A. | 2020 | US | US: Kentucky | | 170329 natients | | | cuff renair | | Direct and indirect | naver | naver | none: charges | Charges/Reimbursemen t-based | N/A | charges | |
| Jacobs, C. A. Alli, V. V. | 2020 | US | US; Kentucky | | 170329 patients | Repair | Surgical | cuff repair | partial care path | Direct and indirect | payer | payer | none; charges | t-based | N/A | charges | |
| Alli, V. V. Zhang, J. | 2020 | | US; Kentucky | | 170329 patients | | | cuff repair | | Direct and indirect | payer | payer | none; charges | Charges/Reimbursemen t-based | N/A | charges | |
| Alli, V. V. | 2020 Impact of incisional hernia development following abdominal operation on total beathcare cost | | US; Kentucky | | 170329 patients | | | cuff repair | | Direct and indirect | payer | payer | none; charges | Charges/Reimbursemen t-based | N/A | charges | |
| Alli, V. V. Zhang, J. | 2020 Impact of incisional hernia development following abdominal operation on total healthcare cost | | US; Kentucky | | 170329 patients | Repair | | cuff repair | | Direct and indirect | payer | payer | none; charges | t-based | N/A | charges | |
| Alli, V. V. Zhang, J. Telem, D. A. | 2020 Impact of incisional hernia development following abdominal operation on total healthcare cost 2018 | | US; Kentucky US; Texas | | 170329 patients | | | cuff repair Abdominal | | Direct and indirect | | payer | | Charges/Reimbursemen t-based Charges/Reimbursemen t-based | N/A N/A | charges | |
| Alli, V. V. Zhang, J. Telem, D. A. Robles, A. J. | 2020 Impact of incisional herria development following abdominal operation on total healthcare cost 2018 | ns | | | | Repair Surgical, hernia, | Surgical | cuff repair | partial care path | | | | | t-based | | | |
| Alli, V. V. Zhang, J. Telem, D. A. Robles, A. J. Kornblith, L. Z. Hendrickson, C. M. | on total healthcare cost 2018 | ns | | | | Repair Surgical, hernia, | Surgical | cuff repair | partial care path | | | | | t-based | | | |
| Alli, V. V. Zhang, J. Telem, D. A. Robles, A. J. Kornblith, L. Z. Hendrickson, C. M. Howard, B. M. | 2020 Impact of incisional hernia development following abdominal operation on total healthcare cost 2018 Health care utilization and the cost of postraumatic acute respiratory distress syndrome care | ns | | | | Repair Surgical, hernia, | Surgical | cuff repair | partial care path | | | | | t-based | | | |
| Alli, V. V. Zhang, J. Telem, D. A. Robles, A. J. Kornblith, L. Z. Hendrickson, C. M. Howard, B. M. Conroy, A. S. Moazed, F. | on total healthcare cost 2018 Health care utilization and the cost of posttraumatic acute respiratory distress syndrome care | ns US | US; Texas | | 14290 patients | Repair Surgical, hernia, Incisional hernia | Surgical Surgical | cuff repair Abdominal | partial care path | Direct and indirect | payer | payer | none; charges | t-based Charges/Reimbursemen t-based Charges/Reimbursemen | NA | charges | |
| Alli, V. V. Zhang, J. Telem, D. A. Robles, A. J. Kornblith, L. Z. Hendrickson, C. M. Howard, B. M. Conroy, A. S. Moazed, F. | on total healthcare cost 2018 Health care utilization and the cost of posttraumatic acute respiratory | ns | | | | Repair Surgical, hernia, | Surgical Surgical | cuff repair Abdominal | partial care path | | payer | | | t-based Charges/Reimbursemen t-based Charges/Reimbursemen | | | |
| Alli, V. V. Zhang, J. Telem, D. A. Robles, A. J. Kornblith, L. Z. Hendrickson, C. M. Howard, B. M. Conroy, A. S. Moazed, F. Catfos, C. S. van Dijck, J. T. J. M. van Essen, T. A. | on total healthcare cost 2018 Health care utilization and the cost of posttraumatic acute respiratory distress syndrome care | ns US | US; Texas | | 14290 patients | Repair Surgical, hernia, Incisional hernia | Surgical Surgical | cuff repair Abdominal | partial care path | Direct and indirect | payer | payer | none; charges | t-based Charges/Reimbursemen t-based Charges/Reimbursemen | NA | charges | |
| Alli, V. V. Zhang, J. Telem, D. A. Kombihi, L. Z. Hendrickson, C. M. Howard, B. M. Conroy, A. S. Moazed, F. <i>Catesa</i> , C. S. <i>Tan Digk</i> , J. T. J. M. van Digkan, T. J. J. M. | on total healthcare cost 2018 Health care utilization and the cost of posttraumatic acute respiratory distress syndrome care 2018 Functional and patient-reported outcome versus in-hospital costs after | ns US US | US; Texas | | 14290 patients | Repair Surgical, hernia, Incisional hernia | Surgical Surgical | cuff repair Abdominal | partial care path | Direct and indirect | payer | payer | none; charges | t-based Charges/Reimbursemen t-based Charges/Reimbursemen | NA | charges | |
| Alli, V. V. Zhang, J. Telem, D. A. Robles, A. J. Kornblith, L. Z. Hendrickson, C. M. Howard, B. M. Conroy, A. S. Moazed, F. Catfos, C. S. van Dijck, J. T. J. M. van Essen, T. A. | on total healthcare cost 2018 Health care utilization and the cost of posttraumatic acute respiratory distress syndrome care 2018 | ns US US | US; Texas | | 14290 patients | Repair Surgical, hernia, Incisional hernia Acute care, trauma care Acute care, brain injury | Surgical Surgical emergency care & acute care | cuff repair Abdominal | partial care path | Direct and indirect | payer | payer | none; charges | t-based Charges/Reimbursemen t-based Charges/Reimbursemen t-based | NA | charges | |
| Alli, V. V. Zhang, J. Telem, D. A. Rohles, A. J. Kombith, L. Z. Hendrickson, C. M. Howard, B. M. Comroy, A. S. Moazed, F. Cattos, C. S. Van Dijek, J. T. J. M. Van Essen, T. A. Dijkman, M. D. Mostert, C. Q. B. Polinder, S. Peul, W. C. | on total healthcare cost 2018 Health care utilization and the cost of posttraumatic acute respiratory distress syndrome care 2018 Functional and patient-reported outcome versus in-hospital costs after traumatic acute subdural hematoma (r-ASDIT); a neurosurgical paradox | us US US | US; Texas US; California | | 14290 patients 1552 patients | Repair Surgical, hernia, Incisional hernia Acute care, trauma care Acute care, trauma care Acute care, trauma care acute subdural | Surgical Surgical emergency care & acute care | cuff repair Abdominal | partial care path full care path unspecified | Direct and indirect | payer | раучет | none; charges none; charges | t-based Charges/Reimbursemen t-based Charges/Reimbursemen t-based | NA | charges | |
| Alli, V. V. Zhang, J. Telem, D. A. Robles, A. J. Kornblith, L. Z. Hendrickson, C. M. Howard, B. M. Controy, A. S. Moazed, F. Cattos, C. S. T. J. J. J. M. van Dijeka, J. T. J. M. van Dijekan, M. D. Mostert, C. Q. B. Polinder, S. | on total healthcare cost 2018 Health care utilization and the cost of posttraumatic acute respiratory distress syndrome care 2018 Functional and patient-reported outcome versus in-hospital costs after | us US US | US; Texas | | 14290 patients | Repair Surgical, hernia, Incisional hernia Acute care, trauma care Acute care, brain injury | Surgical Surgical emergency care & acute care | cuff repair Abdominal | partial care path | Direct and indirect | payer | раучет | none; charges none; charges | t-based Charges/Reimbursemen t-based Charges/Reimbursemen t-based | NA | charges | |
| Alli, V. V. Zhang, J. Telem, D. A. Robbes, A. J. Kornbiht, L. Z. Hendrickson, C. M. Howard, B. M. Controy, A. S. Moazed, F. Cattos, C. S. Van Dijek, J. T. J. M. Van Essen, T. A. Dijkman, M. D. Moastert, C. Q. B. Polinder, S. Peal, W. C. C. M. Thakore, R. V. Greenberg, S. E. | on total healthcare cost 2018 Health care utilization and the cost of posttraumatic acute respiratory distress syndrome care 2018 Functional and patient-reported outcome versus in-hospital costs after traumatic acute subdural hematoma (t-ASDH): a neurosurgical paradox 2019 | us US US | US; Texas US; California | | 14290 patients 1552 patients | Repair Surgical, hernia, Incisional hernia Acute care, trauma care Acute care, trauma care Acute care, trauma care acute subdural | Surgical Surgical emergency care & acute care | cuff repair Abdominal | partial care path full care path unspecified | Direct and indirect | payer | раучет | none; charges none; charges | t-based Charges/Reimbursemen t-based Charges/Reimbursemen t-based | NA | charges | |
| Alli, V. V. Zhang, J. Telem, D. A. Robles, A. J. Komblith, L. Z. Hendrickson, C. M. Howard, B. M. Conny, A. S. Moazed, F. Cana Dick, J. T. J. A. Van Essen, T. A. Dijkman, M. D. Mostert, C. Q. B. Polinder, S. Peul, W. C. W. Greenberg, S. E. Shi, H. | on total healthcare cost 2018 Health care utilization and the cost of posttraumatic acute respiratory distress syndrome care 2018 Functional and patient-reported outcome versus in hospital costs after traumatic acute subdural hematoma (t-ASDH): a neurosurgical paradox 2019 Surgical site infection in orthopedic trauma: A case-control study | us US US | US; Texas US; California | | 14290 patients 1552 patients | Repair Surgical, hernia, Incisional hernia Acute care, trauma care Acute care, trauma care Acute care, trauma care acute subdural | Surgical Surgical emergency care & acute care | cuff repair Abdominal | partial care path full care path unspecified | Direct and indirect | payer | раучет | none; charges none; charges | t-based Charges/Reimbursemen t-based Charges/Reimbursemen t-based | NA | charges | |
| Alli, V. V. Zhang, J. Telem, D. A. Robles, A. J. Kornbilh, L. Z. Hendrickson, C. M. Howard, B. M. Comroy, A. S. Maazed, F. Van Dick, J. T. J. M. van Dick, J. T. J. M. van Dick, J. T. J. M. Van Dick, S. Polinder, S. Peul, W. C. Greenberg, S. E. Shi, H. Foxe, A. M. Francois, E. L. | on total healthcare cost 2018 Health care utilization and the cost of posttraumatic acute respiratory distress syndrome care 2018 Functional and patient-reported outcome versus in-hospital costs after traumatic acute subdural hematoma (t-ASDH): a neurosurgical paradox 2019 | us US US | US; Texas US; California | | 14290 patients 1552 patients | Repair Surgical, hernia, Incisional hernia Acute care, trauma care Acute care, trauma care Acute care, trauma care acute subdural | Surgical Surgical emergency care & acute care | cuff repair Abdominal | partial care path full care path unspecified | Direct and indirect | payer | раучет | none; charges none; charges | t-based Charges/Reimbursemen t-based Charges/Reimbursemen t-based Absorption costing - unspecified generic | NA | charges | |
| Alli, V. V. Zhang, J. Telem, D. A. Robbes, A. J. Kornbiht, L. Z. Hendrickson, C. M. Howard, B. M. Controy, A. S. Moazed, F. Cattos, C. S. Van Dijek, J. T. J. M. Van Essen, T. A. Dijkman, M. D. Mostert, C. Q. B. Polinder, S. Peat, W. C. C. M. Thakore, R. V. Greenberg, S. E. Shi, H. Francis, E. L. Pranbick, M. A. | on total healthcare cost 2018 Health care utilization and the cost of posttraumatic acute respiratory distress syndrome care 2018 Functional and patient-reported outcome versus in hospital costs after traumatic acute subdural hematoma (t-ASDH): a neurosurgical paradox 2019 Surgical site infection in orthopedic trauma: A case-control study | us US US | US; Texas US; California | | 14290 patients 1552 patients | Repair Sorgical, hernia, Incisional hernia Acute care, trauma care Acute care, trauma care Acute care, brain injury acute subdural hernatona, trauma care | Surgical Surgical emergency care & emergency care & cute care | uff repair Abdominal | partial care path full care path unspecified partial care path | Direct and indirect | payer | раучет | none; charges none; charges | t-based Charges/Reimbursemen t-based Charges/Reimbursemen t-based Absorption costing - unspecified/generic Charges/Reimbursemen | NA | charges | |
| Alli, V. V. Zhang, J. Telem, D. A. Rohles, A. J. Kombith, L. Z. Hendrickson, C. M. Howard, B. M. Comroy, A. S. Moazed, F. Cattos, C. S. Moazed, F. Cattos, C. S. Van Dijek, J. T. J. M. Moasteri, C. Q. B. Polinder, S. Peul, W. C. C. W. Hosisteri, C. Q. B. Polinder, S. Feul, W. C. W. Shi, H. Transch, E. L. Francois, E. L. Francis, E. J. Francis, E. J. Smith, B. D. | on total healthcare cost 2018 Health care utilization and the cost of posttraumatic acute respiratory distress syndrome care 2018 Functional and patient-reported outcome versus in-hospital costs after traumatic acute subdural hematoma (t-ASDH): a neurosurgical paradox 2019 Surgical site infection in orthopedic trauma: A case-control study evaluating risk factors and cost | us US VS the Netherland | US; Texas US; California ds The Netherlands | | 14290 patients 1552 patients 108 patients | Repair Surgical, hernia, Incisional hernia Acute care, trauma care Acute care, trauma care Acute care, trauma care acute subdural | Surgical Surgical emergency care & emergency care & cute care | cuff repair Abdominal | partial care path full care path unspecified | Direct and indirect Direct and indirect Direct and indirect | payer | payer payer provider | none; charges none; charges reference pricing | t-based Charges/Reimbursemen t-based Charges/Reimbursemen t-based Absorption costing - unspecified/generic Charges/Reimbursemen | N/A N/A Paper only | charges charges | |
| Alli, V. V. Zhang, J. Telem, D. A. Robbes, A. J. Kornbiht, L. Z. Hendrickkon, C. M. Heward, B. M. Conroy, A. S. Moazed, F. Catto, C. Y. T. J. M. Van Eisen, T. A. Dijkman, M. D. Moster, C. Q. B. Poul, W. C. <i>de. Builder, C. C. W.</i> Thakore, R. V. Greenberg, S. E. Shi, H. Francois, E. L. Frankie, K. M. Smith, B. D. Jiang, J. | on total healthcare cost 2018 Health care utilization and the cost of posttraumatic acute respiratory distress syndrome care 2018 Functional and patient-reported outcome versus in-hospital costs after traumatic acute subdural hematoma (t-ASDH): a neurosurgical paradox 2019 Surgical site infection in orthopedic trauma: A case-control study evaluating risk factors and cost 2015 | us US v? The Netherland US | US; Texas US; California ds The Netherlands | | 14290 patients 1552 patients 108 patients | Repair Sorgical, hernia, Incisional hernia Acute care, trauma care Acute care, trauma care Acute care, brain injury acute subdural hernatona, trauma care | Surgical Surgical emergency care & emergency care & cute care | uff repair Abdominal | partial care path full care path unspecified partial care path | Direct and indirect Direct and indirect Direct and indirect | payer | payer payer provider | none; charges none; charges reference pricing | t-based Charges/Reimbursemen t-based Charges/Reimbursemen t-based Absorption costing - unspecified/generic Charges/Reimbursemen | N/A N/A Paper only | charges charges | |
| Alli, V. V. Zhang, J. Telem, D. A. Robbes, A. J. Kornbiht, L. Z. Hendrickkon, C. M. Heward, B. M. Conroy, A. S. Moazed, F. Cantoy, A. S. Moazed, F. Conroy, A. S. Moazed, F. C. S. Shi, H. Smith, B. D. Jiang, J. Shih, Y. C. Giordano, S. H. | on total healthcare cost 2018 Health care utilization and the cost of posttraumatic acute respiratory distress syndrome care 2018 Functional and patient-reported outcome versus in-hospital costs after traumatic acute subdural hematoma (t-ASDH): a neurosurgical paradox 2019 Surgical site infection in orthopedic trauma: A case-control study evaluating risk factors and cost | us US v? The Netherland US | US; Texas US; California ds The Netherlands | | 14290 patients 1552 patients 108 patients | Repair Sorgical, hernia, Incisional hernia Acute care, trauma care Acute care, trauma care Acute care, brain injury acute subdural hernatona, trauma care | Surgical Surgical emergency care & emergency care & cute care cute care | uff repair Abdominal | partial care path full care path unspecified partial care path | Direct and indirect Direct and indirect Direct and indirect | payer | payer payer provider | none; charges none; charges reference pricing | t-based Charges/Reimbursemen t-based Charges/Reimbursemen t-based Absorption costing - unspecified/generic Charges/Reimbursemen | N/A N/A Paper only | charges charges | |
| Alli, V. V. Zhang, J. Telem, D. A. Rohles, A. J. Kombith, L. Z. Hendrickson, C. M. Howard, B. M. Connoy, A. S. Moazed, F. Cattos, C. S. Moazed, F. Cattos, C. S. Moazed, F. Cattos, C. S. Dijkman, M. D. Mosiert, C. Q. B. Polinder, S. Peul, W. C. Shi, H. A. Trancis, E. L. Prablek, M. A. Masane, S. V. Smith, B. D. Jiang, J. S. | on total healthcare cost 2018 Health care utilization and the cost of posttraumatic acute respiratory distress syndrome care 2018 Functional and patient-reported outcome versus in-hospital costs after traumatic acute subdural hematoma (t-ASDH): a neurosurgical paradox 2019 Surgical site infection in orthopedic trauma: A case-control study evaluating risk factors and cost 2015 | us US v? The Netherland US | US; Texas US; California ds The Netherlands | | 14290 patients 1552 patients 108 patients | Repair Sorgical, hernia, Incisional hernia Acute care, trauma care Acute care, trauma care Acute care, brain injury acute subdural hernatona, trauma care | Surgical Surgical emergency care & emergency care & cute care cute care | uff repair Abdominal | partial care path full care path unspecified partial care path | Direct and indirect Direct and indirect Direct and indirect | payer payer payer | payer payer provider | none; charges none; charges reference pricing | t-based Charges/Reimbursemen t-based Charges/Reimbursemen t-based Absorption costing - unspecified/generic Charges/Reimbursemen | N/A N/A Paper only | charges charges | |

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| Lentz, T. A. Rhon, D. I. George, S. Z. | Predicting Opioid Use, Increased Health Care Utilization and High Cos for Musculoskeletal Pain: What Factors Mediate Pain Intensity and Disability? | sts | | | | | | | | | | | | | | |
|--|---|------|----------------------------|----------------------------------|---|---------------|--------------------|--------------------------|-----------------------------|----------|----------|------------------------------------|---|--------------|------------------------------------|--------|
| | 2020 | US | US; Washington | 283 patients | Pain, Musculoskeletal Pain | Pain medicine | | partial care path | Direct and indirect p | provider | provider | unspecified | Absorption costing - unspecified/generic | unspecified | | no |
| Kaul, S. | | 00 | , musangton | -os pareno | | . an meanait | | partai cure paul | | | pro rate | unspeemed | and the Price of | unspectieu | | |
| Korgenski, E. K. Ying, J. | | | | | | | | | | | | | | | | |
| Ng, C. F. | A retrospective analysis of treatment- related hospitalization costs of pediatric, adolescent, and young adult acute lymphoblastic leukemia | | | | Once la ma la shara i | | | | | | | | | | | |
| Smits-Seemann, R. R. | pediatic, adorescent, and young addit acute tymphonastic reukenna | | single center, | | Oncology, leukemia, acute lymphoblastic | | Pediatric | | | | | | Absorption costing - | | | |
| Nelson, R. E. Androwe S | 2016 | US | US; Utah retrospective | 505 patients | leukemia | Pediatrics | Oncology | partial care path | Direct and indirect p | provider | provider | ABC | ABC | implemented | n | 10 |
| Silva-Velazco, J. | | | | | | | | | | | | | | | | _ |
| Dietz, D. W. Stocchi, L. | Considering Value in Rectal Cancer Surgery: An Analysis of Costs and | d | | | | | | | | | | | | | | |
| Costedio, M. | Outcomes Based on the Open, Laparoscopic, and Robotic Approach for | er - | | | | | | | | | | | | | | |
| Gorgun, E. | Proctectomy | | | | | | | partial care path | | | | | Absorption costing - | | | |
| Kalady, M. F. Kessler, H | 2017 | US | US; Ohio | 488 patients | Oncology, rectal cancer | Oncology | | (surgical episode) | Direct and indirect p | provider | provider | unspecified | Absorption costing - unspecified/generic | unspecified | n | 10 |
| Canizares, M. F. | | | | | | 10 F | | | | | | | | | | |
| Feldman, L. | | | | | | | | | | | | | | | | |
| Miller, P. E. Waters, P. M. | Complications and Cost of Syndactyly Reconstruction in the United States: Analysis of the Pediatric Health Information System | | | | | | | | | | | none; charges, | | | charges, | |
| Bae, D. S. | states. Analysis of the Pediatric Health Information System | | | 38 hospitals 2047 | Pediatrics, orthopedic, | | | | | provider | | transformed with | | | transformed with | |
| | 2017 | US | US; Massachusetts | 38 hospitals, 2047 procedures | surgical, Syndactyly Reconstruction | Pediatrics | Pediatric surgical | partial care path | p Direct and indirect (| | payer | cost-to-charge ratio | Charges/Reimbursemen t-based proxy | N/A | cost-to-charge ratio n | 10 |
| Vuong, B | | | | , | | | is surgicul | | | / | | | | | | |
| Dehal, A | | | | | | | | | | | | | | | | |
| Uppal, A Stern, S L | What Are the Most Significant Cost and Value Drivers for Pancreatic | | | | | | | | | | | | | | | |
| Mejia, J | Resection in an Integrated Healthcare System? | | | | a : 15 | | | | | | | | | | | |
| Weerasinghe, R | 2018 | US | US; California | 796 patients | Surgical, Pancreas, Pancreatic Resection | Surgical | Endocrine | partial care path | Direct and indirect p | provider | provider | unspecified | Absorption costing - unspecified/generic | unspecified | | 10 |
| Sanaiha, Y. | | 00 | 50, cuntonia | 7.50 paucins | - anercane Resection | Jungeral | Lindocriffic | partia care paul | | | Porting | anspectited | | unspectition | | ~ |
| Mantha, A. | | | | | | | | | | | | | | | | |
| Ziaeian, B. Juo, Y. Y. | Trends in Readmission and Costs After Transcatheter Implantation Ver | rsus | | | Cardiology, Renal, | | | | | | | none; charges, | | | charges, | |
| Juo, Y. Y. Shemin. R. J. | Surgical Aortic Valve Replacement in Patients With Renal Dysfunction | n | | 350,609 isolated | Aortic Repair, Thoracic | | | | | | | transformed with | | | transformed with | |
| Benharash, P. | 2020 | US | US; LA | aortic valve replacements | Endovascular Aortic Repair | Surgical | Cardiao/Thom | partial care path | p Direct and indirect (j | provider | nauar | cost-to-charge ratio | Charges/Reimbursemen | N/A | cost-to-charge ratio n | |
| Chatfield, S. C. | 2020 | 05 | US, LA | replacements | Repair | Jurgical | Carutac/1 horacte | partial care path | Direct and indirect (| proxy) | payer | rauo | t-based proxy | INA | rauo n | N |
| Volpicelli, F. M. | | | | | | | | | | | | | | | | |
| Adler, N. M. | Bending the cost curve: time series analysis of a value transformation | | | | | | | | | | | | | | | |
| Kim, K. L. Jones, S. A. | programme at an academic medical centre | | | | | | | | | | | | | | | |
| Francois, F. | 2010 | | | 74 projects, 160434 | | | | | D: . | | | | 197 - C | | у | yes se |
| Shah B C | 2019 | US | US; New York retrospective | patients, | Multiple | multiple | | partial care path | Direct p | provider | provider | ABC | Direct costing | implemented | s | heet |
| Chawla, S. S. Whitson, A. J. | | | | | | | | | | | | | | | | |
| Schiffman, C. J. | Drivers of lower inpatient hospital costs and greater improvements in | | | | orthonadios athresister | | | | | | | unspecified; | | | | |
| Matsen, F. A. | health-related quality of life for patients undergoing total shoulder and ream-and-run arthroplasty | | | | orthopedics, athroplasty total shoulder | | | | | | | Hospital accounting data | | | | |
| Hsu, J. E. | | | | | and ream-and-run | | Orthopedic, | | | | | not otherwise | Absorption costing - | | | |
| | 2020 | US | US; Washington | 433 patients | arthroplasty | Surgical | arthroplasty | unspecified | Direct and indirect p | provider | provider | specified | unspecified/generic | implemented | | .0 |
| Klink, A. J. Chmielowski, B. | | | | | | | | | | | | | | | | |
| Feinberg, B. | Health Care Resource Utilization and Costs in First-Line Treatments fo | or | | | | | | | | | | | | | | |
| Ahsan, S. | Patients with Metastatic Melanoma in the United States | | | | | | | | | | | | | | | |
| Nero, D. Liu, F. X. | | | | | | | | | | | | none, | Charges/Reimbursemen | | | |
| | 2019 | US | US; various states | 1599 patients | Oncology, melanoma | Oncology | | unspecified | Direct and indirect p | payer | payer | reimbursements | t-based | N/A | claims n | 10 |
| Chotai, S. | | | | | | | | | | | | | | | | |
| Sivaganesan, A. Parker, S. L. | Drivers of Variability in 90-Day Cost for Elective Anterior Cervical | | | | | | | | | | | | | | | |
| Sielatycki, J. A. | Drivers of variability in 90-Day Cost for Elective Anterior Cervical Discectomy and Fusion for Cervical Degenerative Disease | | | | | | | | | | | | | | | |
| McGirt, M. J. | | | | | Spine, cervical | | | | | | | none, | Charges/Reimbursemen | | | |
| Devin, C. J. | 2018 | US | US; Tennessee | 445 patients | degenerative disease | Surgical | Spine | partial care path | Direct and indirect p | payer | payer | reimbursements | t-based | N/A | reimbursements n | 10 |
| Sanaiha, Y. | | | | | | | | | | | | | | | | |
| Kavianpour, B. Downey, P. | National Study of Index and Readmission Mortality and Costs for | | | | | | | | | | | | | | | |
| Morchi, R. | National Study of Index and Readmission Mortality and Costs for Thoracic Endovascular Aortic Repair in Patients With Renal Disease | | | | a r 1 - a | | | | | | | none; charges, | | | charges, | |
| Shemin, R. J. | | | | | Cardiology, Surgical, Aortic repair, Renal | | | | | provider | | transformed with cost-to-charge | Charges/Reimbursemen | | transformed with cost-to-charge | |
| Benharash, P. | 2020 | US | US; California | 121046 patients | Disease | Surgical | Cardiac/Thoracic | unspecified | p Direct and indirect (j | | payer | cost-to-charge ratio | t-based proxy | N/A | ratio n | .10 |
| Jain, N. | | | | | | | | | | | | | | | | |
| Brock, J. L. | | | | | | | | | | | | | | | | |
| Phillips, F. M. Weaver, T. | Chronic preoperative opioid use is a risk factor for increased complications, resource use, and costs after cervical fusion | | | | | | | | | | | | | | | |
| Khan, S. N. | complications, resource use, and costs after cervical fusion | | | | Coinc cominal | | | | | | | | Character Division have a set | | | |
| | 2018 | US | US; various states | 29101 patients | Spine, cervical degenerative disease | Surgical | Spine | partial care path | Direct and indirect p | oaver | paver | none, reimbursements | Charges/Reimbursemen t-based | N/A | charges " | 10 |
| Featherall, J. | | 00 | ora, ranous sidica | 22101 patients | augenerative uisease | Jungeral | opus | Parton cure paur | | | Pa/sa | reanoursements | - cardon | | compes 1 | ~ |
| Brigati, D. P. | | | | | | | | | | | | | | | | |
| Arney, A. N. Faour, M. | Effects of a Total Knee Arthroplasty Care Pathway on Cost, Quality, an | nd | | | | | | | | | | | | | | |
| Faour, M. Bokar, D. V. | Patient Experience: Toward Measuring the Triple Aim | | | | | | | | | | | | | | | |
| Murray, T. G. | 2010 | | 10.01 | | orthopedics, total knee | | Orthopedic, | full care path (surgical | | | | Relative Value | 1947 - A. A. A. | | | yes se |
| Mollov R M | 2019 | US | US; Ohio | 6760 surgeries | athroplasty | Surgical | arthroplasty | episode) | Direct p | provider | provider | Unit costing | Direct costing | implemented | 5 | sheet |
| Ackerman, R. S. Iirschi, M. | | | | | | | | | | | | | | | | |
| Alford, B. | Enhanced REVENUE After Surgery? A Cost-Standardized Enhanced | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| Evans, T. | Recovery Pathway for Mastectomy Decreases Length of Stay | | | | | | | | | | | | | | | |
| Evans, T. Kiluk, J. V. | Recovery Pathway for Mastectomy Decreases Length of Stay | | | | | | | | | | | | Charges/Reimbursemen | | | |
| Evans, T. | Recovery Pathway for Mastectomy Decreases Length of Stay 2019 | US | US; unspecified | 103 patients | Oncology, mastectomy | Oncology | | unspecified | Direct and indirect p | payer | payer | none; charges | | N/A | charges n | 10 |

yes see second sheet

yes see second sheet

| Williams, S. B. Shan, Y. Jazzar, U. | Comparing Survival Outcomes and Costs Associated With Radical Cystectomy and Trimodal Therapy for Older Adults With Muscle- | | | | | | | | | | | | | | | |
|--|---|----|---|-----------------|---|--------------------------------|---------------------------|---|---------------------|-----------------------|----------------|-----------------------------------|---|-------------------|---------------------------------|---|
| Mehta, H. B. Baillargeon, J. G. | Cystectomy and Trimodal Therapy for Older Adults With Muscle- Invasive Bladder Cancer | | | | | | | | | | | | | | | |
| Huo, J. | 2018 | US | US; various states | 3200 patients | Oncology, urology, surgical, bladder cancer | Oncology | | partial care path | Direct and indirec | et naver | payer | none, reimbursements | Charges/Reimbursemen t-based | N/A | charges | |
| Schilling, P. L. | 2018 | 03 | 03, various states | 5200 patients | surgical, bladder cancer | Oncorogy | | partial care path | Direct and manee | er payer | payer | rennoursements | Poased | N/A | charges | |
| He, J. Chen, S. | | | | | | | | | | | | | | | | |
| Placzek, H. | Risk-Adjusted Cost Performance for 90-Day Total Hip Arthroplasty Episodes: Comparing US Hospitals Nationwide Before CJR | | | | | | | | | | | | | | | |
| Bini, S. A. | -hoored contraction and and and and and and and and and an | | | | | | Orthopedic, | | | | | none, | Charges/Reimbursemen | | | |
| | 2020 | US | US; various states | 366380 patients | Surgical | Surgical | arthroplasty | partial care path | Direct and indirec | ct payer | payer | reimbursements | t-based | N/A | charges | _ |
| Lott, A. Haglin, J. | | | | | | | | | | | | | | | | |
| Saleh, H. | Using a Validated Middle-Age and Geriatric Risk Tool to Identify Early | | | | | | | | | | | unspecified; Hospital | | | | |
| Hall, J. Egol, K. A. | (48 Hours) Hospital Mortality and Associated Cost of Care | | | | | | | | | | | accounting data | | | | |
| Konda, S. R. | 2018 | US | US; various states | 1486 patients | Acute care, geriatrics, Emergency care | emergency care & acute care | k. | partial care path | Direct | provider | provider | not otherwise specified | Direct costing | implemented | | |
| Ackerman, S. J. | 2018 | 03 | 03, various states | 1400 patients | Entergency care | acute care | | partial care paul | Direct | provider | provider | specified | Direct costing | implemented | | - |
| Knight, T. Wahl, P. M. | Health care utilization and costs following amplified versus non-amplifie | d | | | | | | | | | | | | | | |
| Cartwright, C. P. | molecular probe testing for symptomatic patients with suspected | - | | | | | | | | | | | | | | |
| | vulvovaginitis: A us commercial payer population | | | | Gynecology, obstetrics, | gynecology & | | | | | | none, | Charges/Reimbursemen | | | |
| | 2019 | US | US; various states | 313145 patients | vulvocvaginitis | obstetrics | | unspecified | Direct and indirec | et payer | payer | reimbursements | t-based | N/A | charges | |
| Peard, L. Goodwin, J. | | | | | | | | | | | | | | | | |
| Hensley, P. | Examining and Understanding Value: The Impact of Preoperative | | | | | | | | | | | unspecified; Hospital | | | | |
| Dugan, A. | Characteristics, Intraoperative Variables, and Postoperative Complication on Cost of Robot-Assisted Lanaroscopic Radical Prostatectomy | 15 | | | Surgical, robot, Robot- | | | | | | | accounting data | | | | |
| Bylund, J. Harris, A. M. | 2019 | US | | | Assisted Laparoscopic | | | | D: | | | not otherwise | Absorption costing - | | | |
| Patel, M. I. | 2019 | US | US; Kentucky | 275 patients | Radical Prostatectomy | Surgical | Prostatectomy | partial care path | Direct and indirec | ei provider | provider | specified | unspecified/generic | implemented | | - |
| Ramirez, D. | Lay health worker-led cancer symptom screening intervention and the | | | | | | | | | | | | | | | |
| Agajanian, R. Agajanian, H. | effect on patient-reported satisfaction, health status, health care use, and | | | | | | | | | | | | | | | |
| Bhattacharya, J. | total costs: Results from a tri-part collaboration | | | | | | | | | | | none, | Charges/Reimbursemen | | | |
| Bundorf, K. M. | 2020 | US | US; California | 425 enrollees | Oncology | Oncology | | partial care path | Direct and indirec | ct payer | payer | | Charges/Reimbursemen t-based | N/A | charges | |
| Harris, A. M. | | | | | | | | | | | | | | | | |
| Hensley, P. Goodwin, J. | Examining and Understanding Value: The Cost of Preoperative | | | | | | | | | | | unspecified; | | | | |
| Dugan, A. | Characteristics, Intraoperative Variables and Postoperative Complication | s | | | | | | | | | | Hospital accounting data | | | | |
| Peard, L. Bell, J. R. | of Minimally Invasive Partial Nephrectomy | | | | Urology, surgical, | | | | | | | not otherwise | Absorption costing - | | | |
| Bell, J. K. Bhaladi A Stearns, L. J. | 2019 | US | US; Kentucky | 215 patients | Nephrectomy | Surgical | kidney | partial care path | Direct and indirec | ct provider | provider | specified | unspecified/generic | implemented | | |
| Stearns, L. J. Narang, S. | | | | | | | | | | | | | | | | |
| Albright, R. E. | Assessment of Health Care Utilization and Cost of Targeted Drug Delivery and Conventional Medical Management vs Conventional | | | | | | | | | | | | | | | |
| Hammond, K. Xia. Y. | Medical Management Alone for Patients With Cancer-Related Pain | | | | | | | | | | | | | | | |
| Richter, H. B. | 2019 | US | US; various states | 5215 patients | Oncology, Pain, pain management | Oncology | | partial care path | Direct and indirec | ct naver | payer | none; charges | Charges/Reimbursemen t-based | N/A | charges | |
| McCreary, D. L. | | | 55, futious Mates | S215 patients | managentein | Oncorogy | | partia care paur | conces and mullee | - payet | pays. | none, enarges | | | endiges | - |
| Dugarte, A. J. Vang S | | | | | | | | | | | | | | | | |
| Vang, S. Plowman, B. | Patient-Level Value Analysis: An Innovative Approach to Optimize Care Delivery | 2 | single cen | | | | | | | | | | | | | |
| Williams, B. R. | | | prospectiv | e, | | | Orthopedic | partial care path (full | | | | | Absorption costing - | | | |
| Parikh, H. R. Cunninghom, B. P. | 2019 | US | US; Minnesota mapping | 67 patients | orthopedics | Surgical | fracture | surgical episode) | Direct and indirec | ct provider | provider | TDABC | TDABC | Paper only | | |
| Caloway, C. Yamasaki, A. | | | single cen | | | | | | | | | | | | | |
| Callans, K. M. | Quantifying the benefits from a care coordination program for | | retrospecti direct | ve, | | | | | | | | | | | | |
| Shah, M. Kaplan, R. S. | tracheostomy placement in neonates | | direct observatio | n, | | | | | | | | | | | | |
| Kaplan, R. S. Hartnick, C. | 2020 | US | pre and po US; Massachusetts compariso | | Neonatal, pediatrics, tracheostomy, surgical | Dadiate' | Badiatei - M- | tal partial area | Direct and indirec | at provide- | providar | TDABC | Absorption costing - TDABC | Paper only | | |
| Navarro, S. M. | 2020 | 03 | 0.5, massachusetts compariso | ii 10 patients | uacneosiomy, surgical | reulaules | reutatric Neona | tal partial care path | Direct and indirect | er provider | provider | IDABU | IDABU | raper only | | - |
| Wang, E. Y. | | | | | | | | | | | | | | | | |
| Haeberle, H. S. Mont, M. A. | Machine Learning and Primary Total Knee Arthroplasty: Patient Forecasting for a Patient-Specific Payment Model | | | | | | | | | | | none; charges, | | | charges, | |
| Krebs, V. E. | · occasing to a ratent-specific rayment woder | | | | orthopedics, total knee | | Orthopedic. | partial care path | | provider | | transformed wit cost-to-charge | h Charges/Reimbursemen | | transformed w cost-to-charge | |
| Patterson, B. M. Romkumar, P. N. | 2018 | US | US; New York | 141446 patients | arthroplasty | Surgical | arthroplasty | (surgical episode) | Direct and indirec | | payer | ratio | t-based proxy | N/A | ratio | |
| Skill, N. J. Butler, J. | | | | | | | | | | | | | | | | |
| Butler, J. O'Brien, D. C. | Financial Burden of Liver Transplant vs Resection for Hepatocellular | | | | | | | | | | | | | | | |
| Kays, J. K. | Carcinoma | | | | | | | | | | | | | | | |
| Kubal, C. Liangpunsakul, S. | | | | | | | | | - | provider | | | Charges/Reimbursemen | | | |
| Ninad N Robinson, Jamie R. | 2019 | US | US; Indiana | 44 patients | Oncology, renal | Oncology | | partial care path | Direct and indirec | ct (proxy) | payer | none; charges | t-based | N/A | charges | _ |
| Avritscher, Elenir B.C. | | | | | | | | | | | | | | | | |
| Gay, James C. Willis, Zachary I. | Measuring the Value of a Clinical Practice Guideline for Children With | | | | | | | | | | | none; charges, | Absorpt | ion | | |
| Willis, Zachary I. Putnam, Luke R. | Perforated Appendicitis | | | | | | | | | | | transformed wit | h costing | - | | |
| Anglemyer, Andrew | 2017 | US | US: Tennessee | 313 patients | Appendicitis, Pediatrics | Pediatrice | Pediatric appendicitis | partial care path (surgical episode) | Direct and indiree | provider, ct paver | provider paver | cost-to-charge ratio | Charges/Reimbursemen unspecit t-based proxy ic | fied/gener N/A | charges | |
| Pedroza Claudia Labovitz, J. M. | 2017 | 03 | 0.5, 1 cmicssee | 515 patients | Appendicitis, rediatrics | - i culau ics | appendicitis | (surgical episode) | Direct and indirec | er payet | providei payer | rano | conseu proxy ic | 131/25 | charges | - |
| Kominski, G. F. | Forecasting the Value of Podiatric Medical Care in Newly Insured | | | | | | | | | | | | | | | |
| | Diabetic Patients During Implementation of the Affordable Care Act in | | | | | | | | | | | none; charges, | | | charges, | |
| 1 | California | | | | | | | | | provider | | transformed wit cost-to-charge | | | transformed w | |
| 1 | | | | | | | | | | | | cost-to-charge ratio | Charges/Reimbursemen t-based proxy | N/A | cost-to-charge ratio | ÷ |
| | 2016 | US | US: California | unspecified | Diabetes | Internal Medicine | | unspecified | Direct and indirect | | | | | | | |

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| Scholtens, D. M. Kuang, A. | | Does value vary by center surgical volume for neonates with truncus | | | | | | | | | | | | | | |
|--|------|---|---------|---------------------|------------------------------|--|---------------|-----------------------------|-----------------------|-----------------------------|----------|----------|------------------------------------|---------------------------------------|-------------|--|
| mg, X. Y. | | Does value vary by center surgical volume for neonates with truncus arteriosus? A multicenter study | | | | Neonatal, pediatrics, | | | | | | | none; charges, transformed with | | | charges, transformed with |
| iyeb, O. M. | | | | | | surgical, cardiology, | | | | р | provider | | cost-to-charge | Charges/Reimbursemen | | cost-to-charge |
| st, L. A. | 2020 | | US | US; various states | 1024 neonates | thoracic surgery | Pediatrics | Pediatric Neonatal | full care path | Direct and indirect (| | payer | ratio | t-based proxy | N/A | ratio no |
| amuta, J. M. | | | | | | | | | | | | | | | | |
| avarro, S. M. aeberle, H. S. | | | | | | | | | | | | | | | | |
| Ielm, J. M. | | Predicting Inpatient Payments Prior to Lower Extremity Arthroplasty Using Deep Learning: Which Model Architecture Is Best? | | | | orthopedics, total hip | | | | | | | | | | |
| Kamath, A. F. | | | | | | arthroplasty, total knee | | Orthopedic. | | | | | none | Charges/Reimbursemen | | payment, cost to |
| Schaffer, J. L. | 2019 | | US | US; New York | 295605 patients | arthroplasty | Surgical | arthroplasty | full care path | Direct and indirect p | payer | payer | reimbursements | t-based | N/A | payor no |
| Saifi, C. | | | | | · · | | | | | | | | | | | |
| Cazzulino, A. | | | | | | | | | | | | | | | | |
| Park, C. Laratta. J. | | National Trends for Primary and Revision Lumbar Disc Arthroplasty Throughout the United States | | | | | | | | | | | none; charges, | | | charges, |
| Louie, P. K. | | Throughout the United States | | | | | | | | | | | transformed with | | | transformed with |
| Shillingford, J. N. | 2018 | | US | US; various states | 12957 patients | Athroplasty | Surgical | Orthopedic, arthroplasty | unenasified | p Direct and indirect (| provider | DOUGT | cost-to-charge ratio | Charges/Reimbursemen t-based proxy | N/A | cost-to-charge ratio no |
| hing, M. S. | 2018 | | 03 | 03, various states | 12957 patients | Annoplasty | Suigical | artinoprasty | unspectricu | Direct and indirect (| proxy) | payer | Tauo | Poased proxy | NA . | iano no |
| Palmer, M. B. | | | | | | | | | | | | | | | | |
| Shah, A. K. | | Three-year results of a prospective statewide insurance coverage pilot for | | | | | | | | | | | | | | |
| Chambers, L. C. Garlock, L. B. | | proton therapy: Stakeholder collaboration improves patient access to care | | | | | | | | | | | | | | |
| Melson, B. B. | | | | | | | | | | | | | | Charges/Reimbursemen | | |
| Count 6 1 | 2020 | | US | US; Texas | 32 patients | Oncology | Oncology | | partial care path | Direct and indirect p | payer | payer | none; charges | t-based | N/A | charges no |
| Mukdad, L. Mantha, A. | | | | | | | | | | | | | | | | |
| Aguayo, E. | | Readmission and resource utilization after orthotopic heart transplant | | | | | | | | | | | | | | |
| Sanaiha, Y. | | versus ventricular assist device in the National Readmissions Database, 2010-2014 | | | | Thornois gur | | | | | | | none; charges, transformed with | | | charges, transformed with |
| luo, Y. Y. | | 2010-2014 | | | | Thoracic surgery, Cardiology, heart failure | | | | | orovider | | | Charges/Reimbursemen | | transformed with cost-to-charge |
| Ziaeian, B. Shomin P. I | 2018 | | US | US; California | 12111 patients | heart transplant, VADs | Surgical | Cardiac/Thoracic | unspecified | Direct and indirect (| | payer | ratio | t-based proxy | N/A | ratio no |
| Frankel, W. C. | | | | | | - | | | | | | - | | | | |
| Navarro, S. M. | | | | | | | | | | | | | | | | |
| Haeberle, H. S. Ramanathan, D. | | Optimizing the Volume-Value Relationship in Laminectomy: An | | | | | | | | | | | none; charges, | | | charges, |
| Ramanathan, D. Ramkumar. P. N. | | Evidence-Based Analysis of Outcomes and Economies of Scale | | | | | | | | | | | transformed with | | | transformed with |
| | 2019 | | 110 | LIC: Many Marsh | (7759 | orthopedic, laminectomy | ý, Suminal | Conin a | | p Discut and india | provider | | cost-to-charge | Charges/Reimbursemen | N/A | cost-to-charge |
| Boucek, D. M. | 2019 | | US | US; New York | 67758 patients | surgical | Surgical | Spine | unspecified | Direct and indirect (| proxy) | payer | ratio | t-based proxy | N/A | ratio no |
| al, A. K. | | | | | | | | | | | | | | | | |
| Eckhauser, A. W. | | Resource Utilization for Initial Hospitalization in Pediatric Heart | | | | | | | | | | | | | | -h |
| Weng, H. Y. C. | | Transplantation in the United States | | | | | | | | | | | none; charges, transformed with | | | charges, transformed with |
| Sheng, X. Wilkes, J. F. | | | | | | | | | | р | provider | | | Charges/Reimbursemen | | cost-to-charge |
| into N.M. | 2018 | | US | US; Pennsylvania | 1629 patients | Pediatrics, cardiology | Pediatrics | Pediatric surgical | unspecified | Direct and indirect (| | payer | ratio | t-based proxy | N/A | ratio no |
| Keller, D. S. | | | | | | | | | | | | | | | | |
| Zhang, J. Chand M | | | | | | | | | | | | | | | | |
| Chand, M. | | Opioid-free colorectal surgery: a method to improve patient & financial | | | | | | | | | | | | | | |
| | | outcomes in surgery | | | | | | | | | | | | | | |
| | 2019 | | US | US; various states | 50098 cases | Surgical, Laparoscopic colorectal surgery | Consideral | Colon/Rectal | unspecified | Direct and indirect p | | | none; charges | Charges/Reimbursemen t-based | N/A | charges no |
| Reilly, R. F. | 2019 | | 03 | 0.5, various states | 50078 cases | colorectal surgery | Surgical | Colorrectar | unspectricu | Direct and indirect p | Jayer | payer | none, enarges | Poased | 1974 | charges no |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | unspecified; Hospital | | | |
| | | Creating a Value Dashboard for orthopedic Surgical Procedures | | | | Orthopeadics, total knee | | | | | | | accounting data | | | |
| | | | | | | arthroplasty, total hip | | Orthopedic, | | | | | not otherwise | | | |
| | 2020 | | Lebanon | Lebanon | 6 surgeons' data | arthroplasty | Surgical | arthroplasty | unspecified | Direct p | provider | provider | specified | Direct costing | implemented | no |
| Miller, P. E. Guha, A. | | | | | | | | | | | | | | | | |
| Guna, A. Khera, R. | | National Trends in Healthcare-Associated Infections for Five Common | | | | | | | | | | | | | | |
| Chouairi, F. | | National Trends in Healthcare-Associated infections for Five Common Cardiovascular Conditions | | | | | | | | | | | none; charges, | | | charges, |
| Ahmad, T. | | cardiorascara conditions | | | 17889852 | Cardialana | | | | _ | provider | | transformed with | Character D simply many market | | transformed with |
| vasir, K. Addison D | 2019 | | US | US: various states | 1/889852 hospitalizations | Cardiology, cardiovascular | Cardiology | | unspecified | Direct and indirect (| | paver | cost-to-charge ratio | Charges/Reimbursemen t-based proxy | N/A | cost-to-charge ratio no |
| Addicon D Konda, Sanjit R. | | | | | | | | | | | / | | unspecified; | | | |
| Lott, Ariana | | The coming hip and femur fracture bundle: A new inpatient risk | | | | | | | | | | | Hospital | | | |
| Egol, Kenneth A. | | I ne coming nip and remur tracture bundle: A new inpatient risk stratification tool for care providers | | | | | | | | | | | accounting data | | | |
| | | | 110 | | 100 | Orthopeadics, Geriatrics | | Orthopedic, | | D: . | | | not otherwise | Pr | | |
| Vinegar, A. L. | 2018 | | US | US; New York | 173 patients | total hip arthroplasty | Surgical | arthroplasty | partial care path | Direct p | provider | provider | specified | Direct costing | implemented | no |
| Vinegar, A. L. ackson, L. W. | | | | | | | | | | | | | | | | |
| Sambare, T. D. | | A Surgeon Scorecard Is Associated with Improved Value in Elective | | | | | | | | | | | unspecified; | | | |
| iu, T. C. | | Primary Hip and Knee Arthroplasty | | | | Surgical, total hip | | | | | | | Hospital | | | |
| Banks, S. R. | | | | | | Surgical, total hip arthroplasty, knee | | Orthopedic, | | | | | accounting data not otherwise | Absorption costing - | | |
| Erlinger, T. P. | 2019 | | US | US; Texas | 470 patients | arthroplasty | Surgical | arthroplasty | partial care path | Direct and indirect p | provider | provider | specified | unspecified/generic | implemented | no |
| Rocque, G. B. | | | | | | | | | | | | | | | | |
| Williams, C. P. | | | | | | | | | | | | | | | | |
| Kenzik, K. M. ackson, B. E. | | Where Are the Opportunities for Reducing Health Care Spending Within Alternative Payment Models? | | | | | | | | | | | | | | |
| ackson, B. E. Ialilova, K. I. | | Alternative Payment Models? | | | | | | | | | | | | | | |
| Sullivan, M. M. | 2017 | | 110 | US: Alabama | 3427 patients from | | Oracli | | and a state | Director 11 1 | | | none, | Charges/Reimbursemen | 21/4 | |
| aratta I L | 2017 | | US | US; Alabama | 12 cancer centers | Uncology | Oncology | | partial care path | Direct and indirect p | payer | payer | reimbursements | t-based | N/A | reimbursements no |
| .aratta, J. L. Reddy, H. | | | | | | | | | | | | | | | | |
| ombardi, J. M. | | Utilization of Interspinous Devices Throughout the United States Over a | | | | | | | | | | | | | | -h |
| | | Recent Decade: An Analysis of the Nationwide Inpatient Sample | | | | | | | | | | | none; charges, transformed with | | | charges, transformed with |
| shillingford, J. N. | | | | | | | | | partial care path | n | provider | | cost-to-charge | Charges/Reimbursemen | | cost-to-charge |
| Shillingford, J. N. Saifi, C. | | | US | US; various states | 14225 patients | Surgical, spine | Surgical | Spine | (surgical episode) | Direct and indirect (| (proxy) | payer | ratio | t-based proxy | N/A | ratio no |
| hillingford, J. N. aifi, C. ïscher, C. R. | 2018 | | | | - | | | | | | | | | | | |
| hillingford, J. N. aifi, C. ischer, C. R. chmon P. A Carnuta, J. M. | 2018 | | | | | | | | | | | | | | | |
| hillingford, J. N. aifi, C. iischer, C. R. ohmon P. A. Carnuta, J. M. Jolubovsky, J. L. | | | | | | | | | | | | | | | | |
| hillingford, J. N. aifi, C. ischer, C. R. <u>conven. P. A</u> carnuta, J. M. iolubovsky, J. L. Iaeberle, H. S. | | Can a machine learning model accurately predict patient resource | | | | | | | | | | | none; charges, | | | charges, |
| Shillingford, J. N. Saifi, C. Fischer, C. R. Samuta, J. M. Golubovsky, J. L. Faeberle, H. S. Rajan, P. V. | | Can a machine learning model accurately predict patient resource utilization following lumbar spinal fusion? | | | | | | | | | | | transformed with | | | charges, transformed with |
| hillingford, J. N. aifi, C. ischer, C. R. <u>conven. P. A</u> carnuta, J. M. iolubovsky, J. L. Iaeberle, H. S. | | utilization following lumbar spinal fusion? | US | US: various states | 38070 patients | Spine, lumbar spinal | | | - a - a | p Direct and indirect () | provider | | transformed with | Charges/Reimbursemen | N/A | charges, transformed with cost-to-charge ratio no |

| Navarro, S. M. Haeberle, H. S. Billow, D. G. | Bundled Care for Hip Fractures: A Machine-Learning Approach to an Untenable Patient-Specific Payment Model | | | | | | | | | | none; estimatic cost-to-charge | n, | | charges, transformed |
|--|---|----|--------------------------------|------------------------------|--|------------------|-----------------------------|-------------------------------------|---------------------------|---------------------------|-----------------------------------|---|-------------|-------------------------------|
| Krebs, V. E. Ramkumar, P. N. | | | | | orthopedics, hip fractu | ire, | Orthopedic | | | provider | ratio, SPARCS | Charges/Reimbursemen | | cost-to-char |
| , | 2019 | US | US; New York | 98562 patients | trauma | Surgical | fracture | partial care path | Direct and indirect | (proxy) payer | data | t-based proxy | N/A | ratio |
| Cremins, M. Vellanky, S. | | | | | | | | | | | | | | |
| McCann, G. Mancini, M. | Considering healthcare value and associated risk factors with | | | | | | | | | | | | | |
| Sanzari, L. | postoperative urinary retention after elective laminectomy | | | | surgical, elective | | | | | | | | | |
| Yannopoulos, A. | 2020 | US | US; Conneticut | 433 patients | laminectomy | Surgical | Spine | partial care path | Direct | provider provider | direct costs | Direct costing | unspecified | |
| Navarro, S. M. Ramkumar, P. N. | | | | | | | | | | | | | | |
| Egger, A. C. | Evidence-Based Thresholds for the Volume-Value Relationship in | | | | | | | | | | none: estimatio | in . | | charges. |
| Goodwin, R. C. | Adolescent Idiopathic Scoliosis: Outcomes and Economies of Scale | | | | Orthopoedic, Pediatric | | | | | | cost-to-charge | · | | transformed |
| | 2018 | US | US; New York | 3224 patients | Adolescent Idiopathic Scoliosis | Pediatrics | Pediatric other | partial care path | Direct and indirect | provider (proxy) payer | ratio, SPARCS data | Charges/Reimbursemen t-based proxy | N/A | cost-to-char ratio |
| Bateni, S. B. | 2010 | 00 | 00,100 100 | 5224 padents | 5000315 | 1 cultures | reduitité outer | partial care pain | Direct and maneer | (hoxy) paya | uuu | roused proxy | | Tutto |
| Gingrich, A. A. Hoch, J. S. | | | | | | | | | | | | | | |
| Canter, R. J. | Defining Value for Pancreatic Surgery in Early-Stage Pancreatic Cancer | | | | | | | | | | none; charges, transformed wi | th | | charges, transformed |
| Bold, R. J. | | | | 2786 patients, 157 | Oncology, pancreatic | | | | | provider | | Charges/Reimbursemen | | cost-to-char |
| Wine D | 2019 | US | US; California | hospitals | cancer | Oncology | | unspecified | Direct and indirect | (proxy) payer | ratio | t-based proxy | N/A | ratio |
| Xiao, R. Miller, J. A. | | | | | | | | | | | | | | |
| Zafirau, W. J. Gorodeski, E. Z. | Impact of Home Health Care on Health Care Resource Utilization | | | | | | | | | | none; charges, | | | charges, |
| Young, J. B. | Following Hospital Discharge: A Cohort Study | | | | | | | | | provider | transformed wi | th Charges/Reimbursemen | | transformed cost-to-char |
| | 2018 | US | US; unspecified | 6363 patients | Multiple | multiple | | partial care path | Direct and indirect | | ratio | t-based proxy | N/A | cost-to-char ratio |
| Ramshaw, B. Forman, B. R. | | | | | | | | | | | | | | |
| Moore, K. | Real-World Clinical Quality Improvement for Complex Abdominal Wall | I | | | | | | | | | | | | |
| Heidel, E. Fabian, M. | Reconstruction | | | | Surgical, complex | | | | | | | | | |
| Mancini, G. | 2017 | US | US; Texas | 102 patients | abdominal wall reconstruction | Surgical | Abdominal | full care path (surgica episode) | al Direct and indirect | provider provider | unspecified | Absorption costing - unspecified/generic | implemented | |
| Heincelman, M. | 2017 | 03 | US, Texas | 102 patients | reconstruction | Surgical | Abdominai | episode) | Direct and indirect | provider provider | unspectfied | unspectfied generic | implemented | - |
| Schumann, S. O. Riley, J. | | | | | | | | | | | | | | |
| Zhang, J. | Identification of High Utilization Inpatients on Internal Medicine Services | s | | | | | | | | | | | | |
| Marsden, J. E. Mauldin, P. D. | | | | | | | | | | | | Absorption costing - | | |
| Rookov D.C | 2016 | US | US; unspecified | 7571 patients | Internal medicine | Internal Medicin | ine | unspecified | Direct and indirect | provider provider | unspecified | unspecified/generic | implemented | |
| Sheetz, K. H. Kenney, B. | | | | | | | | | | | | | | |
| Dupree, J. M. | Targeting Value-Driven Quality Improvement for Laparoscopic | | | | | | | | | | | | | |
| Campbell, D. A. Englesbe, M. J. | Cholecystectomy in Michigan | | | | | | | | | | | | | |
| 2 | 2019 | US | US; Michigan | 19213 patients | Surgical, Laparoscopic Cholecystectomy | c Surgical | Gallbladder | partial care path | Direct and indirect | payer payer | none, reimbursement | Charges/Reimbursemen s t-based | N/A | reimbursem |
| Zolin, S. J. | | | | | | | | | | | | | | |
| Tastaldi, L. Alkhatib, H. | Open retromuscular versus laparoscopic ventral hernia repair for medium | | | | | | | | | | | | | |
| Lampert, E. J. | sized defects: where is the value? | | | All medicare | | | | | | | | | | |
| Brown, K. Fafaj, A. | | | | shoulder surgeries | orthopedics, Surgical, | | | | | | none, | Charges/Reimbursemen | | |
| Potro C. C. Ahluwalia, R. | 2020 | US | US; various states | 2002-2018 | Shoulder surgery | Surgical | Abdominal | partial care path | Direct and indirect | payer payer | reimbursement | s t-based | N/A | reimburseme |
| Vainieri, E. | | | single center retrospective | | | | | | | | | | | |
| Tam, J. Sait, S. | Surgical Diabetic Foot Debridement: Improving Training and Practice Utilizing the Traffic Light Principle | | direct | | | | | | | | | | | |
| Sinha, A. | conzing the traine lagis timelpie | | observation, pre and post | | Surgical, diabetic foot | | | partial care path (full | | | | Absorption costing - | | |
| Manu, C. A. Rejohort J | 2019 | UK | UK; London comparison | 53 patients | infection, diabetes | Surgical | Diabetes | surgical episode) | Direct and indirect | payer payer | TDABC | TDABC | Paper only | |
| Ramly, E. P. Larentzakis, A. | | | | | | | | | | | | | | |
| Bohnen, J. D. | The financial impact of intraoperative adverse events in abdominal | | | | | | | | | | | | | |
| Mavros, M. Chang, Y. | surgery | | | | | | | | | | | | | |
| Lee, J. | 2015 | US | US; Massachusetts | 9111 patients | surgical, abdominal surgery | Surgical | Abdominal | unspecified | Direct and indirect | provider provider | unspecified | Absorption costing - unspecified/generic | implemented | |
| Voh. D. D. Orhurhu, V. | | 03 | 0.0, massachusens | 2111 patients | Julgery | Julgical | Augumid | aspectieu | Direct and mullect | provides provides | unspectfied | anapeemen generie | mpremented | |
| Urits, I. Olusunmade, M. | | | | | | | | | | | | | | |
| Owais, K. | Trends of Co-Morbid Depression in Hospitalized Patients with Failed Back Surgery Syndrome: An Analysis of the Nationwide Inpatient Sampl | le | | | | | | | | | | | | |
| Jones, M. Galasso, A. | | | | | Surgical, depression, | | | | | | | Charges/Reimbursemen | | |
| Salien Orburhu M Hollenbeck, B. | 2018 | US | US; unspecified | 115976 patients | psychiatry | Pain medicine | | partial care path | Direct and indirect | payer payer | none; charges | t-based | N/A | |
| Hollenbeck, B. Hoffman, M. A. | | | | | | | | | | | | | | |
| Tromanhauser, S. G. | High-Volume Arthroplasty Centers Demonstrate Higher Composite Quality Scores and Enhanced Value: Perspective on Higher-Volume | | | | | | | | | | | | | charges per quartile, dise |
| | Hospitals Performing Arthroplasty from 2001 to 2011 | | | 1651354 total hip | or orthopedics, surgical, | | 0.1 F | | | ., | | a | | how it shoul |
| | 2020 | US | US; various states | total knee arthroplasties | total hip arthroplasty, total knee arthroplasty | | Orthopedic, arthroplasty | unspecified | Direct and indirect | provider (proxy) payer | none; charges | Charges/Reimbursemen t-based | N/A | costs in discussion |
| Loftus, T. J. | | | | | | | | | | | | | | |
| Rosenthal, M. D. Croft, C. A. | | | | | Acute care, appendicit | | | | | | | | | |
| Stephen Smith, R. | Effect of Time to Operation on Value of Care in Acute Care Surgery | | | | surgical, laparotomy fo intra-abdominal sepsis | | | | | | | | | charges, dise |
| Efron, P. A. Moore F A | | | US; Florida | | with temporary | Surgical | | full care path (surgica | al unspecified | | none, | Charges/Reimbursemen s t-based | N/A | shortcoming discussion |
| | 2018 | US | | 800 patients | abdominal closure | | Appendicitis | episode) | | | | | | |

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| Buell, J. F. Sigmon, D. | | | | | | | | | | | | | | | | | |
|--------------------------------------|---|----------------|--------------------|--------------------------------|-----------------------|---|-------------------|-----------------------------|-------------------------|---------------------|------------|----------|--------------------------------|---------------------------------|-------------|-----------------|-----------------------|
| Ducoin, C. | Initial Experience with Biologic Polymer Scaffold (Poly-4- | | | | | | | | | | | | | | | | |
| Shapiro, M. | hydroxybuturate) in Complex Abdominal Wall Reconstruction | | | | | Surgical, complex | | | | | | | | | | | |
| leja, N. | | | | | | abdominal wall | | | full care path (surgica | | | | | Charges/Reimbursemen | | | |
| Vynter, E. Janicoo M K | 2017 | US | US; Louisiana | | 73 patients | reconstruction | Surgical | Abdominal | episode) | unspecified | payer | payer | none; charges | t-based | N/A | | no |
| lain, N. | | | | | | | | | | | | | | | | | |
| Phillips, F. M. Shimer A. L | | | | | | | | | | | | | | | | | |
| Snimer, A. L. Khan, S. N. | Surgeon Reimbursement Relative to Hospital Payments for Spinal Fusion | 1 | | | | | | | | | | | | | | | |
| iun, 0. 11. | | | | | | | | | | | | | | | | | |
| | 2018 | US | US; various states | | 40965 patients | Surgical | Surgical | Spine | unspecified | unspecified | paver | nguer | none, reimbursement | Charges/Reimbursemen t-based | N/A | charges | no |
| Stull, J. D. | 2018 | 03 | 03, various states | | 40905 patients | Surgical | Surgical | Spine | unspecified | unspectfied | payer | payer | rennoursement | roased | NA | enarges | 110 |
| Bhat, S. B. | | | | | | | | | | | | | | | | | |
| Kane, J. M. | Economic Burden of Inpatient Admission of Ankle Fractures | | | | 76 cases/patients, | | | | | | | | | | | | |
| Raikin, S. M. | Economic Burden of inpatient Admission of Ankle Fractures | | | | and 48044 | | | | | | | | | | | | |
| | | | | | retrospective patient | t orthopedics, Surgical, | | Orthopedic | | | | | none, | Charges/Reimbursemen | | | |
| | 2017 | US | US; unspecified | | files | ankle fractures | Surgical | fracture | unspecified | unspecified | payer | payer | reimbursement | s t-based | N/A | reimbursement | no |
| Lewis, R. B. Hariri, O. | | | | | | | | | | | | | | | | | |
| Elliott, M. E. | Financial Analysis of Closed Femur Fractures in 3- to 6-Year-Olds | | | | | | | | | | | | | | | | |
| Jo, C. H. | Treated with Immediate Spica Casting Versus Intramedullary Fixation | | | | | | | | | | | | | | | | |
| Ramo, B. A. | · · · · · · · · · · · · · · · · · · · | | | | | orthopedic, surgical, | | | | | | | | Charges/Reimbursemen | | | |
| | 2020 | US | US; Texas | | 114 patients | pediatrics | Pediatrics | Pediatric surgical | full care path | unspecified | payer | payer | none; charges | t-based | N/A | charges | no |
| Murphy, W. S. | | | | | | | | | | | | | | | | | |
| Cheng, T. | | | | | | | | | | | | | | | | | |
| Lin, B. Terry, D. | Higher Volume Surgeons Have Lower Medicare Payments, Readmission | 15, | | | | | | | | | | | | | | | |
| Murphy, S. B. | and Mortality after THA | | | | | | | | | | | | | (I D) I | | | |
| | 2019 | US | US; Massachusett | | 409,844 cases | orthopedics, total hip athroplasty | Surgical | Orthopedic, arthroplasty | partial care path | Direct and indirec | t novor | paver | none, reimbursement | Charges/Reimbursemen | N/A | reimbursements | 80 |
| Geerdink, T. H. | 2017 | 03 | 05, massachüsen | 0 | 409,844 cases | aunopiasty | Sargicar | arunopiasty | partial care paul | intect and indifec | a payer | payer | reinibursement | roased | INA | reinibursements | - 10 |
| Haverlag, R. | | | | | | | | | | | | | | | | | |
| van Veen, R. N. | Direct discharge from the ED for patients with simple stable injuries: a | | | | | | | | | | | | | | | | |
| Bouwmeester, O. V. A. | Dutch pilot study | | | | | | | | | | | | | | | | |
| Goslings, J. C. | | | | | | Acute care, emergency | emergency care & | | | | | | | Absorption costing - | | | |
| | 2020 | The Netherland | ds The Netherlands | | 275 patients | care | acute care | | partial care path | direct and indirect | t provider | provider | reference pricir | g unspecified/generic | unspecified | | no |
| Martin, J. A. | | | | | | | | | | | | | | | | | |
| Mayhew, C. R. Morris, A. J. | Using Time-Driven Activity-Based Costing as a Key Component of the | | | multi center, | | | | | | | | | | | | | |
| Bader, A. M. | Value Platform: A Pilot Analysis of Colonoscopy, Aortic Valve | | | retrospective, | | | | | | | | | | | | | |
| Tsai, M. H. | Replacement and Carpal Tunnel Release Procedures | | | process | | a | | | partial care path (full | | | | | Absorption costing - | | | |
| Urman, R. D. | 2018 | US | US: Vermont | mapping, pilot projects (3) | 3 pilot studies | Surgical, cardiology, aortic valve replacement | t Surgical | Cardiac/Thoracic | surgical episode) | Direct and indirec | t provider | provider | TDABC | Absorption costing - TDABC | unspecified | | yes see seco sheet |
| Abdulla, A. G. | 2010 | 00 | ob, remon | projects(5) | 5 prior studies | uorae varve replacemen | Jupicu | curdules rubidere | Surgicul episode) | Direct and manee | provider | provide | Thitbe | Torac | unspectited | | Janeer |
| Ituarte, P. H. | | | | | | | | | | | | | | | | | |
| Wiggins, R. | | | | | | | | | | | | | unspecified; Hospital | | | | |
| Teisberg, E. O. | Endocrine surgery as a model for value-based health care delivery | | | | | | | | | | | | accounting data | 1 | | | |
| Harari, A. Yeh, M. W. | | | | | | | | | | | | | not otherwise | | | | |
| | 2012 | US | US; California | | 44631 patients | Surgical, neurological | Surgical | Endocrine | unspecified | Direct and indirec | t provider | provider | specified | unspecified/generic | implemented | | no |
| King, A. M. Danagoulian, S. | | | | | | | | | | | | | | | | | |
| Lynch, M. | The Effect of a Madical Tanicalant Invoting Comission of Academic | | | | | | | | | | | | | | | | |
| Menke, N. | The Effect of a Medical Toxicology Inpatient Service in an Academic Tertiary Care Referral Center | | | | | | | | | | | | | | | | |
| Mu, Y. | renary care retentil center | | | | | | | | | | | | | Charges/Reimbursemen | | | |
| Saul, M. | 2019 | US | US; Pennsylvania | | 1675 patient records | s Toxicology | toxicology | | partial care path | Direct and indirec | t naver | payer | none; charges | t-based | N/A | | no |
| van der Meulen, M. | | | | - | | | Ey | | | | | 10,0 | | | | | |
| Najafabadi, A. H. Z. | | | | | | | | | | | | | unspecified; | | | | |
| Lobatto, D. J. | Healthcare utilization and costs among prolactinoma patients: a cross- | | | | | | | | | | | | Hospital | | | | |
| van den Hout, W. B. Andela, C. D. | sectional study and analysis of determinants | | | | | | | | | | | | accounting data | | | | |
| Zandbergen, I. M. | | | | | | Endocrinology, Pituitar | у | | | | | | not otherwise | Absorption costing - | | | |
| Paraira A M | 2020 | The Netherland | ds The Netherlands | | 373 patients | adenoma, prolactinoma | endocrinology | | full care path | Direct and indirec | t provider | provider | specified | unspecified/generic | Paper only | | no |
| Edholm, K. Lappe, K. | | | | | | | | | | | | | | | | | |
| Kukhareva, P. | Reducing Diabetic Ketoacidosis Intensive Care Unit Admissions Throug | h | | | | | | | | | | | unspecified; | | | | |
| Hopkins, C. | an Electronic Health Record-Driven, Standardized Care Pathway | | | single center, | | | | | | | | | Hospital | | | | |
| latton, N. D. | , can be a set of the | | | retrospective, pre and post | 214 hospital | Acute care, emergency | emergency core & | | | | | | accounting data value based | , | | | |
| Jebhart, B. | 2020 | US | US; Utah | intervention | admissions | care | acute care | | full care path | Direct | provider | provider | | Direct costing | implemented | | no |
| /anni, F. | | | | | | | | | | | | | | - | | | |
| Foglia, E. | | | | single center, | | | | | | | | | | | | | |
| Pennestri, F. | Introducing enhanced recovery after surgery in a high-volume orthopedic | | | retrospective, | | | | | | | | | | | | | |
| Ferrario, L. Banfi, G. | hospital: a health technology assessment | | | mixed method | s | orthopedics, total knee | | | | | | | | | | | |
| t, v . | 2020 | | | observational | | arthroplasty, total hip | | Orthopedic, | full care path (full | | | | 100 | Absorption costing - | | | yes see sec |
| lick. B. | 2020 | Italy | Italy | study | 938 procedures | arthroplasty | Surgical | arthroplasty | surgical episode) | Direct and indirec | t provider | provider | ABC | ABC | implemented | | sheet |
| Click, B. Lopez, R. | | | | | | | | | | | | | | | | | |
| Arrigain, S. | Shifting Cost-drivers of Health Care Expenditures in Inflammatory Bow | 2 | | | | IDG 1 1 1 . | | | | | | | | | | | |
| Schold, J. | Disease | - | | | | IBS, bowel, crohn's, Inflamatory Bowel | | | | | | | | | | | |
| Regueiro, M. | | | | | | Inflamatory Bowel Disease, ulcerative | | | | | | | none. | Charges/Reimbursemen | | | |
| Rizk, M. | 2020 | US | US; various states | | 641 patients | colitis | Internal Medicine | | full care path | Direct and indirec | t payer | payer | reimbursement | t-based | N/A | reimbursements | no |
| Padilla, J. A. | | | | | | | | | | | | | | | | | |
| Gabor, J. A. | | | | | | | | | | | | | | | | | |
| Ryan, S. P. | Total Hip Arthroplasty for Femoral Neck Fracture: The Economic | | | | | | | | | | | | | | | | |
| Long, W. J. | Implications of Orthopedic Subspecialty Training | | | | | | | | | | | | | | | reimbursement | |
| laular T M | | | | | | a 15 | | | | | | | | Charges/Reimbursemen | | as ratio of | |
| Seyler, T. M. Schwarzkopf, R. M. | 2020 | US | US; various states | | 291 patients | orthopedics, total hip athroplasty | Surgical | Orthopedic, arthroplasty | partial care path | Direct and indirec | | | none, reimbursement | Charges/Reimbursemen | N/A | bundle price | |

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| Agarwal, N. | | | | | | | | | | | | | | | | | |
|---|---|------------------|-------------------------------------|--|-----------------------------------|--|---------------|---------------------------------|---|---|---------------------------------------|----------|---------------------------------|--|-------------|---------|----------|
| Setlur, N. P. Tan, H. J. | Measuring the cost of care in benign prostatic hyperplasia using time driven activity-based costing (TDABC) | | | single center, | | | | | | | | | | | | | |
| Niedzwiecki, D. | driven activity-based costing (TDABC) | | | retrospective, direct | one care pathway | 5 Urology, benign prostati | ic. | | partial care path (full | | | | | Absorption costing - | | | |
| McLaughlin, N. Burko, M. A | 2015 | US | US; California | observation | surgical options | | Urology | | surgical episode) | Direct and indirect | provider provi | ler | TDABC | TDABC | unspecified | | |
| Pang, J. Crawford, K. | | | | | | | | | | | | | | | | | |
| Faraji, F. | An Analysis of 1-Year Charges for Head and Neck Cancer: Targets for | | | | | | | | | | | | | | | | |
| Ramsey, C. Kemp, A. | Value-Based Interventions | | | | | | | | | | | | | Charges/Reimbursemen | | | |
| Califano, J. A. | 2020 | US | US; various states | | 196 consecutive patients | Oncology, head and necl cancer | k Oncology | | partial care path | Direct and indirect | payer payer | | none; charges | Charges/Reimbursemen t-based | N/A | charges | |
| Lobatto, D. J. Vlieland, Tpmy | | | | | | | | | | | | | | | | | |
| van den Hout, W. B. | Feasibility, safety, and outcomes of a stratified fast-track care trajectory in | n | | | | | | | | | | | | | | | |
| de Vries, F. de Vries, A. F. | pituitary surgery | | | prospective, observational | | | | | | | | | | | | | |
| Schutte, P. J. | 2020 | The Netherlands | s The Netherlands | study, process mapping | 155 patients | Endocrinology, surgical, pituitary | endocrinology | | partial care path (full surgical episode) | Direct and indirect | provider provi | ler | reference pricin | Absorption costing - g unspecified/generic | Paper only | | |
| Verstearn M. I. T. Patel, M. I. | 2020 | The reciteration | , The Redictional of | mapping | 155 patients | prunury | chuocrinology | | surgicul episode) | Direct and mancer | porder plota | | reference prem | 5 unspective generic | ruper only | | |
| Ramirez, D. Agajanian, R. | Association of a Lay Health Worker Intervention With Symptom Burden | , | | | | | | | | | | | | | | | |
| Agajanian, H. | Survival, Health Care Use, and Total Costs Among Medicare Enrollees | | | | | | | | | | | | | | | | |
| Coker, T. | With Cancer | | | | | | | | | | | | | Charges/Reimbursemen | | | |
| Jalilian, H. | 2020 | US | US; various states | | 425 patients | Oncology | Oncology | | partial care path | Direct and indirect | payer payer | | none; charges | t-based | N/A | charges | |
| Doshmangir, L. | | | | | | | | | | | | | | | | | |
| Ajami, S. Mir, H. | Economic burden of gastric cancer in the first six months after diagnosis | | | | | | | | | | | | | | | | |
| Siraneh, Y. | | | | | | Oncology, bowel, gastrie | c | | | | | | | Absorption costing - | | | |
| Hasanpoor, E. | 2019 | Iran | Iran | | 118 patients | cancer | Oncology | | unspecified | Direct and indirect | provider provi | ler | unspecified | unspecified/generic | Paper only | | |
| Lobatto, D. J. van den Hout, W. B. | | | | | | | | | | | | | | | | | |
| Najafabadi, A. H. Z. | Healthcare utilization and costs among patients with non-functioning | | | | | | | | | | | | | | | | |
| Steffens, A. N. V. Andela, C. D. | pituitary adenomas | | | | | | | | | | | | | | | | |
| Pereira, A. M. | 2019 | The Netherlands | s The Netherlands | | 167 patients | Endocrinology, Pituitary adenoma | endocrinology | | partial care path | Direct and indirect | provider provi | ler | reference pricin | Absorption costing - g unspecified/generic | N/A | | |
| Gray, C. F. | | | | | | | | | | | | | | | | | |
| Prieto, H. A. Deen, J. T. | Bundled Payment "Creep": Institutional Redesign for Primary | | | | | | | | | | | | | | | | |
| Parvataneni, H. K. | Arthroplasty Positively Affects Revision Arthroplasty | | | | | | | | | | | | | | | | |
| | 2010 | US | US: Florida | | 168 patients | orthopedics, total joint | Commiss." | Orthopedic, | full care path (surgica | | payer, | | | Charges/Reimbursemen | N/A | | |
| Kurt, P. | 2017 | 03 | US, FIORIDA | | 106 patients | arthroplasty | Surgical | arthroplasty | episode) | Direct and indirect | provider payer | provider | none; charges | t-based Direct costing | NA | | |
| Saban, M. Cankaya, F. | | | | | | | | | | | | | | | | | |
| Annac, M. C. | Time-Driven Activity-Based Costing in the Ophthalmology Department of State Hospital: A Case Study | DI | | single center | case study; 5 | | | | | | | | | | | | |
| | | | | retrospective, | surgical procedures | | | | | | | | | Absorption costing - | | | |
| Thaci, B. | 2019 | Turkey | Turkey | case study | in one department | Opthalmology | opthalmology | | full care path | Direct and indirect | provider provi | ler | TDABC | TDABC | Paper only | | 5 |
| McGirt, M. J. | | | | | | | | | | | | | | | | | |
| Ammerman, J. M. Thome, C. | Reduction of direct costs in high-risk lumbar discectomy patients during the 90-day post-operative period through annular closure | | | | | | | | | | | | | | | | |
| Kim, K. D. | the 90-day post-operative period through annular closure | | | randomized | | Surgical, high-risk | | | | | | | | Charges/Reimbursemen | | | |
| Ament, J. D. | 2019 | US | US; California | controlled trial | , 272 patients | lumbar discectomy | Surgical | Spine | partial care path | Direct and indirect | payer payer | | none; charges | t-based | N/A | | |
| Karns, M. R. Jones, D. L. | | | | Retrospective | | | | | | | | | | | | | |
| Todd, D. C. | Patient- and Procedure-Specific Variables Driving Total Direct Costs of | | | cohort, single center, | | orthopedic, surgical, Anterior Cruciate | | | | | | | | | | | |
| Maak, T. G. Aoki, S. K. | Outpatient Anterior Cruciate Ligament Reconstruction | | | economic and | | Ligament | | | | | | | | | | | |
| | | | | decision analysis | 434 patients | Reconstruction, sports medicine | Surgical | Orthopedic | partial care path (full surgical episode) | Direct | provider provi | ler | VDO tool, total direct costs | Direct costing | implemented | | 2 |
| Burks, R. T. Voo M | 2018 | US | US; Utah | | | | | | | | | | | | | | |
| Robinson, J. R. | 2018 | US | US; Utah | | | | | | | | | | | | | | |
| Robinson, J. R. Carter, N. H. Gibson, C. | 2018 Improving the value of care for amendectomy through an individual | US | US; Utah | | | | | | | | | | | | | | |
| Voo M Robinson, J. R. Carter, N. H. Gibson, C. Brinkman, A. S. | 2018 Improving the value of care for appendectomy through an individual surgeon-specific approach | US | US; Utah | | | | | | | | | | | | | | |
| Xao, M Robinson, J. R. Carter, N. H. Gibson, C. Brinkman, A. S. Van Arendonk, K. Speck, K. E. | surgeon-specific approach | | | prospective | | | | | partial care path (full | | | | | Absorption costing - | | | |
| Vao. M Robinson, J. R. Carter, N. H. Gibson, C. Brinkman, A. S. Van Arendonk, K. | 2018 Improving the value of care for appendectomy through an individual surgeon-specific approach 2018 | US | US; Utah US; tennessee | prospective | 216 patients | Appendicitis, surgical | Surgical | Appendicitis | partial care path (full surgical episode) | Direct and indirect | provider provi | ler | reference pricin | Absorption costing - g unspecified/generic | N/A | | |
| Vao M Robinson, J. R. Carter, N. H. Gibson, C. Brinkman, A. S. Van Arendonk, K. Speck, K. E. Danko, M. E. | surgeon-specific approach 2018 | | | prospective | 216 patients | | Surgical | Appendicitis | partial care path (full surgical episode) | Direct and indirect | : provider provie | ler | reference pricin | Absorption costing - g unspecified/generic | N/A | | yı sł |
| Vao M Robinson, J. R. Carter, N. H. Gibson, C. Brinkman, A. S. Van Arendonk, K. Speek, K. E. Danko, M. E. Gupta, P. | surgeon-specific approach 2018 Relationship of Hospital Costs With Mortality in Pediatric Critical Care: | | | prospective observational study single center, | 216 patients | | Surgical | Appendicitis | partial care path (full surgical episode) | Direct and indirect | : provider provi | ler | reference pricin | Absorption costing - g unspecified/generic | N/A | | |
| Xoo M Robinson, J. R. Carter, N. H. Gibson, C. Brinkman, A. S. Van Arendonk, K. Speck, K. E. Doaleo M. E. Gupta, P. | surgeon-specific approach 2018 Relationship of Hospital Costs With Mortality in Pediatric Critical Care: A Multi-Institutional Analysis | US | US; tennessee | prospective observational study single center, pre and post intervention | 917,663 patients, 47 | Appendicitis, surgical | | Appendicitis Pediatric acute | partial care path (full surgical episode) | Direct and indirect | : provider provi | ler | | g unspecified/generic | | | |
| Vao. M. Robinson, J. R. Carter, N. H. Gibson, C. Brinkman, A. S. Van Arendonk, K. Speck, K. E. <u>Paule, M. F.</u> Gupta, P. Retriganti, M. | surgeon-specific approach 2018 Relationship of Hospital Costs With Mortality in Pediatric Critical Care: | | | prospective observational study single center, pre and post intervention | 917,663 patients, 47 | Appendicitis, surgical | | | partial care path (full surgical episode) partial care path | Direct and indirect unspecified | provider provider provider | ler | reference pricin | g unspecified/generic | N/A N/A | charges | |
| Van M. Robinson, J. R. Carter, N. H. Gibson, C. Brinkman, A. S. Wan Arendonk, K. Speek, K. E. Dadra, P. Rettiganti, M. Ilg, A. M. Laviana, A. A. | surgeon-specific approach 2018 Relationship of Hospital Costs With Mortality in Pediatric Critical Care: A Multi-Institutional Analysis 2017 | US | US; tennessee | prospective observational study single center, pre and post intervention (dashboard) | 917,663 patients, 47 | Appendicitis, surgical | | Pediatric acute | surgical episode) | Direct and indirect | : provider provi provider provi | ler | | g unspecified/generic | | charges | |
| Vao. M. Robinson, J. R. Carter, N. H. Gibson, C. Brinkman, A. S. Van Arendonk, K. Speek, K. E. Dawko, M. F. Gupta, P. Rettiganti, M. Ilg, A. M. Laviana, A. A. Kamzuva, M. | surgeon-specific approach 2018 Relationship of Hospital Costs With Mortality in Pediatric Critical Care: A Multi-Institutional Analysis 2017 Time-driven activity-based costing of low-dose-rate and high-dose-rate | US | US; tennessee | prospective observational study single center, pre and post intervention | 917,663 patients, 47 | Appendicitis, surgical | | Pediatric acute | surgical episode) | Direct and indirect | <u>provider</u> provi | ler | | g unspecified/generic | | charges | |
| V. M. J. R. Carter, N. H. Gibson, C. A. S. Wan, Arondonk, K. Speck, K. E. Touko, M. E. Gupta, P. Rettiganti, M. Ilg, A. M. Laviana, A. A. Kamrava, M. Veruttpong, D. Steinberg, M. | surgeon-specific approach 2018 Relationship of Hospital Costs With Mortality in Pediatric Critical Care: A Multi-Institutional Analysis 2017 | US | US; tennessee | prospective observational study single center, pre and post intervention (dashboard) single center, retrospective, process | 917,663 patients, 47 hospitals | Appendicitis, surgical | | Pediatric acute | surgical episode) | Direct and indirect | <u>provider provia</u> payer payer | ler | | g unspecified/generic Charges/Reimbursemen 1-based | | charges | |
| Vac. M. M. Robinson, J. R. Carter, N. H. Grabon, C. Brinkman, A. S. Van Arendonik, K. Speck, K. E. Datas, M. P. Rettiganti, M. Itg, A. M. Laviana, A. A. Kamrava, M. Veruttipong, D. Steinberg, M. | surgeon-specific approach 2018 Relationship of Hospital Costs With Mortality in Pediatric Critical Care: A Multi-Institutional Analysis 2017 Time-driven activity-based costing of low-dose-rate and high-dose-rate | US | US; tennessee | prospective observational study single center, pre and post intervention (dashboard) single center, retrospective, | 917,663 patients, 47 hospitals | Appendicitis, surgical | | Pediatric acute | surgical episode) | Direct and indirect | provider provia | | | g unspecified/generic | | charges | |
| Vac. M. Robinson, J. R. Carler, N. H. Grabon, C. Brinkman, A. S. Van Arendonik, K. Speck, K. E. Haats, M. E. Chapta, P. Rettiganti, M. Itg, A. M. Laviana, A. A. Kamrava, M. Veruttipong, D. Steinberg, M. Park, S. J. Park, S. J. Park, S. J. Park, S. J. | surgeon-specific approach 2018 Relationship of Hospital Costs With Mortality in Pediatric Critical Care: A Multi-Institutional Analysis 2017 Time-driven activity-based costing of low-dose-rate and high-dose-rate brachytherapy for low-risk prostate cancer | US US | US; tennessee US; various states | prospective observational study single center, pre and post intervention (dashboard) single center, retrospective, process mapping, direc | 917,663 patients, 47 hospitals | Appendicitis, surgical 7 Acute care, pediatrics Oncology, prostate | pediatrics | Pediatric acute | surgical episode) | Direct and indirect | payer payer | | unspecified | g unspecified/generic Charges/Reimbursemen t-based Absorption costing - | N/A | charges | |
| Var. M. Robinson, J. R. Carter, N. H. Gibson, C. S. Brinkman, A. S. Yan Arendonk, K. Speck, K. E. Daula, M. B. Gupta, P. Rettigant, M. Itg, A. M. Laviana, A. A. Kamara, M. Veruttipong, D. Steinberg, M. Burke, M. A. Stein, N. P. | surgeon-specific approach 2018 Relationship of Hospital Costs With Mortality in Pediatric Critical Care: A Multi-Institutional Analysis 2017 Time-driven activity-based costing of low-dose-rate and high-dose-rate brachytherapy for low-risk prostate cancer 2016 | US US | US; tennessee US; various states | prospective observational study single center, pre and post intervention (dashboard) single center, retrospective, process mapping, direc | 917,663 patients, 47 hospitals | Appendicitis, surgical 7 Acute care, pediatrics Oncology, prostate | pediatrics | Pediatric acute | surgical episode) | Direct and indirect | payer payer | | unspecified | g unspecified/generic Charges/Reimbursemen t-based Absorption costing - | N/A | charges | |
| Voc. M. Robinson, J. R. Carter, N. H. Gibson, C. M. Brindman, A. S. Brank, K. E. Speck, K. E. Coppta, P. Rettiganti, M. Hig, A. M. Lavinna, A. A. Kamrava, M. Vortnipoug, D. Bark, S. J. Bark, S. M. McLangdin, N. Barke, M. A. Schur, N. P. Nicketwickel, D. R. | surgeon-specific approach 2018 Relationship of Hospital Costs With Mortality in Pediatric Critical Care: A Multi-Institutional Analysis 2017 Time-driven activity-based costing of low-dose-rate and high-dose-rate brachytherapy for low-risk prostate cancer | US US | US; tennessee US; various states | prospective observational study single center, pre and post intervention (dashboard) single center, retrospective, process mapping, direc | 917,663 patients, 47 hospitals | Appendicitis, surgical 7 Acute care, pediatrics Oncology, prostate | pediatrics | Pediatric acute | surgical episode) partial care path full care path | Direct and indirect unspecified Direct and indirect | payer payer | | unspecified | g unspecified/generic Charges/Reimbursemen t-based Absorption costing - | N/A | charges | r |
| Vac. M. Robinson, J. R. Carter, N. H. Grabon, C. Brinkman, A. S. Van Arendonik, K. Speck, K. E. Daula, M. E. Gapta, P. Retiggant, M. Ing, A. M. Laviana, A. A. Kamirav, M. Veruttipong, D. Steinberg, M. Park, S. J. Park, S. J. Park, S. J. Barke, M. A. Stein, N. P. | surgeon-specific approach 2018 Relationship of Hospital Costs With Mortality in Pediatric Critical Care: A Multi-Institutional Analysis 2017 Time-driven activity-based costing of low-dose-rate and high-dose-rate brachytherapy for low-risk prostate cancer 2016 Time-driven activity-based costing: a driver for provider engagement in | US US | US; tennessee US; various states | prospective observational study single center, pre and post intervention (dashboard) single center, retrospective, process mapping, direc observation | 917,663 patients, 47 hospitals | Appendicitis, surgical 7 Acute care, pediatrics Oncology, prostate | pediatrics | Pediatric acute | surgical episode) | Direct and indirect unspecified Direct and indirect | payer payer | ler | unspecified | g unspecified/generic Charges/Reimbursemen t-based Absorption costing - | N/A | charges | |

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|-----|------|

| Moodie, M. L. Peeters, A. Playfair, J. O'Brien, P. E. | Cost-Efficacy of Surgically Induced Weight Loss for the Management of Type 2 Diabetes A randomized controlled trial | | | | 40 patients, 23 | | | | | | | | | | | | |
|---|--|-----------|--------------------|--|-----------------------------|--|-------------------|-----------------------------|-------------------------|---------------------|----------|----------|----------------------------------|---------------------------------|-------------|----------------------------|-----------------|
| | 2009 | Australia | Australia | controlled trial, | surgical, 7 medical | Surgical, Diabetes | Internal Medicine | | unspecified | Direct | provider | provider | direct costs | Direct costing | Paper only | | no |
| Nelson, A. A. Pearce, D. J. Fleischer, A. B. Balkrishnan, R. Feldman, S. R. | Infliximab for inpatient psoriasis management - is there a role? | | | | | | | | | | | | | | | | |
| | 2005 | US | US; Ohio | | 208 inpatient admissions | Psoriasis, Dermatology | Dermatology | | partial care path | Direct and indirect | paver | payer | none; charges | Charges/Reimbursemen t-based | N/A | charges | no |
| Yanik, John M. Bedard, Nicholas A. Hanley, Jessica M. Otero, Jesse E. | Rapid Recovery Total Joint Arthroplasty is Safe, Efficient, and Cost- Effective in the Veterans Administration Settine | | | | | | | | 1 | | | | unspecified; Hospital | | | | |
| Callaghan, John J. Marsh, John L. | | | | | | orthopedics, total hip athroplasty, total knee | | Orthopedic, | | | | | accounting data not otherwise | Absorption costing - | | | |
| | 2018 | US | US; Iowa | | 78 patients | arthroplasty | Surgical | arthroplasty | full care path | Direct and indirect | provider | provider | specified | unspecified/generic | unspecified | | no |
| Zhang, Steven Vora, Molly Harris, Alex H. S. Baker, Laurence Curtin, Catherine Kamal, Robin N. | Cost-Minimization Analysis of Open and Endoscopic Carpal Tunnel Release | | | | 16 million patient | | | Carpal Tunnel | full care path (surgica | 1 | | | none, | Charges/Reimbursemen | | | |
| A Adenikiniu R | 2016 | US | US; California | | records | Carpal Tunnel Release | Surgical | Release | episode) | Direct and indirect | payer | payer | reimbursements | t-based | N/A | reimbursemen | its no |
| A. Adenikinju, R. Ranson, S. A. Rettig, K. A. Egol and S. R. Konda | Ability of a Risk Prediction Tool to Stratify Quality and Cost for Older Patients With Operative Distal Radius Fractures | | | | | Orthorpedic, Geriatric, Operative Distal Radius | | Orthopedic | | | | | | Charges/Reimbursemen | | index admissi cost, per | on |
| A. Alibrahim, Y. | 2021 | US | US; New York | | | Fractures | Surgical | fracture | unspecified | Direct and indirect | payer | payer | specified | t-based | N/A | category | no |
| A. Alloranim, Y. Abdulsalam, S. Al Mutawa, H. Behbehani, D. Alhuwail and S. Al Jenaei | Towards value-based healthcare: Establishing baseline pharmacy care costs for diabetes management 2021 | Kuwait | Kuwait | single center, observation, interviews | one pharmacy | Diabetes, pharmacy | Internal Medicine | | partial care path | Direct and indirect | provider | provider | TDABC | Absorption costing - TDABC | unspecified | | yes se sheet |
| D. J. Baughman, A. | | | | | | | | | | | | | | | | | |
| Waheed, M. N. Khan and J. M. Nicholson | Enhancing Value-Based Care With a Walk-in Clinic: A Primary Care Provider Intervention to Decrease Low Acuity Emergency Department Overutilization | | | | | | emergency care & | | | | | | | Charges/Reimbursemen | | | |
| J. A. Berinstein, S. A. | 2021 | US | US; Pennsylvania | | | Emergency care | acute care | | unspecified | Direct and indirect | payer | payer | none; charges | t-based | N/A | average charge | es no |
| Cohen-Mekelburg, G. M. Greenberg, D. Wray, S. K. Berry, S. D. Saini, A. M. Fendrick, M. A. Adams, A. K. Waljee and D. D. P. Ulianine A. Beschloss, C. | A Care Coordination Intervention Improves Symptoms But Not Charges in High-Risk Patients With Inflammatory Bowel Disease 2021 | US | US; Michigan | | | IBS/IBD inflammatory bowel disease | Internal Medicine | | partial care path | Direct and indirect | payer | payer | none; charges | Charges/Reimbursemen t-based | N/A | charges | no |
| Dicindio, J. Lombardi, A. Varthi, A. Ozturk, R. Lehman, L. Lenke and C. Saifi | Marked Increase in Spinal Deformity Surgery Throughout the United States | | | | | Orthopedic, Spinal | | | | | | | | Charges/Reimbursemen | | | |
| H. Bueno, J. L. Bernal, | 2021 | US | US; various states | | | Deformity Surgery | Surgical | Spine | full care path | Direct and indirect | provider | provider | none; charges | t-based | N/A | unspecified | no |
| V. Jimenez-Jimenez, F. J. Martin-Sanchez, X. Rossello, G. Moreno, C. Goni, V. Gil, P. Llorens, N. Naranjo, J. | The Clinical outcomes, healthcare resource utilization, and related costs (COHERENT) model. Application in heart failure patients | | | Retrospective, | 30 day period of | heart failiure, | | | | | | | | Absorption costing - | | | yes see |
| Jacob P. Harran | 2021 | Spain | Spain | | heart failure patient | | Cardiology | | partial care path | Direct and indirect | provider | provider | DRG costs | unspecified/generic | implemented | | sheet |
| R. A. Burnett lii, J. Yang, P. M. Courtney, E. B. Terhune, C. P. Hannon and C. J. Della Valle | Costs of unicompartmental compared with total knee arthroplasty : a matched cohort study over ten years | US | US; various states | | | Total knee arthroplasty, orthopedic | Sumical | Orthopedic, arthroplasty | full care path | Direct and indirect | wourid | nouidar | none; reimbursements | Charges/Reimbursemen | N/A | nin komo | |
| M. Casey, D. Perera, J. | 2021 | 03 | 03, various states | | | ormopeute | Surgical | arunopiasty | run care paur | istect and muffect | provider | provider | remoursements | roased | N/A | reimbursemen | n 110 |
| Enticott, H. Vo, S. Cubra, A. Gravell, M. Waerea and G. Habib | High utilisers of emergency departments: the profile and journey of patients with mental health issues | | | | | | emergency care & | | | | | | | Absorption costing - | | | yes se |
| K. A. Chovanec, C. | 2021 | Australia | Australia | | | Emergency care | acute care | | partial care path | Direct and indirect | provider | provider | specified | unspecified/generic | N/A | | sheet |
| K. A. Chovanec, C. Arsene, A. Beck and B. Liedel | Why Not Home?: A Study of the Impact of an Effort to Reduce Postacute Expenditures | 2 | | | | | emergency care & | | | | | | | Charges/Reimbursemen | | | |
| | 2022 | US | US; various states | | | Various, post-acute | acute care | | partial care path | Direct and indirect | payer | payer | none; charges | t-based | N/A | charges | no |
| R. V. Cohen, A. M. Nishikawa, R. A. Ribeiro, F. M. Oliveira, P. C. Andrade, S. M. Junqueira and B. Toldo | Surgical Management of Obesity in Brazil: Proposal for a Value-Based Healthcare Model and Preliminary Results | | | | | | | | | | | | | | | | |
| | | | | | | Obesity, surgical, | | | | | | | | Absorption costing - | | | yes se |

 BMJ Open

| A. P. B. da Silva Etges, L. N. Cruz, R. Schlatter, J. Neyeloff, R. B. | Time-driven activity-based costing as a strategy to increase efficiency: A | n | | multi center, | | | | | | | | | | | | |
|---|--|---------------|-------------------------|----------------------------------|--|---|------------------------|------------------------------|--------------------------------------|----------------------------|-------------------------------------|---------|---|--|--|------------------------------------|
| Cardoso, L. Kopittke, A. A. Nunes, J. A. Neto, | analyses of interventional coronary procedures | | | retrospective, process | | | | | | | | | | | | |
| J. L. Nogueira, R. M. de | 2022 | Brazil | Brazil | mapping, 5 hospitals | 5 hospitals, 90 patients | Interventional Coronary Procedures | Cardiology | | full care path (surgical episode) | Direct and indirect p | rovider provide | r | TDABC | Absorption costing - TDABC | unspecified | d |
| M. Dziemianowicz, J. Burmeister and M. | | | | retrospective, | | | | | | | | | | | | |
| Dominello | Examining the Financial Impact of Altered Fractionation in Breast Cance | 217. | | process mapping, direct | t | Oncology, breast cance cancer, sentinel lymph | r, | | | | | | | | | |
| | An Analysis Using Time-Driven Activity-Based Costing | | | observation, treatment | 2 treatment options 50 patient visits | , node biobsy, Altered Fractionation in Breast | | | | | | | | Absorption costing - | | |
| C. Fang, A. Hagar, M. | 2021 | US | US; Michigan | comparison | total | Cancer | Oncology | | full care path | Direct and indirect p | rovider provide | r | TDABC | TDABC | Paper only | r |
| Gordon, C. T. Talmo, | | | | | | | | | | | | | | | | |
| D. A. Mattingly and E. L. Smith | Differences in Hospital Costs among Octogenarians and Nonagenarians Following Primary Total Joint Arthroplasty | | | single center, retrospective, | | Geriatrics, Orthopedic, | | | | | | | | | | |
| | | US | US: Boston | patient | | Primary Total Joint | | Orthopedic | full care path (surgical | | | | TDABC | Absorption costing - TDABC | | |
| C. Fang, N. Pagani, M. | 2021 | 08 | US; Boston | comparison | 889 surgeries | Arthroplasty | Surgical | fracture | episode) | Direct and indirect p | rovider provide | r | IDABC | IDABC | unspecified | a |
| Gordon, C. T. Talmo, D. A. Mattingly and E. | Episode-of-Care Costs for Revision Total Joint Arthroplasties by Decada | al | | | | | | | | | | | | | | |
| L. Smith | Age Groups | | | single center, retrospective, | | Geriatrics, Orthopedic, | | | | | | | | | | |
| | 2021 | US | US; Boston | patient comparison | 551 surgeries | Primary Total Joint Arthroplasty | Surgical | Orthopedic fracture | full care path (surgical episode) | Direct and indirect | rovider provide | r | TDABC | Absorption costing - TDABC | unspecified | d |
| C. J. Fang, J. M. Shaker, J. M. Drew, A. | | | | | | | | | | | | | | | | |
| Jawa, D. A. Mattingly and E. L. Smith | The Cost of Hip and Knee Revision Arthroplasty by Diagnosis-Related Groups: Comparing Time-Driven Activity-Based Costing and Traditiona | d | | single center, | | | | | | | | | | | Absorption | |
| and E. L. Smith | Accounting | | | retrospective, process | | Geriatrics, Orthopedic, Primary Total Joint | | Orthopedic | full care path (surgical | | | | | Absorption costing - | costing - unspecified/gener | |
| | 2021 | US | US; Boston | mapping | 793 surgeries | Arthroplasty | Surgical | arthroplasty | episode) | Direct and indirect p | rovider provide | r | TDABC | TDABC | ic Paper only | r |
| C. J. Fang, J. M. Shaker, P. A. Hart, C. | | | | | | | | | | | | | | | | |
| Cassidy, D. A. Mattingly, A. Jawa and | Variation in the Profit Margin for Different Types of Total Joint Arthroplasty | | | | | Geriatrics, Orthopedic, | | | | | | | | | | |
| E. L. Smith | | | | single center, | | Primary Total Joint | | Orthopedic | full care path (surgical | F | rovider, | | | Absorption costing - | Charges/Reimbur | |
| C. A. Feizpour, M. S. | 2021 | US | US; Boston | retrospective | 13545 procedures | Arthroplasty | Surgical | arthroplasty | episode) | Direct and indirect p | ayer provide | r payer | TDABC | TDABC | sement-based unspecified | d |
| Patel, M. A. Syed, A. Carrasco, J. Shah, S. | Enhanced recovery in liver transplantation: A value-based approach to | | | | | | | | | | | | | | | |
| Hanish, L. Sosa, S. Fogus, S. Bennett, C. | complex surgical care | | | Retrospective, single center, | | Surgical, enhanced | | | | | | | | | | |
| Shi, B. Hardman and P. | 2021 | US | US; Texas | pre and post intervention | 379 liver transplant recipients | recovery pathway, liver transplant | Surgical | Liver | full care path | Direct r | rovider provide | r | direct costs | Direct costing | unspecified | d unspecified |
| A. M. Fontebasso, S. Figueira, K. Thavorn, P. | | | | | | | | | | | | - | | | | |
| Glen, J. Lampron and | Financial implications of trauma patients at a Canadian level 1 trauma | | | | | | | | | | | | unspecified; Hospital | | | |
| M. Matar | center: a retrospective cohort study | | | | | | | Orthopedic, | | | | | accounting data not otherwise | Absorption costing - | | |
| N.G. 17. G | 2020 | Canada | Canada | | | Surgical, Trauma surge | ry Surgical | arthroplasty | full care path | Direct and indirect p | rovider provide | r | specified | unspecified/generic | N/A | |
| M. Gandjian, C. Williamson, Y. Sanaiha, | | | | | | | | | | | | | | | | |
| J. Hadaya, Z. Tran, S. T. Kim, S. Revels and | Continued Relevance of Minimum Volume Standards for Elective Esophagectomy: A National Perspective | | | | | | | | | | | | none; charges, transformed wit | | | charges, transformed with |
| P. Benharash | | | | | | elective esophagectomy | | | | F | rovider | | cost-to-charge | Charges/Reimbursem | | cost-to-charge |
| I. M. Ganske, K. | 2021 | US | US; various | | - | cardiovascular | Surgical | Cardiac/Thoracic | unspecified | Direct and indirect (| proxy) payer | | ratio | t-based proxy | N/A | ratio |
| Sanchez, E. Le, O. C. Langa, B. Sharif- | Time-Driven, Activity-Based Costing of Presurgical Infant Orthopedics: | | | multi center, | | pediatric, crainiofacial, | | | | | | | | | | |
| Askary, E. Ross, P. Santiago, J. G. Meara, | A Critical Component of Establishing Value of Latham Appliance and Nasoalveolar Molding | | | prospective, process | | presurgical infant orthopedics, plastic | | | | | | | | | | |
| | - | | 1/2 D . | | t 37 patients, two hospitals | surgery, reconstructive surgery, Latham device | Pediatrics | Pediatric Plastic surgery | full care path (surgical episode) | Direct and indirect p | rovider provide | r | TDABC | Absorption costing - TDABC | Paper only | , |
| B. L. Padwa and A. C. | 2021 | US | US; Boston | | | | | | | | | | | | | |
| H. C. Gillis, K. Dolan, | 2021 | US | US; Boston | observation | | | | | | | | | | | | |
| H. C. Gillis, K. Dolan, C. L. Sargel, R. Z. Thompson and J. E. | 2021 A Quality Improvement Approach to Influence Value-based Mucolytic | US | US; Boston | observation | | | | | | | | | | | | |
| H. C. Gillis, K. Dolan, C. L. Sargel, R. Z. | 2021 A Quality Improvement Approach to Influence Value-based Mucolytic Use in the PICU | US | US; Boston | observation | | pediatric, pediatric intensive care. PICU | | Pediatrie seute | | | | | direct costs | | | |
| Allosi H. C. Gillis, K. Dolan, C. L. Sargel, R. Z. Thompson and J. E. Lutmer | 2021 A Quality Improvement Approach to Influence Value-based Mucolytic Use in the PICU 2021 | US | US; Boston US; Ohio | observation | | pediatric, pediatric intensive care, PICU, Mucolutic aerosols | Pediatrics | Pediatric acute care | partial care path | Direct p | rovider provide | r | direct costs (medicine costs |) Direct costing | N/A | |
| Alloi H. C. Gilis, K. Dolan, C. L. Sargel, R. Z. Thompson and J. E. Lutmer J. Hadaya, Y. Sanaiha, R. Hernandez, Z. Tran, | Use in the PICU 2021 | US | | oose valou | | intensive care, PICU, | Pediatrics | | partial care path | Direct p | rovider provide | r | direct costs (medicine costs |) Direct costing | N/A | |
| Alloci H. C. Gillis, K. Dolan, C. L. Sargel, R. Z. Thompson and J. E. Lutmer J. Hadaya, Y. Sanaiha, | Use in the PICU 2021 Impact of hospital volume on resource use after elective cardiac surgery: | US | | | | intensive care, PICU, | Pediatrics | | partial care path | Direct | rovider provide | r | (medicine costs none; charges, | | N/A | charges, |
| Alloi H. C. Gillis, K. Dolan, C. L. Sargel, R. Z. Thompson and J. E. Lutmer J. Hadaya, Y. Sanaiha, R. Hernandez, Z. Tran, R. J. Shemin and P. | Use in the PICU 2021 Impact of hospital volume on resource use after elective cardiae surgery: A contemporary analysis | US | US; Ohio | OUSEL VARION | | intensive care, PICU, Mucolutic aerosols | | care | | F | rovider | r | (medicine costs none; charges, transformed wit cost-to-charge | h Charges/Reimbursem | en | transformed with cost-to-charge |
| Alloi H. C. Gillis, K. Dolan, C. L. Sargel, R. Z. Thompson and J. E. Lutmer J. Hadaya, Y. Sanaiha, R. Hernandez, Z. Tran, R. J. Shemin and P. | Use in the PICU 2021 Impact of hospital volume on resource use after elective cardiac surgery: | US | | | | intensive care, PICU, | | | | | rovider | r | (medicine costs none; charges, transformed wit | h | | transformed with |
| Alloci H. C. Gitlis, K. Dolan, C. L. Sargel, R. Z. Thompson and J. E. Lutmer J. Hadaya, Y. Sanaiha, R. Hernandez, Z. Tran, R. J. Shermin and P. Benharash M. K. Islam, S. Ruths, K. Jansen, R. Faick, M. | Use in the PICU 2021 Impact of hospital volume on resource use after elective cardiac surgery: A contemporary analysis | US | US; Ohio | | | intensive care, PICU, Mucolutic aerosols | | care | | F | rovider | r | (medicine costs none; charges, transformed wit cost-to-charge | h Charges/Reimbursem | en | transformed with cost-to-charge |
| Alloci H. C. Gillis, K. Dolan, C. L. Sargel, R. Z. Thompson and J. E. Lutmer J. Hadaya, Y. Sanaiha, R. Hernandez, Z. Tran, R. J. Shemin and P. Benharash M. K. Islam, S. Ruths, | Use in the PICU 2021 Impact of hospital volume on resource use after elective cardiae surgery: A contemporary analysis | US | US; Ohio | | | intensive care, PICU, Mucolutic aerosols elective cardiac surgery | Surgical | care | | F | rovider | r | (medicine costs none; charges, transformed wit cost-to-charge | h Charges/Reimbursem | en | transformed with cost-to-charge |
| Alloci H. C. Gillis, K. Dolan, C. L. Sargel, R. Z. Thompson and J. E. Lutmer J. Hadaya, Y. Sanaiha, R. Hernandez, Z. Tran, R. J. Shemin and P. Benharash M. K. Islam, S. Ruths, K. Jansen, R. Falck, M. M. Oklen and J. E. | Use in the PICU 2021 Impact of hospital volume on resource use after elective cardiac surgery: A contemporary analysis 2021 Evaluating an integrated care pathway for frail elderly patients in Norway | US | US; Ohio | | | intensive care, PICU, Mucolutic aerosols | Surgical | care | | F Direct and indirect (| rovider proxy) payer rovider, | | (medicine costs none; charges, transformed wit cost-to-charge ratio | h Charges/Reimbursem t-based proxy Absorption costing - | en N/A | transformed with cost-to-charge |
| Attaci H. C. Gillis, K. Dolan, C. L. Sargi, R. Z. Thompson and J. E. Luttner J. Hadaya, Y. Samiha, R. Hernandez, Z. Tran, R. J. Shenim and P. Benharsh M. K. Isalam, S. Rutho, K. Jansen, R. Falck, M. R. Molicen and J. E. Askildicen D. W. Jang, H. J. Lee, | Use in the PICU 2021 Impact of hospital volume on resource use after elective cardiac surgery: A contemporary analysis 2021 Evaluating an integrated care pathway for frail elderly patients in Norway using multi-criteria decision analysis | US US y | US; Ohio US; various | | | intensive care, PICU, Mucolutic aerosols elective cardiac surgery geriatrics, frail elderly, | y Surgical | care | unspecified | Direct and indirect (| rovider proxy) payer rovider, | | (medicine costs none; charges, transformed wit cost-to-charge ratio | h Charges/Reimbursem t-based proxy | en N/A Charges/Reimbur sement-based | transformed with cost-to-charge |
| Attaci Attaci I. C. Gillis, K. Dolan, C. L. Sargi, R. Z. Thompson and J. E. Lattner J. Hadaya, Y. Samahe, R. Heranadez, Z. Tan, R. J. Shemin and P. Benbarash M. K. Islam, S. Ruthy, K. Janen, R. Falch, M. R. Mollen and J. E. Askidsen | Use in the PICU 2021 Impact of hospital volume on resource use after elective cardiac surgery: A contemporary analysis 2021 Evaluating an integrated care pathway for frail elderly patients in Norway using multi-criteria decision analysis | US US y | US; Ohio US; various | | | intensive care, PICU, Mucolutic aerosols elective cardiac surgery geriatrics, frail elderly, | y Surgical | care | unspecified | Direct and indirect (| rovider proxy) payer rovider, | | (medicine costs none; charges, transformed wit cost-to-charge ratio | h Charges/Reimbursem t-based proxy Absorption costing - | en N/A Charges/Reimbur sement-based | transformed with cost-to-charge |
| Attaci Attaci II. C. Gillis, K. Dolan, C. L. Sargi, R. Z. Thompson and J. E. Lattner J. Hadaya, Y. Samahe, R. Heranadez, Z. Tan, R. J. Shemin and P. Benbarash M. K. Islam, S. Ruths, K. Jancen, R. Palak, M. R. Molileen and J. E. Askildeen D. W. Jang, H. J. Lee, P. G. Chen, S. M. | Use in the PICU 2021 Impact of hospital volume on resource use after elective cardiae surgery: A contemporary analysis 2021 Evaluating an integrated care pathway for frail elderly patients in Norway using multi-criteria decision analysis 2021 | US US y | US; Ohio US; various | | | intensive care, PICU, Mucolutic aerosols elective cardiac surgery geriatrics, frail elderly, | Surgical Geriatrics | care | unspecified | Direct and indirect (| rovider proxy) payer rovider, | | (medicine costs none; charges, transformed wit cost-to-charge ratio | h Charges/Reimbursem t-based proxy Absorption costing - | en N/A Charges Reinhor sement-based patient 0x0 N/A | transformed with cost-to-charge |

| H. Ko, D. S. Brodke, M. E. Vanneman, A. J. Schoenfeld and B. I. Martin | | Is Discretionary Care Associated with Safety Among Medicare Beneficiaries Undergoing Spine Surgery? | | | | | | | | | | | | | | | | |
|--|------|--|--------|----------------|---|--|--|-------------------|-----------------------------|-----------------------------------|---------------------------|------------|----------|--|---|-------------|-------------|-----------------|
| | 2021 | Benericianes Ondergoing spine Surgery: | US | US; various | | | spine surgery, surgical | Surgical | Spine | partial care path | Direct and indirec | t payer | payer | none; reimbursements | Charges/Reimbursemen t-based | N/A | reimburseme | ents no |
| S. R. Konda, J. R. Johnson, N. Dedhia, E. A. Kelly and K. A. Egol | | Can We Stratify Quality and Cost for Older Patients With Proximal and Midshaft Humerus Fractures? | | | | | | | | | | | | direct variable costs as an | | | | |
| | 2021 | | US | US; various | | | Humerus Fractures, geriatrics, orthopedic | Surgical | Orthopedic fracture | unspecified | Direct | provider | provider | estimation of total costs | Direct costing | N/A | | no |
| A. T. Malik, S. N. Khan, R. T. Voskuil, J. H. Alexander, J. P. Drain and T. J. Scharschmidt | | What Is the Value of Undergoing Surgery for Spinal Metastases at Dedicated Cancer Centers? | US | US; various | | | Orthopedic, Surgical, | Oncology | | partial care path | Direct and indirec | | Parat | none; reimbursements | Charges/Reimbursemen t-based | N/A | reimhurseme | unto no |
| T. R. McClintock, D. F. | 2021 | | 03 | US, various | 10 A | | spine surgery | Oncology | | partial care pain | Direct and indirec | i payer | payer | reinbursemenis | t-based | N/A | reinourseme | ins no |
| Friedlander, A. Y. Feng, M. A. Shah, D. J. Pallin, S. L. Chang, A. M. Bader, T. W. Feeley, R. S. Kaplan and G. E. | | Determining Variable Costs in the Acute Urolithiasis Cycle of Care Through Time-Driven Activity-Based Costing | | | multi center, retrospective, process mapping, journey | unspecified number of patients, acute | | emergency care & | | | | | | | Absorption costing - | | | yes se |
| R. Negrini, R. D. da | 2021 | | US | US; Boston | mapping | stone episodes | Acute Urolithiasis | acute care | | full care path | Direct and indirec | t provider | provider | TDABC | TDABC | unspecified | | sheet |
| K. Negrini, K. D. da Silva Ferreira and D. Z. Guimaraes | | Value-based care in obstetrics: comparison between vaginal birth and caesarean section | | | single center, retrospective, process | | Obstetrics, birth, vaginal | | | | | | | direct and | Absorption costing - | | | yes se |
| T. V. Newman, K. D. | 2021 | | Brazil | Brazil | mapping | 9345 deliveries | birth, caesarean birth | obstetrics | | full care path | Direct and indirec | t provider | provider | indirect costs | unspecified/generic | Paper only | | sheet |
| V. Newman, K. D. Munshi, L. M. Neilson, C. B. Good, E. C. S. Swart, Y. Huang, R. Henderson and N. Parekh | 2021 | Health care utilization and costs associated with switching from DPP-4i to GLP-1RA or SGLT2i: an observational cohort study | US | US; various | | | Diabetes | Internal Medicine | | partial care path | Direct and indirec | t paver | paver | none: charges | Charges/Reimbursemen t-based | N/A | charges | по |
| N. Panda, L. | 2021 | | | | | | | ema medicilie | | partial care paul | | . payer | P-0,-4 | none, enarges | - compati | | compes | |
| Shagabayeva, C. E. Comrie, N. Phan, P. Moonsamy, C. F. Jeffrey Yang, F. G. Fernandez and C. R. | | Drivers of Cost Associated With Minimally Invasive Esophagectomy | US | | | | esophagectomy, surgical | | | | | | | | | N/A | | |
| S. K. Pasquali, D. | 2022 | | US | US; Boston | | | thoracic surgery | Surgical | Cardiac/Thoracic | full care path | Direct | provider | provider | direct costs | Direct costing | N/A | | no |
| Thibault, M. Hall, K. Chiswell, J. C. Romano, J. W. Gaynor, D. M. Shahian, M. L. Jacobs, M. G. Gaies, S. M. | 2021 | Evolving Cost-Quality Relationship in Pediatric Heart Surgery | US | US; Boston | Retrospective, multi-center | | pediatrics, surgical, pediatric heart surgery | Pediatrics | Pediatric surgical | full care nath | direct and indirect | nrovider | provider | CHD-method standardized costs | Absorption costing - unspecified/generic | Paper only | | no |
| R. K. Sethi, R. P. Pumpian, C. E. Drolet and P. K. Louie | | Utilizing Lean Methodology and Time-Driven Activity-Based Costing Together: An Observational Pilot Study of Hip Replacement Surgery Utilizing a New Method to Study Value-Based Health Care | US | US; Washington | single center, retrospective, surgeon comparison | 346 nations | surgical, orthopedic, hip replacement surgery, anterior hip arthroplasty | Sumical | Orthopedic, arthroplasty | full care path (surgical episode) | Direct and indirec | t provider | provider | TDARC | Absorption costing - | Paper only | | yes se |
| N. G. Thaker, D. Boyce- Fappiano, M. S. Ning, D. Pasalic, A. Guzman, G. Smith, E. B. | | Activity-Based Costing of Intensity-Modulated Proton versus Photon Therapy for Oropharyngeal Cancer | 03 | 03, washington | single center, process mapping, | 540 parents | anerio niparinopiasiy | Sugea | arunopiasty | episodej | Direct and manee | r provider | provider | ibase | IDABC | raperonry | | sileet |
| Holliday, J. Incalcaterra, A. S. | 2021 | | US | US; Texas | matched | 50 patients (matche | d oncology, radiation | Oncology | | | Direct and indirec | | | TDABC | Absorption costing - TDABC | incent in t | | yes se |
| Gardon S. F. S. Tomicki, G. Dieguez, H. Latimer, P. Cockrum and G. Kim | | Real-World Cost of Care for Commercially Insured versus Medicare Patients with Metastatic Pancreatic Cancer Who Received Guideline- Recommended Therapies | | os, rexas | sample | pan\$) | oncology oncology, metastatic | Gacology | | partial care path | issues and indirec | a provider | provider | IDADC | Charges/Reimbursemen | implemented | | sheet |
| | 2021 | | US | US; various | | | pancreatic cancer | Oncology | | full care path | Direct and indirec | t payer | payer | none; charges | t-based | N/A | charges | no |
| W. Wang, E. Li, K. Campbell, A. McBride and S. D'Amato | | Economic Analysis on Adoption of Biosimilar Granulocyte Colony- Stimulating Factors in Patients With Nonmyeloid Cancer at Risk of Febrile Neutropenia Within the Oncology Care Model Framework | | | | | oncology, Nonmyeloid | | | | | | | | | | | |
| | 2021 | | US | US; New Jersey | | | Cancer | Oncology | | partial care path | Direct | provider | provider | direct costs | Direct costing | N/A | | no |
| K. L. Wise, H. R. Parikh, B. Okelana, A. J. Only, M. Reams, A. Harrison, J. Braman, E. Craig and B. P. Cunningham | 2022 | Measurement of value in rotator cuff repair: patient-level value analysis for the 1-year episode of care | US | US: Minnesota | single center, retrospective, process manning | 396 natients | orthopedic, surgical, rotator cuff renair | Survical | Orthopedic rotate | r full care path | Direct and indirec | t provider | provider | TDARC | Absorption costing - | unspecified | | yes se sheet |
| C. Iloabuchi, N. Dwibedi, T. LeMasters, | | | | ., | 9.11 | - - - | | | | | | | | | | | | |
| C. Shen, A. Ladani and U. Sambamoorthi | | Low-value care and excess out-of-pocket expenditure among older adults with incident cancer – A machine learning approach | 10 | | | | oncology, incident | | | | D ² - 1 | | | total out of pocket expenditures | Charges/Reimbursemen | | | |
| | 2021 | | US | US; various | | | cancer | Oncology | | full care path | Direct | patient | patient | (SEER data) | t-based patient OoO | N/A | | no |

Balzer

Parker

S. Gandhi

and N. Navai

Richardson, T Patel, R. M.

King, B. C

Lee, H. C.

Hall, M.

Bamat, N. A.

Courtney

N. H. Nguyen, J. Luo, L. Ohno-Machado, W. J. Sandborn and S.

Singh

Burden and Outcomes of Fragmentation of Care in Hospitalized Patient

With Inflammatory Bowel Diseases: A Nationally Representative Cohort

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N. Seyidova, A. D. Chen, D. del Valle, D. Chi, R. P. Cauley, B. T. Lee and S. J. Lin none; charges, charges, transformed with Nationwide cost variation for lower extremity flan reconstruction lower extremity flap transformed with reconstruction, surgical, cost-to-charge Charges/Reimbursemen cost-to-charge US: varie plastic surgery full care path Direct and indirect (proxy) ratio t-based proxy ratio US Plastic surgery A. Jacir, D. Mendoza E. Dean and H. Gitlow The cost of care during times of COVID: Case study of TDABC and single center. minimum utilization cost analysis in a medicare advantage population process mapping, case case study. Absorption costing US; Florid telehealth visits Direct and indirect provider provid TDABC TDABC study Covid Infectious disease full care path unspecifie D. Fürstenau, H. Haneke, C. Spies, T. Walz K Schewing M Tackling the frailty burden with an integrative value-based approach Höft, R. Mörgeli and F. results from a mixed-methods study bottom-up surgical, perioperative clinical costing 2021 German German process partial care path cified provider approach Unspecifie J. F. Buell, A. N. Flaris, S. Raiu, A. Hauch, M. Darden and G. G. Long-Term Outcomes in Complex Abdominal Wall Reconstruction Repaired with Absorbable Biologic Polymer Scaffold (Poly-4-Surgical, abdominal wall reconstruction, Hydroxybutyrate) Charges/Reimbursemen reherniation, complex US; North Carolin abdominal wall hernia US none; charges t-based V. J. Siu. T. Varkey, U. N. Khan, J. B. Ding and Lend Me a Hand: A Value-Based Care Case Study on Pan Plexopathy of Unknown Origin pan plexopathy. neurology, brachial out of pocket Charges/Reimburseme US; Texas 2021 US plexus injury costs to patient t-based patient OoO J. B. Kukreja, M. A Seif, M. W. Mery, J. R. Incalcaterra, A. M Utilizing time-driven activity-based costing to determine open radical single center Kamat, C. P. Dinney, J. cystectomy and ileal conduit surgical episode cost drivers retrospective, open radical cystecton B. Shah, T. W. Feeley process urology, oncology, Absorption costing US: Texa bladder cancer full care path Direct and indirect provider TDABC TDABC 2021 US Prioritization framework for improving the value of care for very low birth weight and very preterm infants Retrospective 26098 preterm or charges cohort, multi low birth weight Preterm infants neonatal standardized Charges/Reimbursemen US; Texa perinatology, pediatrics Pediatrics Pediatric Neonatal partial care path Direct and indirect paye across hospitals t-based center L. Fernando-Canavan A. Gust. A. Hsueh. A. single cente Tran-Duy, M. Kirk, P Measuring the economic impact of hospital-acquired complications on an retrospective Brooks and J. Knight acute health service mixed methods bottom-up observational emergency care, hospital emergency care & clinical costing Absorption costing and red complicat Direct and indirect H. Skibicki, M. Yayac, C. A. Krueger and P. M Target Price Adjustment for Hip Fractures Is Not Sufficient in the Bundled Payments for Care Improvement Initiative arthroplasty hin Orthonedic Charges/Reimburseme charges (EOC US; Pennsylv 202 fractures, orthopedics Surgica arthroplasty full care path Direct and indirect paye none; charges t-based costs) D. Clewley, Y. Iftikhar M. E. Horn and D. I. Do the Number of Visits and the Cost of Musculoskeletal Care Improve Outcomes? More May Not Be Better Subacromial pain Charges/Reimbursemen Retrospective none; 2020 US: Texas clinical trial syndrome Direct and indirect reimburse ents t-based US 98 pa artial care path B. Walker, L. Wilfong, J. Frytak and N. Robert Practice patterns among oncologists participating in the oncology car model after three years Charges/Reimbursemer US; Louisiana full care path Direct and indirect payer oncology, cancer none; charges t-based C. A. Krueger, M. Yayac, C. Vannello, J Wilsman, M. S. Austin and P. M. Courtney Are We at the Bottom? BPCI Programs Now Disincentivize Providers Who Maintain Quality Despite Caring for Increasingly Complex Patients orthopedic, total hip arthroplasty, total knee Orthopedic Charges/Reimbursemen none; US US: Pennsylva arthroplasty arthronlast vartial care nat Direct and indirect reimburs t-based B. S. Horton, J. D. Marland, H. S. West and J. D. Wylie Transition to Telehealth Physical Therapy After Hip Arthroscopy for Femoroacetabular Impingement: A Pilot Study With Retrospective orthopedics, hip Matched-Cohort Analysis athroscopy, physical Charges/Reimbursemen

yes see second

yes see second

sheet

BMJ Open

Direct and indirect payer

(proxy

none; charges

none; charges

HCUP data

t-based

t-based

Charges/Reimbursemen

partial care path

US; Utah

US: Califor

US

therapy

Diseases

Gastroenterology Inflammatory Bowel BMJ Open

| R. Lyons, A. Nsair, R. J. Shemin and P. Benharash | Trends in utilization, mortality, and resource use after implantation of left ventricular assist devices in the United States | t | | | | | | | | | | | none; | | | charges |
|---|--|-----------------|-----------------|----------------------------------|--------------------|---------------------------------------|----------------|-----------------|---|----------------|-----------------|--------------|------------------------------|---|-------------|------------------------------------|
| Demand and | ventricular assist devices in the United States | | | | | cardiovascular, left | | | | | provider | | reimbursemen cost-charge- | | | transformed with cost-to-charge |
| | 2021 | US | US; various | | | ventricular assist devic | es Surgical | Cardiac/Thoraci | ic full care path | Direct and ind | | ayer | | t-based proxy | N/A | ratio no |
| Khanijow, A. N. Wood, L. N. | | | | | | | | | | | | | | | | |
| Kie, R. | The impact of an enhanced recovery program (ERP) on the costs of | | | | | | | | | | | | | | | |
| 'heiss, L. M. Iollis, R. H. | colorectal surgery | | | | | | | | | | | | | | | |
| ardiman, K. M. | 2021 | 110 | | single center, | | surgical, colorectal | | | partial care path (ful | | | | | Absorption costing - | | yes s |
| Gunnelle D. I. Jacobs, K. | 2021 | US | US; Alabama | retrospective | 616 surgical cases | surgery | Surgical | Colon/Rectal | surgical episode) | Direct and ind | rect provider p | rovider | unspecified | unspecified/generic | Paper only | shee |
| Dewilde, T. | | | | | | | | | | | | | | | | |
| Vandoren, C. | Variability in Hospital Costs of Adult Spinal Deformity Care | | | | | | | | | | | | | | | |
| Cardoen, B. Vansteenkiste, N. | variability in Hospital Cosis of Adult Spitial Deformity Care | | | | | | | | | | | | | | | |
| Scheys, L. | 2020 | | | single center, | 120 | Surgical, spine, Adult | | | 6 H | D: . | | | ABC (excludi | ng Absorption costing - | | yes s |
| Roodhooft F Mattar D | 2020 | The Netherlands | The Netherlands | retrospective | 139 patients | Spinal Deformity | Surgical | Spine | full care path | Direct | provider p | rovider | overheads) | ABC | Paper only | shee |
| Di Filippo, A. | | | | | | | | | | | | | | | | |
| Invento, A. | Economic implications of ACOSOG Z0011 trial application into clinical | | | single center, retrospective, | | | | | | | | | | | | |
| Radice, D. Burcuta, M. | practice at the European Institute of Oncology | | | clinical trial, | | oncology, breast cance | r, | | | | | | | | | |
| Bagnardi, V. | 2021 | Italy | Italy | compare pre and post | 3912 patients | cancer, sentinel lymph node biobsy | Oncology | | partial care path (ful surgical episode) | Direct and ind | rect provider p | rovider | TDABC | Absorption costing - TDABC | implemented | yes s shee |
| Weir, T. B. | 2//2 F | itary | ataty | anu post | 2712 patients | aoue biodsy | Oncorogy | | surgicai episode) | isneet and ind | reer provider p | normeti | IDABU | DADC | mplemented | snee |
| Usmani, M. F. | | | | | | | | | | | | | | | | |
| Camacho, J. Sokolow, M. | Effect of Surgical Setting on Cost and Hospital Reported Outcomes for | | | | | | | | | | | | | | | |
| Sokolow, M. Bruckner, J. | Single-Level Anterior Cervical Discectomy and Fusion | | | 1.1 | | Spine, surgical, Anterio | or | | | | | | | | | |
| anini P | 2021 | US | US; Maryland | multi center, retrospectivo | 301 nationts | Cervical Discectomy a Fusion | nd Surgical | Snine | full care path | Direct and ind | rect provider | rovider | unspecified | Absorption costing - unspecified/generic | Paper only | |
| urami I I | | 00 | 55, mai yiana | reasspective | Sor pastents | | ougedi | opine | run cure paur | oncet and ind | providen p | e e - resta | anspectified | and because Pencine | , upor omy | 110 |
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Inclusions RQ2 (49) extracted data to be shared with Erasmus Data Repository (FigShare)

| | Study characteristics | | | | | Costing | method char | ecteristics | | Value- | Based consequences of costing information (facil | itators) | | |
|------|---|---|----------------|--------------------------|--------------|------------|---------------------------|---------------------|---------------------------|---|---|-----------------------------------|--|----------------------|
| ear | Reference | Medical Specialty | Costing method | Costing period | Centre | Study type | PM: Process Mapping | EI: Expert Input | DO: Direct Observation | CG: Cost grouping, either per item or per activity, or both | Benchmarking across/Compare costs across | Identification of Cost Drivers | Measured cost difference | Care pa adjustmer |
| 2022 | (Alibrahim et al., 2022) | Internal medicine | TDABC | partial | single | retro | yes | yes | | items, activities | | yes | | suggeste |
| 2022 | (Wise et al., 2022) | Surgical, orthopaedic, rotator cuff re | TDABC | full (FSE) | single | retro | yes | | yes | items, activities | surgeons, two alternative treatments within one care path | yes | yes, ± \$727 about the mean per patient | suggeste |
| 2021 | (Etges et al., 2021) | Cardiology (incl. several surgeries) | TDABC | full (FSE) | multi | retro | yes | yes | yes | items, activities | hospitals, interventional coronary procedures | yes | yes, estimate 51.0% of procedure cost | yes |
| 2021 | (Dziemianowicz et al., 2021) | Oncology | TDABC | full | single | retro | yes | yes | yes | items, activities | treatment care paths (accelerated whole breast irradiation vs. usual care) | yes | \$2,302 (25.0%) difference across | sugges |
| 2021 | (Fang, Hagar, Gordon, et al., 2021) | Surgical, orthopaedic fracture | TDABC | full (FSE) | single | retro | yes | | | items, activities | patients | yes | treatments | sugge |
| 2021 | (Fang, Shaker, Drew, et al., 2021) | Surgical, orthopaedic, arthroplasty | TDABC | full (FSE) | single | retro | yes | | yes | items, activities | costing methods (TA and TDABC) | yes | | sugge |
| 2021 | (Fang, Shaker, Hart, et al., 2021) | Surgical, orthopaedic, arthroplasty | TDABC | full (FSE) | single | retro | yes | | yes | items, activities | five treatments (total joint arthroplasties), cost vs. reimbursement | yes | | |
| 2021 | (Ganske et al., 2021) | Paediatric, surgical, plastic surgery | TDABC | full (FSE) | multi | Pro | yes | | yes | items, activities | treatment care paths | yes | up to \$8900 if surgery was required, but long- | sugg |
| | | | | | | | | | | | eight care paths for acute ureteral stones (patient | | vas required, but iong- term outcomes yet yes, \$6614 difference | |
| | (McClintock et al., 2021) | Emergency & acute care | TDABC | full (multiple) | multi | retro | yes | yes | yes | items, activities | journeys) | yes | across care paths | sugg |
| 2021 | (Sethi, Pumpian, Drolet, & Louie, 2021) | Surgical, orthopaedic arthroplasty | TDABC | full (FSE) | single | retro | yes | | yes | items, activities | surgeons treatments (matched sample, intensity-modulated | yes | yes, cost difference of | sugg |
| 2021 | (Thaker et al., 2021) | Oncology | TDABC | partial | single | pro | yes | yes | yes | items, activities | proton vs. photon therapy) and individual care paths | yes | up to 3.33 times, depending on patient | sugg |
| 2021 | (Kukreja et al., 2021) | Oncology (incl. surgery) | TDABC | full | single | retro | yes | | yes | items, activities | | yes | | sugg |
| 2021 | (Mattar et al., 2021) | Oncology | TDABC | partial (FSE) | single | retro | yes | | | items | pre and post implementation of Z0011 guidelines | yes | yes, mean cost savings | , , |
| | | | | | multi | | yes | | | | in oncology patient journeys | | of €309 per patient | |
| | (Bueno et al., 2021) | Cardiology | AC (other) | partial | | retro | | | | items | | yes | | sug |
| | (Casey et al., 2021) | Emergency & acute care | AC (other) | partial | single | retro | yes | | | items | surgeons | yes | | |
| | (Cohen et al., 2021) | Surgical, bariatric | AC (other) | full (FSE) | single | retro | | | | items | treatment | yes | | |
| 2021 | (Negrini, da Silva Ferreira, & Guimarae | s Gynaecology & obstetrics | AC (other) | full | single | retro | yes | | | items, activities | procedures | yes | yes, \$967 per patient | sug |
| 2021 | (Fernando-Canavan et al., 2021) | Emergency & acute care | AC (other) | partial | single | retro | | | | items, activities | | yes | | |
| 2021 | (Khanijow et al., 2021) | Surgical, colorectal | AC (other) | partial (FSE) | single | retro | | | | items | intervention | yes | yes, reduced variable cost, similar total cost | |
| 2020 | (Wise et al., 2020) | Surgical, orthopaedics, fracture | ABC | partial (FSE) | single | retro | | | | items | patients, patient groups, demographics | yes | | |
| 2020 | (Vanni, Foglia, Pennestri, Ferrario, & Ba | Surgical, orthopaedic, arthroplasty | ABC | full (FSE) | single | both | | yes | yes | items, activities | treatment care paths (enhanced recovery after surgery) | yes | estimate €2,054,000 annually | |
| 2020 | (Jacobs et al., 2020) | Surgical, spine | ABC | l, l year (incl. surgeri | single | retro | yes | | | items, activities | patients, patient groups | yes | | sug |
| 2020 | (Bodar et al., 2020) | Paediatric, surgical | TDABC | full (FSE) | single | both | yes | | yes | items, activities | costing methods (TA and TDABC) | yes | 20.0% and without care path alteration | sug |
| 2020 | (Ning et al., 2020) | Oncology | TDABC | full (FSE) | single | retro | yes | yes | yes | items, activities | treatment care paths (MRI-guided vs. usual care) | yes | yes, estimate for each 10.0% decrease in case | sug |
| | (Ahluwalia et al., 2020) | Surgical, orthopaedics fracture | TDABC | full (FSE) | single | pro | yes | yes | yes | items, activities | treatment care paths (home care vs. usual care), | yes | duration from baseline £2,018 per patient | sug |
| | (Caloway et al., 2020) | Paediatric, neonatal | TDABC | partial | single | retro | yes | yes | yes | | costs vs. reimbursements before and after intervention (family-centred care | yes | yes, 36.0% or \$92,000 per tracheostomy care | |
| | (Burnhope et al., 2020) | Surgical, cardiac/thoracic | AC (other) | partial | multi | | | , | , | items | coordination program) patients, implant devices | | cvcle | sug |
| | | | | | | retro | yes | | | | patients, impaint devices | yes | | sug |
| | (Lenfant, Sawczyn, Kim, Aminsharifi, & | | AC (other) | partial | single | retro | | | | items | | yes | yes, multiple yes, quarterly costs | |
| 2015 | (Hernandez, Kaplan, Witkowski, Faison, | , Multiple | TDABC | full | multi, pilot | retro | yes | yes | yes | items, activities | before and after intervention (IPUs) | yes | declined yes, estimate OR time | sug |
| 2015 | (Basto, Chahal, & Riedel, 2019) | Oncology | TDABC | partial (PSE) | single | pro | yes | | yes | items, activities | treatment care paths (parallel vs. induction design in OR) | yes | reduction of 55 min, or \$,2818 missed revenue | sug |
| 2015 | (McCreary et al., 2019) | Surgical, orthopaedics fracture | TDABC | partial (FSE) | single | both | yes | | | items | | yes | | sug |
| 2015 | (Ahluwalia et al., 2019) | Surgical, foot debridement | TDABC | partial (FSE) | single | retro | | | yes | items | before and after intervention (traffic-light principle) | yes | | |
| | (Kurt, Saban, Cankaya, & Annac, 2019) | | TDABC | ull (entire department | single | retro | yes | yes | yes | items, activities | | yes | | sug |
| 2015 | (Danilyants, MacKoul, van der Does, Ha | Gynaecology & obstetrics (incl. surgery) | AC (other) | partial (FSE) | single | retro | | | | items | | yes | | sug |
| 2015 | (Danilyants, MacKoul, Baxi, van der Doe | e Gynaecology & obstetrics (incl. surg | AC (other) | partial (FSE) | single | retro | | | | items | | yes | | |
| 2015 | (Chatfield et al., 2019) | Multiple | Direct costing | partial | single | retro | | | | items | | yes | | |
| 2015 | (Featherall et al., 2019) | Surgical, orthopaedic arthroplasty | Direct costing | full (FSE) | multi | retro | | | | items | intervention | | yes, £255 per patient | |
| 2018 | (Martin et al., 2018) | Surgical, carpal tunnel release | TDABC | partial (FSE) | multi | retro | yes | | yes | items, activities | multiple treatment care paths (colonoscopy, aortic valve replacement, Carpal Tunnel Release) | yes | yes, 70.9% (\$27,103) and 31.6% (\$178) | : |
| 2018 | (Robinson et al., 2018) | Surgical, appendicitis | AC (other) | partial (FSE) | single | pro | | yes | yes | items | pre and post intervention (dashboard) | yes | yes, decreased by \$496 per operation | |
| 2018 | (Karns et al., 2018) | Surgical, orthopaedic | Direct costing | partial (FSE) | single | retro | | yes | | items | intervention | yes | per operation | |
| 2017 | (Isaacson et al., 2017) | Urology | TDABC | partial | single | Pro | yes | | yes | items, activities | | yes | yes, estimate two hours | sug |
| | (Yu et al., 2017) | Paediatrics, appendicitis | TDABC | full (FSE) | single | pro | yes | yes | yes | items, activities | treatment care paths (pre and post intervention) | yes ves | per cycle 11.0% cost reduction, and 51.0% | ves, |
| | (Yu et al., 2017) | | | | | | yes | | yes | | scassen care pans (pre and post intervention) | yes | and 51.0% hospitalization time | yes, |
| | () | Urology | AC (other) | partial | multi | retro | | yes | | items | | | estimate 13.0-28.0% | |
| | (French et al., 2016) | Oncology, surgical | TDABC | tial (FSEs, 11 surgeri | single | retro | yes | | | items, activities | potential staffing ratios treatments (high-dose vs. low-dose | yes | per surgery type \$2,668 difference | Jueneu |
| 2016 | (Ilg et al., 2016) | Oncology | TDABC | full | single | retro | yes | yes | yes | items, activities | treatments (high-dose vs. low-dose brachytherapy) | yes | \$2,668 difference across treatments yes, 400.0% increase | |
| 2015 | (Kaplan et al., 2015) | Urology | TDABC | partial (FSE) | single | retro | yes | yes | | items, activities | five treatment care paths | yes | from least to most expensive nathways | sug |
| 2014 | (McLaughlin, Upadhyaya, et al., 2014) | Surgical, neurosurgery | ABC | partial (FSE) | single | retro | yes | | | items, activities | patients | yes | yes, 25.0% | yes, |
| 2014 | (McLaughlin, Martin, et al., 2014) | Surgical, neurosurgery | ABC | partial (FSE) | single | retro | yes | | | items, activities | patients | yes | | sug |
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SUPPLEMENT DIGITAL CONTENT

1 Search strategy

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SUPPLEMENT DIGITAL CONTENT 2 Inclusion/exclusion criteria, data extracted Eligibility criteria Language English or Dutch Publication date Between 2003 and 1.1.2022 Original, peer-reviewed, empirical research Research type Terms Any variation of the terms "cost" and "value-based" in title or abstract Full text content Costs of an intervention, treatment, care path, or other healthcare activity must have been measured or estimated. Variables collected Descriptive Name, year published, authors, medical specialty, location Costs included Based on author reporting we classify studies into one of two categories: Direct costs only Direct and indirect costs We inductively classify studies into one or more categories: Cost perspective Provider costs (e.g. hospital) • Payer costs (reimbursements, charges, payments) • • Patient costs (out-of-pocket costs to patient) Care path length We inductively classify studies into one of the following categories: • Full care path • Full care path, full surgical episode (FSE) Partial care path, full surgical episode (PSE) • Partial care path Costing method used, as labelled by the authors. These include traditional cost Costing method label accounting, ABC, or ABC excluding overheads, TDABC, or TDABC with some cost categories omitted, microcosting, bottom-up clinical costing, reference pricing, relative value units or DRG costs, direct variable costs, or direct costs as an estimate of total cost, reimbursements, charges, claims, payments, and cost-to-charge ratio. Costing method applied, based on method described by authors. We classified Costing method studies using management accounting literature (e.g., Zimmerman, 2015). We applied found the following categories represented in the literature. • Direct costing Absorption costing, which includes: o ABC o TDABC. • Other Cases using reimbursements or charges to estimate costs were coded as 'reimbursements' or 'cost-to-charge ratio'. **Facilitating factors** If the study discussed the consequences of the costing information generated, we collected the consequences. After we collected all consequences, we categorized these inductively. Note: ABC: Activity-based costing; TDABC: Time-driven activity-based costing Supplement digital content table 1. Eligibility criteria and data collected. 1

SUPPLEMENT DIGITAL CONTENT 3 All studies included in RQ1

| Perspective | Method | n | studies |
|-------------|--|----|-----------------------|
| Provider | Direct costs only | - | |
| | Direct costing | 23 | [1–23] |
| | Absorption costing | | |
| | ABC | 7 | [24–30] |
| | TDABC | 31 | [31–61] |
| | Other | 47 | [62–108] |
| | Not specified | 3 | [109–111] |
| Insurer | Charges & reimbursements | | |
| | Charges, reimbursements, claims | 81 | [23,39,112–190] |
| | Charges adjusted with cost-to charge ratio | 25 | [108,191–214] |
| Patient | Out-of-pocket costs to patient | 5 | [106,126,130,215,216] |

types[23,38,39,106,108,126,130]. Studies are classified based on actual costs included and methods described, not necessarily the labels used by authors.

Supplement digital content table 2. Overview of cost measurement methods used in valuebased healthcare with references

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Reference numbers start at 1, these differ from the manuscript.

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PRISMA 2020 Checklist

| Section and Topic | ltem # | Checklist item | Location where item is reported |
|-------------------------------|-----------|--|---------------------------------------|
| TITLE | | | |
| Title | 1 | Identify the report as a systematic review. | pg 0 |
| ABSTRACT | | | |
| Abstract | 2 | See the PRISMA 2020 for Abstracts checklist. | |
| INTRODUCTION | | | |
| Rationale | 3 | Describe the rationale for the review in the context of existing knowledge. | pg1-3 |
| Objectives | 4 | Provide an explicit statement of the objective(s) or question(s) the review addresses. | pg 3 |
| METHODS | | | |
| Eligibility criteria | 5 | Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses. | pg 4 and supplemer |
| Information sources | 6 | Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted. | Pg 4 and supplement |
| ³ Search strategy | 7 | Present the full search strategies for all databases, registers and websites, including any filters and limits used. | Supplement |
| Selection process | 8 | Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process. | pg 6 |
| Data collection process | 9 | Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process. | рд б |
| Data items | 10a | List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect. | pg 4, supplement |
| 2 7 2 | 10b | List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information. | pg 4, supplement |
| Study risk of bias assessment | 11 | Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process. | pg 4, supplement |
| Effect measures | 12 | Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results. | pg 4 |
| 2 Synthesis 8 methods | 13a | Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)). | pg 8 |
| 1 | 13b | Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions. | N/A |
| ò | 13c | Describe any methods used to tabulate or visually display results of individual studies and syntheses. | pg 8 |
| | 13d | Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used. | pg 4 |
| ₽ D | 13e | Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression). | N/A |
| | 13f | Describe any sensitivity analyses conducted to assess robustness of the synthesized results. | N/A |
| Reporting bias assessment | 14 | Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases). | N/A, discussed pg 23 |
| Certainty assessment | 15 | Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome. For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml | N/A |

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PRISMA 2020 Checklist

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| Section and Topic | ltem # | Checklist item | Location where iter is reporte |
|--|-----------|--|--------------------------------------|
| RESULTS | | | |
| Study selection | 16a | Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram. | pg 5,6, 7 |
| | 16b | Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded. | pg 5 (flowch |
| Study characteristics | 17 | Cite each included study and present its characteristics. | pg 7-14, ar supplemer |
| Risk of bias in studies | 18 | Present assessments of risk of bias for each included study. | N/A |
| Results of individual studies | 19 | For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots. | N/A |
| Results of | 20a | For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies. | N/A |
| syntheses | 20b | Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect. | N/A |
| | 20c | Present results of all investigations of possible causes of heterogeneity among study results. | pg 7-9 |
| | 20d | Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results. | N/A |
| Reporting biases | 21 | Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed. | N/A |
| Certainty of evidence | 22 | Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed. | N/A |
| DISCUSSION | | | |
| Discussion | 23a | Provide a general interpretation of the results in the context of other evidence. | pg 18-21 |
| | 23b | Discuss any limitations of the evidence included in the review. | pg 21 |
| | 23c | Discuss any limitations of the review processes used. | pg 21, 4 |
| | 23d | Discuss implications of the results for practice, policy, and future research. | pg 18-21 |
| OTHER INFORMA | TION | | |
| Registration and | 24a | Provide registration information for the review, including register name and registration number, or state that the review was not registered. | pg 4 |
| protocol | 24b | Indicate where the review protocol can be accessed, or state that a protocol was not prepared. | suppleme |
| | 24c | Describe and explain any amendments to information provided at registration or in the protocol. | N/A |
| Support | 25 | Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review. | Funding state |
| Competing interests | 26 | Declare any competing interests of review authors. | Author statement |
| Availability of data, code and other materials | 27 | Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review. | Data availabi statement |

 44 From:
 Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372:n71. doi:

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| 2 3 4 | Section and Topic | ltem # | Checklist item | Reported (Yes/No) |
|----------------------|---|-----------|---|----------------------|
| 5 6 | TITLE | | | |
| 7 | Title | 1 | Identify the report as a systematic review. | yes |
| 8 | BACKGROUND | r | | |
| 9 10 | Objectives | 2 | Provide an explicit statement of the main objective(s) or question(s) the review addresses. | yes |
| 11 | METHODS | r | | |
| 12 | Eligibility criteria | 3 | Specify the inclusion and exclusion criteria for the review. | yes |
| 13 14 15 | Information sources | 4 | Specify the information sources (e.g. databases, registers) used to identify studies and the date when each was last searched. | yes |
| 16 | Risk of bias | 5 | Specify the methods used to assess risk of bias in the included studies. | no |
| 17 | Synthesis of results | 6 | Specify the methods used to present and synthesise results. | yes |
| 10 | RESULTS | | | |
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| 21 22 23 24 | Synthesis of results | 8 | Present results for main outcomes, preferably indicating the number of included studies and participants for each. If meta-analysis was done, report the summary estimate and confidence/credible interval. If comparing groups, indicate the direction of the effect (i.e. which group is favoured). | yes |
| 25 | DISCUSSION | | | |
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| 28 29 | Interpretation | 10 | Provide a general interpretation of the results and important implications. | yes |
| 30 | OTHER | | | |
| 31 | Funding | 11 | Specify the primary source of funding for the review. | yes |
| 32 33 | Registration | 12 | Provide the register name and registration number. | N/A |
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Cost measurement in value-based health care: a systematic review

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Title: Cost measurement in value-based health care: a systematic review

Running head: Cost measurement in value-based healthcare

Authors: Maura Leusder, Petra Porte, Kees Ahaus, and Hilco van Elten

Maura Leusder, MSc. Department Health Services Management & Organisation, Erasmus University Rotterdam The Netherlands

Petra J. Porte, PhD. Department Health Services Management & Organisation, Erasmus University Rotterdam The Netherlands

C.T.B. (Kees) Ahaus, Prof. Dr. Ir. Department Health Services Management & Organisation, Erasmus University Rotterdam The Netherlands

Hilco J. van Elten, PhD. Center for Corporate Reporting, Finance & Tax, Nyenrode Business University, Breukelen, The Netherlands

Corresponding author; Maura Leusder, MSc.

leusder@eshpm.eur.nl. +31 06 38002149 J6-41, Bayle Building (J) Burgemeester Oudlaan 50, 3062 PA Rotterdam Postbus 1738, 3000 DR Rotterdam

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Keywords: Costs, value-based healthcare, cost accounting, process improvements, time-driven activity-based costing, activity-based costing, decision-making

ABSTRACT

Objective Although value-based healthcare (VBHC) views accurate cost information to be crucial in the pursuit of value, little is known about how the costs of care should be measured. The aim of this review is to identify how costs are currently measured in VBHC, and which cost measurement methods can facilitate VBHC or value-based decision making.

Design Two reviewers systematically search the PubMed/MEDLINE, Embase, EBSCOhost, and Web of Science databases for publications up to 1/1/2022 and follow PRISMA guidelines to identify relevant studies for further analysis.

Eligibility criteria Studies should measure the costs of an intervention, treatment, or care path and label the study as 'value-based'. An inductive qualitative approach was used to identify studies that adopted management accounting techniques to identify if or how cost information facilitated VBHC by aiding decision-making.

Results We identified 1,930 studies, of which 215 measured costs in a VBHC setting. Half of these studies measured hospital costs (110, 51.2%) and the rest relied on reimbursement amounts. Sophisticated costing methods that allocate both direct and indirect costs to care paths were seen as able to provide valuable managerial information by facilitating care path adjustments (40), benchmarking (39), the identification of cost drivers (47), and the measurement of total costs or cost savings (26). We found three best practices that were key to success in cost measurement: process mapping (34), expert input (16), and observations (24).

Conclusions Cost information can facilitate VBHC. Time-driven activity-based costing (TDABC) is viewed as the best method although its ability to inform decision-making depends on how it is implemented. While costing short, or partial, care paths and surgical episodes produces accurate cost information, it provides only limited decision-making information. Practitioners are advised to focus on costing full care cycles and to consider both direct and indirect costs through TDABC.

Strengths and limitations

- Using two independent reviewers, this systematic review analyzes all value-based healthcare studies that have to date measured costs to provide a comprehensive comparison of cost measurement methods.
- This research operationalizes the benefits of cost measurement to practitioners by identifying four mechanisms through which cost information facilitates value-based healthcare.
- By comparing the methods used in literature to collect cost information, this study identifies three best practices for practitioners and researchers.
- By limiting the search to studies labelled as 'value-based' in their title or abstract, this review overlooks studies that measure healthcare costs but do not explicitly relate this to value-based healthcare.
- The included studies may have achieved value-based healthcare without reporting this explicitly, and therefore may be overlooked when answering Research Question 2.

INTRODUCTION

To make sound value-based decisions in healthcare, hospital practitioners and healthcare providers require patient-level information on the costs incurred and outcomes achieved in hospitals and other healthcare organizations [1]. This will enable care providers to steer towards better patientreported outcome measures, better patient-reported experience measures, and clinical outcomes at equal or lower cost [2]. With detailed cost and outcome information, care paths can be continuously optimized [3]. Consequently, value-based healthcare (VBHC) is considered one solution to the financial pressures our global healthcare system places on managers and administrators [1,4,5] based on its promise to streamline care by focusing on desirable outcomes. Additionally, hospitals can benefit from cost information by gaining insight into the sources of costs that can then guide cost-containment strategies. Cost information may therefore facilitate process and quality improvement initiatives pursued by management [6-10]. Furthermore, insight into patient-level or treatment-level costs enables hospitals to negotiate appropriate prices with insurance firms, especially given the trend towards new payment models and away from fee-forservice payments [11,12]. Finally, it is suggested that such treatment-level cost information enables market-based competition among hospitals based on outcomes and prices [13].

Considerable research has addressed the outcome side of Porter's value equation [14]. This value equations suggests that healthcare should pursue 'value', where value is defined as desirable and relevant patient level outcomes divided by the costs of delivering care [1, 2]. Many studies have measured patient-level outcomes from both the patient perspective (e.g., patient-reported outcome measures, patient-reported experience measures) and clinical outcome perspective [15,16]. Less is known about the cost side of this equation. Often, the term 'cost' is conflated with the price paid by insurance firms or patients to the hospital [17,18]. However, prices do not reflect

the costs incurred by hospitals [6,19–21]. Prices paid by insurance firms are negotiated sums that include profit margins for both the insurer and the hospital [22]. They are also impacted by political factors, such as the hospital-payor mix [23] that refers to the range of private and public insurance schemes that make up the hospital's income stream. Finally, fee-for-service payments fail to account for patient-level differences in required care. Reimbursements are therefore considered a poor indicator of costs.

Some authors argue for time-driven activity-based costing (TDABC) as the 'gold standard' of cost measurement in healthcare organizations [3,5,15]. TDABC, in a fine-grained way, matches direct and indirect costs to activities based on the time an activity takes. A care path is made up of many activities, each generating costs. The costs of a care path can thus be calculated by first identifying all costs relevant to each activity, and then summing these costs across the activities [22].

Although the research is growing and results are promising, there is relatively little empirical evidence to support TDABC being the best costing method to enable VBHC since studies rarely compare methods, and often simply use whichever system the investigated hospital or care provider uses. Costing methods differ by how they allocate indirect costs to products or services [24]. Moreover, indirect costs cannot causally be attributed to patients and therefore need to be appropriately allocated. An example of such indirect costs are the salaries of administrative personnel such as the front office staff who welcome patients, coordinate schedules, and manage equipment. While some costing methods ignore this (e.g., direct costing), other methods average indirect costs across days or months, or systematically allocate them to patients. These methods range from imprecise to fine-grained, with TDABC towards the fine-grained end of the scale. This insight is particularly relevant to healthcare since indirect costs are high. The most fine-grained

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method is known as activity-based costing (ABC) and allocates indirect costs based on actual units of resources used per activity. In comparison, TDABC allocates indirect costs based on a perminute cost, making it considerably easier to implement. Costing methods that ignore the indirect costs of a care path underestimate the true costs of the care delivered.

Previous systematic reviews have found that TDABC was able to facilitate VBHC, often highlighting cost savings as a result but without comparing it to alternative methods [3,4,15]. Therefore, we do not know how TDABC compares to other cost measurement methods currently in use. While TDABC may be able to facilitate VBHC [5,15], it is unclear how its benefits compare to other costing methods. For these reasons, the cost side of the value equation remains unclear. To address this challenge, we pose two research questions:

RQ1: Which costing methods are currently being used by practitioners to facilitate VBHC?

RQ2: What are the consequences of applying a specific costing method in VBHC? These consequences may include whether the method enables a cost reduction with equal or better health outcomes or provides sufficient information to further improve a care path.

This comprehensive review draws on management accounting literature to categorize costing methods reported in empirical VBHC literature published over the last two decades (January 1, 2003 to January 1, 2022) into cost measurement methods defined in the literature [24], such as direct costing and absorption costing. Compiling studies in this way revealed four ways through which cost information facilitates VBHC and three best practices.

MATERIALS AND METHODS

Literature search strategy

To identify relevant studies, we systematically searched four major databases: Embase, Medline, Web of Science, and CINAHL EBSCOhost. Our search string (online supplementary appendix)

was developed by assessing previously identified relevant papers and was designed to catch all studies that address VBHC and measure the costs of an intervention, care path, or treatment by including the following specific terms:

cost, microcost*, macrocost* AND [meaning in combination with] value-based, value based, OR valuebased

Initial search string testing showed that restricting the search to the phrase "value-based healthcare" excluded too many relevant studies because authors use phases such as "value-based perspective" or "value-based equation" when referring to VBHC. Conversely, the term "value" was too broad and yielded more than 40,000 mostly non-specific results. By using wildcard terms indicated by stars we included many variations on the term 'cost'.

Eligibility criteria, record selection, and data collection

We limited ourselves to peer-reviewed empirical research that measured or estimated costs in a VBHC context. All the inclusion criteria and variables extracted are detailed in the **online supplementary appendix**. The following variables, inspired by Porter [2] and the cost measurement methods defined in the accounting literature, were noted:

- Cost types included (direct vs. indirect).
- Cost perspective (provider, payer, patient).
- Portion of the care path costed (full, partial).
- Cost measurement method used (as labelled by authors, verbatim).
- Cost measurement categories based on accounting definitions, e.g., direct costing, absorption costing, step-down allocation, and other recognized methods [24].
- Consequences of the costing information generated.

Patient and public involvement

This study did not involve patients or the public in designing, executing, or reporting the research.

RESULTS

Record selection

Our four-person (ML, PP, HvE, KA) research group identified 3,275 relevant papers, of which 1,930 remained after removal of duplicates. We conducted a trial screening of 30 papers to test and further specify screening criteria. The screening process comprised two rounds as shown in **Figure 1**. In Round 1, ML and PP screened the titles and abstracts independently. When there was uncertainty about the eligibility of a paper, it was retained for full-text screening following Bramer [25]. We accepted 674 studies based on titles and abstracts, with a Cohen's kappa inter-rater reliability score of 0.78, indicating substantial agreement [26].

In Round 2, both ML and PP screened the full text of all 674 studies independently. Of these, 215 studies were seen as relevant for RQ1, with a Cohen's kappa of 0.76 between ML and PP. HvE was included in any resolution discussions needed. Finally, we assessed whether each paper discussed if or how the costing information facilitated VBHC (RQ2), yielding 49 instances where the costing method facilitated VBHC. This review was not registered.

Figure 1 here

Figure 1. PRISMA flowchart depicting the screening, exclusion and inclusion processes with two reviewers.

Descriptive characteristics

An overview of the included studies is provided in **Table 1**. Our earliest study is from 2005, with an upsurge in studies from 2017 onwards. Just under half (n=98, 45.6%) of studies were published in the last two years. An overwhelming majority are from the US (n= 178, 82.8%). Europe is the second most common continent with 22 (10.6%) studies of which 9 (4.2%) relate to Dutch healthcare.

The three largest medical specialty groups represented are surgical (n=99; 46.0%), oncology (n=37; 17.2%), and pediatrics (n=19; 8.8%). A complete list of the 215 studies included is summarized in the **online supplementary appendix**. Extracted data are available in the **supplementary file**.

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| Characteristic | n | % | Characteristic | n | % |
|----------------------|-----|--------|-----------------------------------|---------|-------|
| Year published | | | Торіс | | |
| 2005-2009 | 3 | 1.4% | Cardiology | 5 | 2.3% |
| 2010-2013 | 6 | 2.8% | Dermatology | 1 | 0.5% |
| 2014 | 6 | 2.8% | Emergency & acute care | 11 | 5.1% |
| 2015 | 7 | 3.3% | Endocrinology | 3 | 1.4% |
| 2016 | 9 | 4.2% | Surgical, of which | 99 | 46.0% |
| 2017 | 17 | 7.9% | Appendicitis, 2 | | |
| 2018 | 28 | 13.0% | Abdominal, 6 | | |
| 2019 | 41 | 19.1% | Bariatric, 2 | | |
| 2020 | 43 | 20.0% | Cardiac/Thoracic, 12 | | |
| 2021 | 51 | 23.7% | Colon/Rectal, 2 | | |
| 2022 as per 1/1/2022 | 4 | 1.9% | Endocrine, 2 | | |
| Geography | | | Ear/Nose/Throat, 2 | | |
| Americas | | 84.3% | Gallbladder, 2 | | |
| Brazil | 3 | | Liver, 2 | | |
| Canada | 1 | | Neurosurgical, 5 | | |
| US of which | 178 | | Orthopedic arthroplasty, 25 | | |
| Boston, 8 | | | Orthopedic fracture, 12 | | |
| California, 18 | | | Orthopedic rotator cuff repair, 2 | | |
| New York, 23 | | | Orthopedic other, 3 | | |
| Texas, 12 | | | Plastic surgery, 2 | | |
| Pennsylvania, 9 | | | Spine, 13 | | |
| Other states, 108 | | | other surgical, 5 | | |
| Asia | | 2.3% | Geriatrics | 1 | 0.5% |
| China | 1 | 2.370 | Gynecology & obstetrics | 8 | 3.7% |
| Iran | 1 | | Infectious disease | 1 | 0.5% |
| Kuwait | 1 | | Internal medicine | 12 | 5.6% |
| Lebanon | 1 | | Multiple | 3 | 1.4% |
| Singapore | 1 | | Nephrology | 1 | 0.5% |
| | 1 | 10.6% | | 2 | 0.37 |
| Europe Andalusia | 1 | 10.070 | Neurology | 2 37 | 0.9% |
| | 1 | | Oncology Ophthalmalagy | 37 | 17.2% |
| Germany | 1 | | Ophthalmology Orthonodia | | |
| Italy | 3 | | Orthopedic Dain modicing | 1 | 0.5% |
| Norway | 1 | | Pain medicine | 3 | 1.4% |
| Serbia | 1 | | Pediatrics of which | 19 | 8.8% |
| Spain | 2 | | Appendicitis, 3 | | |
| Netherlands | 9 | | Emergency & acute care, 2 | | |
| UK | 4 | 1.001 | Neonatal, 3 | | |
| Oceania | | 1.9% | Oncology, 1 | | |
| Australia | 4 | | Surgical, 5 | | |
| Transcontinental | | 0.9% | Surgical, plastic surgery, 2 | | |
| Russia | 1 | | Other pediatric, 3 | | _ |
| Turkey | 1 | | Toxicology | 1 | 0.5% |
| | | | Urology | 4 | 1.9% |

Table 1. Characteristics of value-based healthcare studies that measure costs (n=215).

Which cost measurement methods are currently being used to facilitate VBHC?

To answer RQ1, we look at how costs were measured. A summary of our findings is presented in Table 2. The literature contains many overlapping and contradictory terms, as 'costs' can refer to insurer costs, reimbursements, hospital costs, or patient costs. About half of the studies (n=110, 51.2%) take a provider perspective, with costs calculated for the hospital or care facility. Many studies use charges or payments because hospital cost data are unavailable, considering charges to be a relevant proxy. Some studies use terms such as 'costs', 'charges', 'prices', 'payments', and 'reimbursements' interchangeably, making it difficult to differentiate [17,18,27–30]. For example, Jain et al. [17] stated, "The terms reimbursement, cost, and payment have been used interchangeably throughout the text to represent actual amounts paid by insurers." Similarly, Robles et al. [30] explained, "Total hospital charges were utilized in this standardized costing analysis. Hospital charge data provides a relative measure of the 'cost' of episodes of care, as actual cost data are generally not ascertainable in the healthcare setting." When calculating costs using TDABC, Ahluwalia et al. [31] called these costs 'prices.' To try to address this confusion, some recent studies refer to provider costs as the 'true cost' of care [6,7,9,19]. Some studies that compare several cost types [19,20] also differentiate 'traditional hospital accounting' costs from 'true costs' calculated with TDABC [6,9,20,32,33].

| 2 3 4 5 6 7 8 9 10 11 2 13 14 15 16 17 18 19 20 1 22 3 4 5 6 7 8 9 10 11 2 13 14 15 16 17 18 19 20 1 22 3 24 5 26 7 28 29 30 1 32 3 34 35 36 37 38 9 40 41 42 43 44 5 6 | |
|---|--|
| 28 29 30 31 32 33 34 35 36 37 38 39 40 41 | |
| 43 44 | |

| | Stı | ıdies | Perspe | ectives | | |
|---|-----|------------|----------|---------|---------------|------------|
| Characteristic | n | % | n | % | - | |
| Cost perspective | | | | | - | |
| Provider | 110 | 51.2% | 111 | 51.6% | | |
| Insurer | 103 | 47.9% | 106 | 49.3% | | |
| Patient | 2 | 0.9% | 5 | 2.3% | | |
| N* | 215 | | 222 | | | |
| | | All studie | s (n=215 | 5) | Provider only | Payer only |
| Cost types included | | | | | | |
| Direct | 28 | | 13.0% | | 24 | 2 |
| Direct and indirect | 177 | | 81.9% | | 84 | 93 |
| Unspecified | 10 | | 4.6% | | 2 | 8 |
| Costs measurement implementation | | | | | | |
| No, costs measured for purpose of study | 34 | | 15.7% | | 33 | |
| Yes, costing method is implemented | 39 | | 17.6% | | 39 | |
| Unspecified or not applicable | 142 | | 66.2% | | 38 | 102 |
| Costs coverage | | | | | | |
| Full care path | 47 | | 21.8% | | 30 | 16 |
| Full care path (full surgical episode) | 17 | | 7.4% | | 13 | 4 |
| Partial care path (full surgical episode) | 22 | | 8.3% | | 19 | 3 |
| Partial care path | 86 | | 42.1% | | 37 | 49 |
| Unspecified | 43 | | 19.9% | | 11 | 31 |

Note: N differs between studies and perspectives because seven studies measured two cost types. **Table 2.** Characteristics of costing methods in value-based health care

We categorized studies based on the cost types included. Both direct and indirect costs were considered in 177 (81.9%) studies, while 28 (13.0%) papers only included direct costs.

Next, we looked at whether costs were calculated for a complete care path. We found 64 (29.8%) studies that measured costs for a full care path, of which 16 (7.4%) refer to full surgical episodes and label them as such without considering all the pre- or post-surgical costs. The remaining 86 (42.1%) measure costs of a partial care path.

Table 3 categorizes studies based on the costing method used. In those papers measuring costs within a care provider, we identified two clear categories that were in line with the

management accounting literature [24]. The first is 'direct costing' (n=23), where direct costs of care are summed and indirect costs ignored. This implies that, if costs cannot be causally attributed to the treatment of a specific patient, they are not considered and hence overlooked when making managerial decisions [24].

The second category of studies considers both direct and indirect costs and uses 'absorption costing', whereby indirect costs are allocated to patients based on an allocation key (a type of formula used for allocating indirect costs) [31]. These studies include but are not limited to TDABC (n=31) and ABC (n=7), where costs are allocated to individual care activities (such as a consultation or treatment step). The remaining absorption costing papers (n=47) also consider direct and indirect costs but do not report how indirect costs are allocated to activities. In the absorption costing studies, authors may state that cost information was calculated based on diagnosis-related group costs, micro-costing, bottom-up clinical costing, or hospital accounting systems not further classified. A full list of all the terms used is presented in the **online supplementary appendix.**

| Perspective | Method | n |
|-------------|--|----|
| Provider | Direct costs only | |
| | Direct costing | 23 |
| | Absorption costing | |
| | ABC | 7 |
| | TDABC | 31 |
| | Other | 47 |
| | Not specified | 3 |
| Insurer | Charges and reimbursements | |
| | Charges, reimbursements, claims | 81 |
| | Charges adjusted with cost-to-charge ratio | 25 |
| Patient | Out-of-pocket costs to patient | 5 |

Note: The total number of studies here is 222 because 7 studies measure two cost types. Studies are classified based on actual costs included and methods described, not necessarily the labels used by the studies' authors.

 Table 3. Overview of cost measurement methods used in value-based healthcare

How do these costing methods facilitate VBHC?

To answer RQ2, we extracted all the consequences related to the costing method as described in the papers. Here, like Etges et al. [3], we were looking for how the costing information facilitated VBHC. Note that not all the studies included to address RQ1 describe facilitating VBHC or the consequences of the cost information generated. The reported consequences were grouped inductively, revealing four categories:

- Identification of cost drivers, in terms of cost items (e.g., staff costs, material costs) or activities (e.g., surgery, initial consult; n=48).
- 2. Comparison of costs across patient groups, care providers, or procedures (n=39).
- 3. Measured cost difference, or cost saving, while achieving equal or better care (n=26).
- 4. Suggested or measured care path improvements (n=40).

These studies are presented in Table 4. The studies reporting these facilitators used ABC (n=6),

TDABC (n=29), other absorption costing methods (n=12), or direct costing (n=3).

| Study | Charact | eristics | | | | Bes | t pra | octices | Value-Based consequences of costing informatio | | | | |
|---|----------------|--------------------|--------|---------------|-----|-----|-------|----------------------|---|-----|---|------------------------|--|
| Medical Specialty | Costing method | period | Centre | Study type | PM | EI | DO | CG | Compare costs across | ICD | MPS | Care patl adjustmer | |
| [34] Internal medicine | TDABC | partial | single | retro | yes | yes | | items, activities | | yes | | suggested | |
| [33] Surgical, orthopedic, rotator cuff repair | TDABC | full (FSE) | single | retro | yes | | yes | items, activities | surgeons, two alternative treatments | yes | yes, ± \$727 about the mean per patient | suggested | |
| [4] Cardiology, surgical | TDABC | full (FSE) | multi | retro | yes | yes | yes | items, activities | hospitals, procedures | yes | yes, estimate 51.0% of procedure cost | yes | |
| [10]Oncology | TDABC | full | single | retro | yes | yes | yes | items, activities | treatment care paths | yes | \$2,302 (25.0%) difference across treatments | suggested | |
| [35] Surgical, orthopedic | | | | retro | yes | | | items, activities | patients | yes | | suggestee | |
| [36] Surgical, orthopedic | | · · / | | retro | - | | | items, activities | patients | yes | | suggested | |
| [19] Surgical, orthopedic | | | | retro | yes | | yes | items, activities | costing methods (TA and TDABC) | yes | | suggested | |
| [20] Surgical, orthopedic | | · · · | U | retro | yes | | yes | items, activities | five treatments, cost vs. reimbursement | yes | | | |
| [37] Pediatric, surgical, plastic surgery | TDABC | full (FSE) | multi | pro | yes | | yes | items, activities | treatment care paths | yes | up to \$8900, but long- term outcomes yet unknown | suggested | |
| [38] Emergency & acute care | TDABC | full (multiple) | multi | retro | yes | yes | yes | items, activities | eight care paths for acute ureteral stones (patient journeys) | yes | yes, \$6614 difference across care paths | suggested | |
| [39] Surgical, orthopedic | TDABC | full (FSE) | single | retro | yes | | yes | items, activities | surgeons | yes | | suggestee | |
| [40]Oncology | TDABC | partial | single | pro | yes | yes | yes | items, activities | treatments and individual care paths | yes | yes, cost difference of up to 3.33 times, depending on case mix | suggestee | |
| [41]Oncology (incl. surgery) | TDABC | full | single | retro | yes | | yes | items, activities | | yes | on cuse mix | suggested | |
| [42] Oncology | TDABC | partial (FSE) | single | retro | yes | | | items | pre and post implementation | yes | yes, mean cost savings of €309 per patient | yes | |
| [43]Cardiology | AC (other) | partial | multi | retro | | | | items | patient journeys | yes | | suggested | |
| [44] Emergency & acute care | AC (other) | partial | single | retro | yes | | | items | surgeons | yes | | | |
| [45] Surgical, bariatric | AC (other) | full (FSE) | single | retro | | | | items | treatment | yes | | | |
| [46] Gynecology & obstetrics | AC (other) | full | single | retro | yes | | | items, activities | procedures | yes | yes, \$967 per patient | suggested | |
| [47] Emergency & acute care | AC (other) | partial | single | retro | | | | items, activities | | yes | | | |
| [48] Surgical, colorectal | AC (other) | partial (FSE) | single | retro | | | | items | intervention | yes | yes, reduced variable cost, similar total cost | yes | |
| [21] Surgical, orthopedics fracture | , ABC | partial (FSE) | single | retro | | | | items | patients, patient groups, demographics | yes | | | |
| [49] Surgical, orthopedic, arthroplasty | ABC | full (FSE) | single | both | | yes | yes | items, activities | treatment care paths | yes | estimate €2,054,000 annually | yes | |
| [50] Surgical, spine | ABC | Full | single | retro | yes | | | items, activities | patients, patient groups | yes | | suggestee | |
| [6] Pediatric, surgical | TDABC | full (FSE) | single | both | yes | | yes | items, activities | costing methods (TA and TDABC) | yes | 20.0% and without care path alteration | suggestee | |
| [51]Oncology | TDABC | full (FSE) | single | retro | yes | yes | yes | items, activities | treatment care paths | yes | yes, estimate for each 10.0% decrease in case duration, total costs could decrease by about 8.0%. | suggestee | |
| [31] Surgical, orthopedic | TDABC | full (FSE) | single | pro | yes | yes | yes | items, activities | treatment care paths | yes | £2,018 per patient | suggestee | |
| [52]Pediatric, neonatal | TDABC | partial | single | retro | yes | yes | yes | items, activities | Pre and post intervention | yes | yes, 36.0% or \$92,000 per tracheostomy care cycle | yes | |
| [53] Surgical, cardiac/thoracic | AC (other) | partial | multi | retro | yes | | | items | patients, implant devices | yes | | suggested | |

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| [54]Oncology, surgical | AC (other) | partial | single | retro | | | | items | | yes | yes, multiple | |
|---|----------------|--------------------|-----------------|-------|------|-----|-----|----------------------|--|-----|--|------------------------------|
| [55]Multiple | TDABC | full | multi, pilot | retro | yes | yes | yes | items, activities | before and after intervention (IPUs) | yes | yes, quarterly costs declined | suggested |
| [56]Oncology | TDABC | partial (PSE) | single | pro | yes | | yes | items, activities | treatment care paths (parallel vs. induction design in OR) | yes | yes, estimate OR time reduction of 55 min, or \$,2818 missed revenue | suggested |
| [57] Surgical, orthopedics fracture | TDABC | partial (FSE) | single | both | yes | | | items | | yes | | suggested |
| [58] Surgical, foot debridement | TDABC | partial (FSE) | single | retro | | | yes | items | before and after intervention | yes | | yes |
| [59]Ophthalmology | TDABC | full | single | retro | yes | yes | yes | items, activities | | yes | | suggested |
| [60] Gynecology & obstetrics, surgical | AC (other) | partial (FSE) | single | retro | | | | items | | yes | | suggested |
| [61] Gynecology & obstetrics, surgical | AC (other) | partial (FSE) | single | retro | | | | items | | yes | | |
| [62] Multiple | Direct costing | partial | single | retro | | | | items | | yes | | |
| [63] Surgical, orthopedic | Direct costing | full (FSE) | multi | retro | | | | items | intervention | | yes, £255 per patient | yes |
| [5] Surgical, carpal tunnel release | TDABC | partial (FSE) | multi | retro | yes | | yes | items, activities | multiple treatment care paths | yes | yes, 70.9% (\$27,103) and 31.6% (\$178) | yes |
| [64] Surgical, appendicitis | AC (other) | partial (FSE) | single | pro | | yes | yes | items | pre and post intervention (dashboard) | yes | yes, decreased by \$496 per operation | yes |
| [65] Surgical, orthopedic | Direct costing | partial (FSE) | single | retro | | yes | | items | intervention | yes | | |
| [8] Urology | TDABC | partial | single | pro | yes | | | items, activities | | yes | yes, estimate two hours per cycle | suggested |
| [66] Pediatrics, appendicitis | TDABC | full (FSE) | single | pro | yes | yes | - | items, activities | treatment care paths (pre and post intervention) | yes | 11.0% cost reduction, and 51.0% hospitalization time reduction | yes, several |
| [67]Urology | AC (other) | partial | multi | retro | | yes | | items | | | | |
| [7] Oncology, surgical, 11 surgeries | TDABC | Partial (FSEs) | single | retro | yes | | | items, activities | potential staffing ratios | yes | estimate 13.0-28.0% per surgery type | modelled and suggested |
| [9] Oncology | TDABC | full | single | retro | yes | yes | yes | items, activities | treatments (high-dose vs. low- dose brachytherapy) | yes | \$2,668 difference across treatments | yes |
| [68]Urology | TDABC | partial (FSE) | single | retro | yes | yes | | items, activities | five treatment care paths | yes | yes, 400.0% increase from least to most expensive pathways | suggested |
| [32] Surgical, neurosurgery | ABC | partial (FSE) | single | retro | yes | | | items, activities | patients | yes | yes, 25.0% | yes, severa |
| [69] Surgical, neurosurgery | ABC | partial (FSE) | single | retro | yes | | | items, activities | patients | yes | | suggested |
| [70] Pediatric plastic surgery | ABC | partial, 1 year | single | retro | | | | items | patients | yes | | suggested |
| | | | | Count | t 34 | 16 | 24 | | 39 | 47 | 26 | 40 |

Note: ABC: Activity-Based costing; TDABC: Time-Driven activity-based costing; FSE: Full surgical episode; AC (other): Absorption costing, other; PSE: Partial surgical episode; Retro: Retrospective; Pro: Prospective; PM: Process mapping; EI: Expert input; DO: Direct Observation; CG: Cost grouping, cost items only or activities; ICD: Identify cost drivers; MPS: Measured provider cost savings (at equal or better care). Costing methods are classified based on actual reported costs and methods applied, not necessarily the labels used by authors.

Table 4. Costing method applications, method used, and consequences (ordered by year).

Activity-based costing

The six studies applying ABC justified this on the basis that it was the care provider's existing costing method. Three of these studies measured costs for a full surgical episode [21,32,69] as part of a longer care path, two measured costs for a full care path [49,50], and one measured costs of a partial care path [70]. While these studies all applied ABC, the ability to facilitate VBHC differed. Jacobs et al. [50] measured costs for a complete care path for patients with adult spinal deformity, a complex care path spanning about one year. The authors compared costs across patient groups and patients, identified major cost drivers, and suggested where to concentrate cost containment. Similarly, McLaughlin and colleagues [32,69] measured costs, identified cost drivers, and evaluated targeted cost containment initiatives. In one paper [32], the cost containment initiatives were informed by the cost information: activities with the highest costs were targeted for savings and a 25% reduction in total costs was achieved. In the other paper [69] they identified comorbidities and demographics that were strongly related to the total costs of patients undergoing neurosurgery, whereas Wise et al. [21] did not for geriatric hip-fracture patients while identifying cost drivers and comparing costs across patient groups. Vanni et al. [49] successfully predicted about $\in 2$ million annual cost savings associated with an enhanced recovery pathway.

Time-driven activity-based costing

The majority of the papers used to answer RQ2 involved TDABC. Significant cost drivers were identified linked to activities in a care path, and some suggested where to target improvement initiatives [4,6–8,10,33,40,59]. Many of the TDABC studies were able to suggest [6,8,10,19,33–38,40,41,51,55–59,68] or measure [5,9,31,42,52,66] care path improvements (see **Table 4**).

The lengths and specificities of the care path costs varied widely. Some studies were narrow in scope, calculating costs for subsections of a single care path or surgical procedure [6,8,38,39,56].

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Isaacson et al. [8] calculated costs for cleaning a single reusable piece of equipment, while others costed single surgical days [6], compared alternative surgeons [39], or anesthesia solutions within a care path [56]. Within this group, McClintock et al. [38] took the broadest perspective by mapping individual patient journeys.

The largest group (n=10) of TDABC studies measured costs across care paths within a single provider and for a single diagnosis [9,10,31,33,37,40–42,51,66]. Typically, these studies compared costs between a new intervention and the 'usual' care [9,10,31,51,52,66], or between alternative care paths [33,37,40,42] in order to measure cost savings.

Some studies were broader in scope, costing multiple care paths or treatments within one specialty [5,7,20,68], an entire department [34,59], multiple practice units [55], or providers [4]. Some compared 'true costs' calculated using TDABC across care providers within specialties or care paths [4,37], while others argued that TDABC costs were too subjective to be compared across hospitals [10,38]. While most studies compared costs across care paths, some also compared costs across patient groups [19,35,36], or even individual patient journeys [38,40].

Technology played a prominent role in studies aiming to reduce costs. One study was able to suggest how to use technology more efficiently [6], and some, by integrating technological investments in the calculated TDABC costs, show how technology can reduce costs [37,40,51].

Conversely, studies using unspecified absorption methods [60,61] did not include investments in technology, and this is surprising since absorption costing methods require indirect costs to be allocated.

Analyses enabled by activity-based and time-driven activity-based costing

Several of the ABC and TDABC studies compared costs calculated using traditional accounting costs [6,19,20] or reimbursement amounts [20,21] and found that prices do not equal costs. Some carried out quantitative analyses using cost information generated using ABC or TDABC including regression analyses to identify correlations [7,33,35,36,40], compare patient groups [20,35,36], and compare costs and outcomes across a matched patient sample [40].

Two recent studies [33,57] have conducted patient-level value analyses (PLVAs), comparing patient-reported outcomes with patient-level TDABC costs. Wise et al. [33] did so for rotator cuff repair surgery over a period of one year, while McCreary et al. [57] analyzed ankle fractures. Both studies found costs to be unrelated to patient-reported outcome measures, highlighting the need for further research. This suggests that patient-reported outcome measures are not strongly associated with the costs of the care delivered, and that patient satisfaction may depend on other factors such as their perceived experience with healthcare professionals.

Other absorption costing methods and direct costing

Other absorption costing methods reported in the studies were labelled as micro-costing (n=5), bottom-up clinical costing [47], or were described but not labelled (n=6). Most were able to identify cost drivers (n=12, for details see **Table 4**) and some compared costs within providers. Notably, Robinson et al. [64] used the cost information to build and evaluate a dashboard that provides real-time feedback to surgeons during operations and monthly summaries and thereby decreases costs significantly. Some studies omitted certain cost categories such as equipment [61]. Direct costing enabled cost drivers to be identified [62,63,65], and in some cases granular cost measurement.

Best practices

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Having identified these four facilitators, we compared studies to find common practices. This is particularly useful because costing methods are not labelled consistently. For example, many studies refer to ABC as 'bottom-up costing.' To look beyond labels, we compared the actual methodologies used to measure costs. We found that studies that were able to facilitate VBHC used process mapping (n=34), expert input (n=17), and/or direct observations (n=24) when measuring costs. These practices overlap with TDABC best practices, but are not exclusive to TDABC, as shown in **Table 4**.

Studies that made specific care path improvement suggestions used process mapping, and especially those involving multidisciplinary teams reported significant benefits [4,9,10,19]. This approach enabled experts (doctors, care professionals, administrators) with the required knowledge and experience to reflect critically on the process [4,9,10,19], resulting in actionable suggestions. In comparison, studies that did not use process mapping tended to suggest minimizing high-cost items (e.g., total operating time, nursing costs) but were unable to couple these suggestions to specific activities or to chronological points in the care path. Commenting only on cost items, and not identifying chronological points, limits the ability of cost information to steer management towards where to focus process improvement initiatives.

Expert input while creating process maps or measuring costs was often cited by authors as valuable, especially for estimating preparation time or other behind-the-scenes activities that do not involve the patient but are critical to delivering care. Some studies that could not call on expert input cited this as a limitation. A few cases also evaluated the impact of costing information, for example by involving experts to evaluate a dashboard [64].

Finally, some studies involved direct observations, particularly those that calculated process times to the minute or measured the costs of individual patient journeys.

DISCUSSION

This review focused on VBHC studies that have measured or estimated costs, and on identifying which costing methods can facilitate VBHC. By assessing the consequences of the costing methods used, we were able to identify characteristics of costing methods that do facilitate VBHC.

Previous research found that TDABC can facilitate VBHC through cost containment and process improvements [3,15]. We built on this by comparing value-based consequences across costing methods. While the field is young and alternatives seem limited, we have found considerable evidence that TDABC and ABC can indeed facilitate VBHC. As previously noted, TDABC is considerably easier to implement than ABC, which leads us to recommend it over ABC. We found no well-documented alternatives to TDABC or ABC in our review. However, not all the TDABC studies delivered the facilitating factors we have identified. We therefore emphasize the need to follow TDABC guidelines carefully and to explicitly document methods used. Several of the studies in this review simply stated that TDABC was applied, outsourced, used with incomplete costs, or used without listing exact cost rates.

The start and end points of care paths tend to be well documented by authors but are inconsistent. To view costs in relation to outcomes, as suggested by Porter [2], the total costs from start to finish of a trajectory should be included [71]. In many studies, the start and end points of cost measurement windows seem somewhat arbitrary but are still labeled as full care paths. Consequently, this results in inconsistencies across studies, hindering comparisons. Encouragingly, some of the more recent studies have measured costs across a genuine full care path and future research should do the same, explicitly defining start and end points. This would enable consistent comparisons across providers. As with the ICHOM standard outcome sets produced by the International Consortium for Health Outcomes Measurement, costs could be

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catalogued and compared over full care paths. Indeed, in a recent expert consensus study, experts agreed on the need to focus on full care paths [71].

Furthermore, we can see a trade-off in the specificity and length of the care path costed. Studies that measure costs for elements of a care path (such as a surgical operation) can provide detailed costs for that portion of the care path, but not total care costs for a patient because the remainder of the care path is not included. Some surgical studies measured costs for partial care paths, and often concluded that operating theatre time should be minimized due to high surgeon and operating theatre costs. However, this conclusion has limited relevance for the value equation [13] because it does not provide cost information for an entire care path, or advice on how to circumvent surgery.

Studies that cost complete care paths appear to use less-detailed costing methods (due to the sheer length of the care path) but are able to compute total costs of a patient's care. This enabled benchmarking across providers, as well as cost comparisons of new vs. standard care, or of treatment alternatives. This allowed providers to steer towards lower-cost outcomes to maximize value. Future research should focus on measuring costs for full care paths, and on comparing costs to outcomes as demonstrated in some of the more recently published studies in our review [33,40,57].

Our review highlights the need to involve medical professionals in this process, both when implementing costing methods as well as when evaluating the results. Future cost measurement studies, and hospitals looking to implement TDABC, should involve multidisciplinary teams. Studies that have involved medical professionals in the process of measuring costs and then using the findings were able to improve care paths through improvement initiatives and/or dashboards. This suggests that generating and using costing information should be viewed as a process. Future

qualitative research should follow this process to better understand the mechanisms through which cost information impacts decision making, and the impact that staff involvement has on cost containment. Previous research suggests that staff involvement is critical as it builds trust in the accuracy of the data [72].

Limitations and future research

We must acknowledge several limitations related to the scope, breadth, and quality of the included studies. First, our search strategy will have missed studies that measure costs but do not label the study as VBHC-oriented. Not all TDABC studies make value-based claims or contributions and may therefore be overlooked in our review. Additionally, not all studies explicitly discuss the impact or consequences of the costing method applied, which may impact our findings. Future qualitative research could usefully investigate TDABC implementations and evaluate whether the facilitating factors found in this review are achieved. Second, sophisticated methods such as TDABC are currently only used with predictable and/or short care paths such as orthopedic surgery. Further research testing the feasibility and practicality of TDABC in different settings, such as emergency on-call care, or longer care paths such as fertility treatment, is warranted. Further, our findings may have limited generalizability across medical specialties as indicated in Table 1. Finally, we have relied on the reporting of authors whose style and quality differs across disciplines and journals. To an extent we circumvented this limitation by looking beyond the cost measurement labels used by authors, extracting the costs included and methods used, and then categorizing them using established accounting definitions. However, we cannot exclude the possibility of errors due to a lack of explicit reporting in some of the studies reviewed.

Conclusions

This systematic review reveals that cost information, at the treatment or patient level, for complete care paths does enable value-based decision making through several mechanisms. Such cost information can direct quality and process improvement initiatives alongside informing appropriate reimbursement levels. In the pursuit of VBHC, practitioners and academics are advised to apply ABC or TDABC to estimate costs, using process mapping, expert input, and observations, rather than relying on pricing information.

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Patient and public involvement: This study did not involve patients or the public in designing, executing or reporting of the research.

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Ethics approval: Ethical approval was not required for this systematic review as this review used data from the public domain (published articles).

ORCID ID

Maura Leusder 0000-0001-7134-1003 Petra Porte 0000-0003-0228-1013 Kees Ahaus 0000-0001-9973-3746 Hilco van Elten 0000-0003-3909-5521

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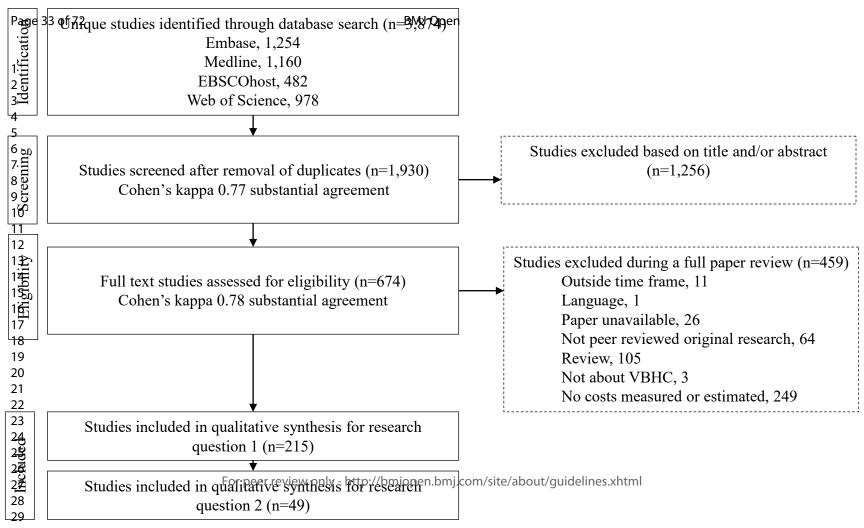
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SUPPLEMENT DIGITAL CONTENT

1 Search strategy

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| Eligibility criteria | n criteria, data extracted | | | | | | |
|--|---|--|--|--|--|--|--|
| Language | English or Dutch | | | | | | |
| Publication date | Between 2003 and 1.1.2022 | | | | | | |
| Research type | Original, peer-reviewed, empirical research | | | | | | |
| Terms | Any variation of the terms "cost" and "value-based" in title or abstrac | | | | | | |
| Full text content | Costs of an intervention, treatment, care path, or other healthcare acti- have been measured or estimated. | | | | | | |
| Variables collected | | | | | | | |
| Descriptive | Name, year published, authors, medical specialty, location | | | | | | |
| Costs included | Based on author reporting we classify studies into one of two categor Direct costs only Direct and indirect costs | | | | | | |
| Cost perspective | We inductively classify studies into one or more categories: | | | | | | |
| ···· r ···· p ····· · | Provider costs (e.g. hospital) | | | | | | |
| | Payer costs (reimbursements, charges, payments) | | | | | | |
| | Patient costs (out-of-pocket costs to patient) | | | | | | |
| Care path length | Fatient costs (out-of-pocket costs to patient) We inductively classify studies into one of the following categories: Full care path Full care path, full surgical episode (FSE) Partial care path, full surgical episode (PSE) | | | | | | |
| | • Partial care path | | | | | | |
| Costing method label | Costing method used, as labelled by the authors. These include traditional accounting, ABC, or ABC excluding overheads, TDABC, or TDABC some cost categories omitted, microcosting, bottom-up clinical costing reference pricing, relative value units or DRG costs, direct variable condirect costs as an estimate of total cost, reimbursements, charges, claip payments, and cost-to-charge ratio. | | | | | | |
| Costing method applied | Costing method applied, based on method described by authors. We a studies using management accounting literature (e.g., Zimmerman, 20 found the following categories represented in the literature. | | | | | | |
| | Direct costing Absorption costing, which includes: ABC | | | | | | |
| | TDABC.Other | | | | | | |
| | Cases using reimbursements or charges to estimate costs were coded 'reimbursements' or 'cost-to-charge ratio'. | | | | | | |
| Facilitating factors | If the study discussed the consequences of the costing information ge we collected the consequences. After we collected all consequences, categorized these inductively. | | | | | | |
| Note: ABC: Activity-based costing; TDABC: Time-driven activity-based costing | | | | | | | |
| Suppl | ement digital content table 1. Eligibility criteria and data collected. | | | | | | |
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SUPPLEMENT DIGITAL CONTENT 3 All studies included in RQ1

| Perspective | Method | n | studies | | | | |
|---|---|-----|----------------------------|--|--|--|--|
| Provider | Direct costs only | | | | | | |
| | Direct costing | 23 | [1-23] | | | | |
| Provider Provider Provider Insurer Patient Note: Total In types[23,38, methods des Supplema Supplema Reference m 1 Chatfiel of a valu 2019;28 2 Feathera Pathway Arthrop 3 Karns M Total D Sports M 4 Tan RY driven a Genetic 5 Ravikur | Absorption costing | | | | | | |
| | ABC | 7 | [24–30] | | | | |
| | TDABC | 31 | [31–61] | | | | |
| | Other | 47 | [62–108] | | | | |
| | Not specified | 3 | [109–111] | | | | |
| Insurer | Charges & reimbursements | | | | | | |
| | Charges, reimbursements, claims | 81 | [23,39,112–190] | | | | |
| _ | Charges adjusted with cost-to charge ratio | 25 | [108,191–214] | | | | |
| | Out-of-pocket costs to patient | 5 | [106,126,130,215,216] | | | | |
| Suppleme | ent digital content table 2. Overview of cost me based healthcare with referen | | ent methods used in value- | | | | |
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| | | | | | | | |
| | of all studies included in research question 1 | | | | | | |
| Reference ni | umbers start at 1, these differ from the manuscrip | ot. | | | | | |
| of a val | Chatfield SC, Volpicelli FM, Adler NM, <i>et al.</i> Bending the cost curve: Time series analysis of a value transformation programme at an academic medical centre. <i>BMJ Qual Saf</i> 2019; 28 :449–58. | | | | | | |
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| Total D | AR, Jones DL, Todd DC, <i>et al.</i> Patient- and Proce irect Costs of Outpatient Anterior Cruciate Ligar Med 2018;6:2325967118788543. | | 1 0 | | | | |
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| hospital | mar TS, Sharma C, Marini C, <i>et al.</i> A validated v -wide perioperative outcomes: Adaptability to co | | - | | | | |

hospital-wide perioperative outcomes: Adaptal cohorts. *Ann Surg* 2010;**252**:486–96.

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 Inclusions RQ1 (215) extracted data to be shared with Erasmus Data Repository (FigShare)

| Authors | Year Pub | Title paper (see full reference in manuscript) | Geography (country) of study | Geography, state of country, if N/A country | study design (if incl. in RQ2) | unit of analysis | disease/topic labels provided by study (overlapping tags, can be multiple) | Medical Specialty (non overlapping labels) | | Care path studied | Costs included | Costs perspectiv e (all) | Primary Cost perspective | Secondary Cost perspective if applicable | Costing method used as described in study | Primary Costing method classification | Secondary Costing method classification, if applicable | Implementation of costing method (N/A if reimbursements or charges, unspecified if not discussed in study) | if reimbursement; actual measurement used for estimation | RQ2 include discuss consequences impact of co information study |
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| Rominoz M P P McLaughlin, N. | 2020 | | Andalusia | Andalusia | | patients | surgical | Urology | | surgical episode) | Direct and indirect | provider | provider | | unspecified | unspecified/generic | | Paper only | | no |
| Upadhyaya, P. Buxey, F. Martin, N. A. | | Value-based neurosurgery: Measuring and reducing the cost of microvascular decompression surgery | | | | | neurosurgical, microvascular decompression, trigeminal neuralgia | | | | | | | | | | | | | |
| | 2014 | | US | US; California | single center, retrospective | 44 neurosurgical patients | (TN) or hemifacial spasm (HFS) | Surgical | Neurosurgery | partial care path (full surgical episode) | Direct and indirect | provider | provider | | ABC | Absorption costing - ABC | | implemented | | yes see secor sheet |
| Hennink, S. D. Hofland, N. Gopie, J. P. Van Der Kaa, C. De Koning, K. | | Value-based healthcare in Lynch syndrome | | | | | oncology, lynch | | | | | | | | | | | | | |
| Nielsen, M. | 2016 | | The Netherlands | The Netherlands | | 64 Lynch Syndrome patients | syndrome, colorectal cancer | Oncology | | full care path | Direct and indirect | provider | provider | | unspecified | Absorption costing - unspecified/generic | | unspecified | | no |
| French, K. E. Guzman, A. B. Rubio, A. C. | | Value based care and bundled payments: Anesthesia care costs for | | | single center. | 5,357 outpatient | | | | | | | | | | | | | | |
| Frenzel, J. C. Feeley, T. W. | 2016 | outpatient oncology surgery using time-driven activity-based costing | US | US; Virginia | retrospective, | anesthesia cases across 11 procedure groups | oncology | Oncology | | partial care path (full surgical episode) | Direct and indirect | provider | provider | | TDABC | Absorption costing - TDABC | | implemented | | yes see secon sheet |
| Tan, R. Y. C. Met-Domestici, M. | | Using quality improvement methods and time-driven activity-based | 00 | 00, 11, 11, 11, 11, 11, 11, 11, 11, 11, | single center, | Bionba | oneology | oncorogy | | surgious episode) | Direct and mancer | provider | provider | | TIMBE | TD/IDC | | mpenened | | siter |
| Zhou, K. Guzman, A. B. Lim, S. T. Soo, K. C. | | costing to improve value-based cancer care delivery at a Cancer Genetics clinic | 0 in | Siz | retrospective, process mapping, | 251 Patients with high-risk features suggestive | oncology, genetics, | Oraclass | | | Direct | | | | TDABC | Direct costing | | | | |
| Eoolou T W Danilyants, N. MacKoul, P. Baxi, R. | 2016 | | Singapore | Singapore | observation | ofhereditarycancer | Cancer genetics | Oncology | | partial care path | Direct | provider | provider | | ПЛАВС | Direct costing | | unspecified | | no |
| baxi, R. van der Does, L. Q. Haworth, L. R. | 2019 | Value-based assessment of hysterectomy approaches | US | US: Maryland | single center, retrospective | 2689 patients, female, 18 or over | gynecology, vaginal hysterectomy, robot, robot-assisted | gynecology & | | partial care path (full surgical episode) | Direct and indirect | nravidar | nrouidar | | Microcosting supplemented with charges | Absorption costing - unspecified/generic | | Paper only | | yes see second |
| Hernandez, A. Kaplan, R. S. Witkowski, M. L. Forrest Faison, C. Porter, M. E. | | Navy medicine introduces value-based health care | | os, way and | single center, retrospective, multiple care | initia, to or ore | pregnancy, osteoarthritis | , | | sugen episodej | - Direct and maneer | provider | provider | | Whitehaliges | | | ruper only | | |
| Parra, E. | 2019 | | US | US; Florida | paths, pilot project | 22877 patients total | diabetes, lower back pain, multiple | obstetrics | | full care path | Direct and indirect | provider | provider | | TDABC | Absorption costing - TDABC | - | implemented | | yes see second sheet |
| Arenas, M. D. Alonso, M. Martínez, M. F. Gamen, Á | | Assessing value-based health care delivery for haemodialysis | | | multi center, | 5 haemodialysis | | | | | | | | | | | | | | |
| Aguarón, J. Feeobar M. T. Brown, G. C. | 2017 | | Spain | Spain | retrospective | treatment centers, patients unspecified | haemodialysis, renal | Urology | | partial care path | Direct and indirect | provider | provider | | Microcosting | Absorption costing - unspecified/generic | | Paper only | | yes see second sheet |
| Brown, M. M. Brown, H. C. Kindermann, S. Sharma, S. | | A Value-Based Medicine Comparison of Interventions for Subfoveal Neovascular Macular Degeneration | | | | 233 patients with | Ophthalmology, Neovascular, macular | | | | | | | | none. | Charges/Reimbursemen | | | average medicare | |
| | 2007 | | US | US; Pennsylvania | | degeneration | degeneration | opthalmology | | partial care path | Direct | payer | payer | | reimbursements | | | N/A | reimbursements | no |
| Medbery, R. L. Chadid, T. S. Sweeney, J. F. Knechtle, S. J. Kooby, D. A. | | Laparoscopic vs open right hepatectomy: A value-based analysis | | | | 105 patients total, elective laparoscopic liver resection surgery or | Surgical, Hepatectomy, | | | | | | | | unspecified; Hospital accounting data | | | | | |
| Maithel, S. K. Lis E Danilyants N | 2014 | | US | US; Georgia | | open right hepatectomy | Laparoscopic liver resections | Surgical | Liver | partial care path | Direct and indirect | provider | provider | | not otherwise specified | Absorption costing - unspecified/generic | | implemented | | no |
| MacKoul, P. van der Does, L. Haworth, L. Baxi, R. | | A value-based evaluation of minimally invasive hysterectomy approaches | | | | | gynecology, vaginal | | | | | | | | | | | | | |
| Gabriel, L. | 2019 | | US | US; Maryland | single center, retrospective | 2689 patients, female, 18 or over | hysterectomy, robot, | gynecology & obstetrics | | partial care path (full surgical episode) | Direct and indirect | provider | provider | | Microcosting | Absorption costing - unspecified/generic | - | Paper only | | yes see secon sheet |
| Casey, J. Gee, M. Palmer, C. | | Value-based healthcare analysis of joint replacement surgery for patients with primary hip osteoarthritis | | | | | orthopedics, joint replacement, total hip | | | | | | | | Patient Level Information Costing System | | | | | |
| Sinha, J. Moxham, J. Colorato Stone, T. J. Van Deen, W. K. | 2019 | | UK | UK; London | | 50 patients primary hip osteoarthritis | replacement, Hip | Surgical | Orthopedic, arthroplasty | full care path | Direct and indirect | provider | provider | | methodology (PLICS) | Absorption costing - unspecified/generic | | implemented | | no |
| Van Deen, W. K. Spiro, A. Burak Ozbay, A. Skup, M. Centeno, A. | | The impact of value-based healthcare for inflammatory bowel diseases on healthcare utilization: A pilot study | | | | 60 patients with | | | | | | | | | | | | | Medicare reimbursements based on | |
| Juran, N. E. | 2017 | | US | US: California | | inflamatory bowel disease | IBS, bowel, Inflamatory bowel disease | Internal Medicine | | full care path | Direct and indirect | | | | none, | Charges/Reimbursemen | | NUA | DRG/HCPS codes | 80 |

| Isaacson, D. Ahmad, T. | | | | | | | | | | | | | | | | | |
|---|---|----------------|------------------|----------------------------------|-----------------------------------|---|-------------|--------------------|--------------------------|-----------------------------|----------|--------------|--|---|---------------|-------------------------|----------------|
| Metzler, I. | Defining the Costs of Reusable Flexible Ureteroscope Reprocessing Using | | | single center, | | | | | | | | | | | | | |
| Tzou, D. T. | Time-Driven Activity-Based Costing | , | | direct observation, | | | | | | | | | | | | | |
| Taguchi, K. Usawachintachit, M. | | | | process | | Urology, | | | | | | | | Absorption costing - | | | yes see second |
| | 2017 | US | US; California | mapping | 10 Uteroscopes | Ureterorenoscopy | Urology | | partial care path | Direct and indirect provi | vider pr | rovider | TDABC | TDABC | Paper only | | sheet |
| Ionov, M. V. Zhukova O. V. | | | | | | | | | | | | | | | | | |
| Zhukova, O. V. Yudina, Y. S. | | | | | | Blood pressure, | | | | | | | | | | | |
| Avdonina, N. G. | Value-based approach to blood pressure telemonitoring and remote counseling in hypertensive patients | | | | | hyperternsion, Blood | | | | | | | | | | | |
| Emelyanov, I. V. | countering in hypercentre parents | | | | 240 hypertensive | pressure telemonitoring and remote counselling | | | | | | | | Absorption costing - | | | |
| Kurapeev, D. I. Zuorton N. E. | 2020 | Russia | Russia | | patients | (BPTM) | Cardiology | | partial care path | Direct and indirect provid | vider pr | vrovider | unspecified | unspecified/generic | unspecified | | no |
| Annabathula, R. | | | | | | | | | | | | | | | | | |
| Dugan, A. | | | | | | | | | | | | | | | | | |
| Bhalla, V. Davis, G. A. | Value-based assessment of implementing a Pulmonary Embolism | | | | 634 patients, 18 or | | | | | | | | | | | | |
| Smyth, S. S. | Response Team (PERT) | | | | over, acute | | | | | | | | | | | | |
| Gupta, V. A. | 2020 | US | US: Kentucky | | Pulmonary Embolism | Cardiology, pulmonary embolism | Cardiology | | unspecified | Direct and indirect payer | er ns | NAMOR | | Charges/Reimbursemen t-based | N/A | total reimbursements | 00 |
| Goretti, G. | 2020 | 00 | ob, reinderg | | Linoonani | cinconsin | culuiology | | unspectifica | Direct and mancet payer | en pr | <u>ija</u> | remoursements | roused | | Termoursements | 10 |
| Marinari, G. M. | | | | | | | | | | | | | | | | | |
| Vanni, E. | Value-Based Healthcare and Enhanced Recovery After Surgery | | | | | | | | | | | | | | | | |
| Ferrari, C. | Implementation in a High-Volume Bariatric Center in Italy | | | | 2122 patients, | Obesity, surgical, | | | | | | | | | | | |
| | | | | | morbidly obese, | bariatric surgery, Morbid | l. | | | | | | | Absorption costing - | | | |
| | 2020 | Italy | Italy | | bariatric surgery | Obesity | Surgical | Bariatric | unspecified | Direct and indirect provi | vider pr | rovider | unspecified | unspecified/generic | Paper only | | no |
| Konda, S. R. Lott, A. | | | | | | | | | | | | | | | | | |
| Egol, K. A. | Development of a Value-based Algorithm for Inpatient Triage of Elderly | | | | | | | | | | | | unspecified; | | | | |
| | Hip Fracture Patients | | | | | | | | | | | | Hospital accounting data | | | | |
| | | | | | 361 operative hip | Geriatrics, trauma, hip | | Orthopedic | | | | | not otherwise | Absorption costing - | | | |
| | 2020 | US | US; New York | | fracture patients | fracture | Surgical | fracture | partial care path | Direct and indirect provid | vider pr | rovider | | unspecified/generic | implemented | | no |
| Ennis, R. D. | | | | | | | | | | | | | | | | | |
| Parikh, A. B. Sanderson, M. | | | | | | | | | | | | | | | | | |
| Liu, M. | Interpreting oncology care model data to drive value-based care: A prostate cancer analysis | | | | | | | | | | | | | | | | |
| Isola, L. | prostate cancer analysis | | | | 210 | Oncology, Hematology, | | | | | | | none, | Charges/Reimbursemen | | | |
| | 2019 | US | US; New York | | episodes of care | prostate cancer | Oncology | | full care path | Direct and indirect payer | er pa | aver | reimbursements | t-based | N/A | reimbursements | no |
| Denneny, J. C. | | | | | | | 0.000 | | | | p | - <u>/</u> - | | | | | |
| Cyr, D. D. | | | | | | | | | | | | | | | | | |
| Witsell, D. L. | A pathway to value-based care of chronic rhinosinusitis using a claims | | | | | | | | | | | | | | | | |
| Brereton, J. Schulz, K. | database | | | | 7499183 patients, | | | | | | | | | | | | |
| Schulz, K. | | | | | 18-64, acute | Rhinosinusitis, Typical | | | | | | | | Charges/Reimbursemen | | | |
| | 2019 | US | US; Maryland | | rhinosinutitis | chronic rhinosinusitis | Surgical | ENT | partial care path | Direct and indirect payer | er pa | ayer | reimbursements | t-based | N/A | claims | no |
| Peele, P. Keyser, D. | | | | | | | | | | | | | | | | | |
| Lovelace, J. | Advancing Value-Based Population Health Management Through Payer- | | | | | | | | | | | | | | | | |
| Moss, D. | Provider Partnerships: Improving Outcomes for Children with Complex | | | | | | | | | | | | | | | | |
| | Conditions | | | | 262 child natients | Pediatrics, complex | | | | | | | none, | Charges/Reimbursemen | | | |
| | 2018 | US | US; Pennsylvania | | under 21, | conditions | Pediatrics | Pediatric other | partial care path | Direct and indirect payer | er pa | ayer | | t-based | N/A | reimbursements | no |
| Brown, M. M. | | | | | | | | | | | | | | | | | |
| Brown, G. C. | | | | | | | | | | | | | | | | | |
| Brown, H. C. Peet, J. | A Value-Based Medicine Analysis of Ranibizumab for the Treatment of Subfoveal Neovascular Macular Degeneration | | | | | Neovascular, macular | | | | | | | | | | | |
| 1000, 5. | Subioveat Neovascular Macular Degeneration | | | | or neovascular | degeneration, Subfoveal | | | | | | | | | | | |
| | 2008 | US | US: Danneuluania | | macular | Neovascular Macular | anthalmalam | | nortial cara noth | Direct and indirect neuror | ar na | have | | Charges/Reimbursemen t-based | N/A | raimhursamants | 20 |
| Burnhope, E. | 2000 | 00 | US; Pennsylvania | | degeneration 134 patients | Degeneration | opmannotogy | | partial care path | Direct and indirect payer | e. pa | <u>1750</u> | sements | e ouedu | | remodisements | |
| Waring, M. | | | | | undergoing Implantable | | | | | | | | unenaoi6-J. | | | | |
| Guilder, A. | A systematic approach towards implementing value-based health care in heart failure: Understandings from retrospective analysis methods in | | | | Implantable Cardioverter | | | | | | | | unspecified; Hospital | | | | |
| Malhotra, B. Cardoso, J. M. | heart failure: Understandings from retrospective analysis methods in South London | | | | Defibrillator (ICD) | | | | | | | | accounting data | | | | |
| Cardoso, J. M. Razavi, R. | | | | | or Cardiac | | | | | | | | not otherwise | Absorption costing - | | | yes see second |
| Corr.White G | 2020 | UK | UK; London | | Resynchronization | Cardiology, heart failure | Surgical | Cardiac/Thoracic | partial care path | Direct and indirect provi | vider pr | rovider | specified | unspecified/generic | implemented | | sheet |
| Khullar, O. V. Jiang, R. | | | | | | | | | | | | | | | | | |
| Force, S. D. | Transthoracic versus transhiatal resection for esophageal adenocarcinoma | | | | | | | | | | | | | | | | |
| Pickens, A. | of the lower esophagus: A value-based comparison | | | | | | | | | | | | | | | | |
| Sancheti, M. S. | | | | | 942 patients | Oncology, esophageal | | | | | | | none, | Charges/Reimbursemen | | Medicare costs, | |
| Ward, K. Gillagnia, T | 2015 | US | US; Georgia | | esophagectomy 967 patients | cancer | Oncology | | full care path | Direct and indirect payer | er pa | ayer | reimbursements | t-based | N/A | reimbursements | |
| Ebinger, J. E. | | | | | | | | | | | | | | | | | |
| Strauss, C. E. | | | | | receiving primary percutaneous | | | | | | | | unspecified; | | | | |
| Garberich, R. R. Bradley, S. M. | Value-based ST-segment-elevation myocardial infarction care using risk- | | | | coronary | | | | | | | | Hospital | | | | |
| Rush, P. | guided triage and early discharge | | | | intervention | | | | | | | | accounting data | | | | |
| Chavez, I. J. | 2018 | LIE . | US Minner | | | Cardiology, heart failure | Commissed | CastingTheory | full care path (surgical | | | | not otherwise | I la se se i di se i | investore and | | |
| Pouloco A K Bodar, Y. J. L. | 2018 | US | US; Minnesota | | 2011 | myocardial infarction | Surgical | Cardiac/Thoracic | episode) | Direct provi | vider pr | provider | specified | Unspecified | implemented | | no |
| Bodar, Y. J. L. Srinivasan, A. K. | | | | | | | | | | | | | | | | | |
| Shah, A. S. | Time-Driven activity-based costing identifies opportunities for process | | | simple cost | | | | | | | | | | | | | |
| Kawal, T. | efficiency and cost optimization for robot-assisted laparoscopic pyeloplasty | | | single center, retrospective, | 25 robot assisted | | | | | | | | | | | | |
| Shukla, A. R. | | | | direct | laparoscopic | Pediatrics, urology, | | | full care path (surgical | | | | | Absorption costing - | | | yes see second |
| | 2020 | US | US; Pennsylvania | | pyeloplasties | robotics, robot | Pediatrics | Pediatric surgical | | Direct and indirect provi | vider pr | rovider | | TDABC | Paper only | | sheet |
| Verberne, W. R. | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| Dijkers, J. | | | | | | | | | | | | | unspecified; | | | | |
| Dijkers, J. Kelder, J. C. | Value-based evaluation of dialysis versus conservative care in older | | | | 366 patients aged | | | | | | | | unspecified; Hospital | | | | |
| Dijkers, J. | Value-based evaluation of dialysis versus conservative care in older patients with advanced chronic kidney disease: A cohort study | | | | ≥70 years with | | | | | | | | Hospital accounting data | | | | |
| Dijkers, J. Kelder, J. C. Geers, A. B. M. | | The Notherland | The Netherlands | | | Nephrology, kidney, dialysis, chronic | Nephrology | | full care path | Direct and indirect provide | ridar | midar | Hospital accounting data not otherwise | Absorption costing - unspecified/generic | implemented | | 20 |

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| de Lissovoy, G. Palacios, I. | A value-bas | sed analysis of hemodynamic support strategies for high-risk e patients undergoing a percutaneous coronary intervention | | | | 427 patients | | | | | | | | none; charges, | | | | |
|--|--|---|-------------------------|---|---|--|---|-------------------|---|--|--------------------|----------------------------------|----------------------------|---|---|--------------------------|---|--------------------------------------|
| Dixon, S. | neart failure | e patients undergoing a percutaneous coronary intervention | | | | enrolled in trial, mean age 68, 80.6% | | | | | | provider | | transformed with | h Charges/Reimbursemen | | none, charges, | |
| Maini, B. O'Noill W | 2013 | | US US | S; various states | | male male 68, 80.6% | Cardiology, heart failure | Surgical | Cardiac/Thoracic | partial care path | Direct and indirec | | payer | ratio | t-based proxy | N/A | cost to charges | no |
| Ravikumar, T. S. | | | | | | | | | | | | | | | | | | |
| Sharma, C. | | | | | | | | | | | | | | | | | | |
| Marini, C. Steele, G. D. | A validated | d value-based model to improve hospital-wide perioperative | | | | | | | | | | | | direct variable | | | | |
| Steele, G. D. Ritter, G. | outcomes: A | Adaptability to combined medical/surgical inpatient cohorts | | | | | | | | | | | | costs as an | | | | |
| Barrera, R. | 2010 | | US US | S; New York | | >100,000 hospital admissions | Summinal | Surgian | other | nartial cars | Direct | monidae | nrauidar | estimation of | Direct costing | Bapar only | | |
| Kim M Ning, M. S. | 2010 | | 0.3 US | | | autilissions | Surgical | Surgical | outer | partial care path | Direct | provider | provider | total costs | Direct costing | Paper only | | по |
| Venkatesan, A. M. | | | | | ingle center, | | | | | | | | | | | | | |
| Stafford, R. J. | Developing | g an intraoperative 3T MRI-guided brachytherapy program agnostic imaging suite: Methods, process workflow, and value- | | | etrospective, lirect | | | | | | | | | | | | | |
| Bui, T. P. Carlson, R. | based analy | aprovide marging surve, memous, process worknow, and value- ysis | | | observation, | | | | | | | | | | | | | |
| Bailard, N. S. | | | | | process | | Oncology, Gynecology, | | | full care path (surgical | | | | | Absorption costing - | | | yes s |
| Vedam S | 2020 | | US US | S; Texas n | | 10 female patients 338 female patients, | gynecologic pelvic tumo | or Oncology | | episode) | Direct and indirec | t provider | provider | TDABC | TDABC | Paper only | | sheet |
| Sun, L. L. Cao, D. Y. | | | | | | 18-65, colposcopic- | | | | | | | | | | | | |
| Yang, J. X. | | d medicine analysis on loop electrosurgical excision procedure | | | | histopathologically | | | | | | | | | | | | |
| Bian, M. L. | and CO2 la: neoplasia 2 | ser vaporization for the treatment of cervical intraepithelial | | | | confirmed CIN2, intact uterus, no past | | | | | | | | | | | | |
| Wei, L. H. | | | | | | history of cervical | Obstetrics, Gynecology, | gynecology & | | | | | | | | | | |
| Shen, K. | 2012 | | China Ch | hina | | neoplasia, and had a | cervical neoplasia | obstetrics | | partial care path | unspecified | provider | provider | unspecified | Unspecified | unspecified | | no |
| Fortmann, A. L. | | | | | | | | | | | | | | | | | | |
| Walker, C. Barger, K. | | | | | | 236 treated patients, | | | | | | | | | | | | |
| Robacker, M. | | Integration in Primary Care Improves One-Year Clinical and Dutcomes in Diabetes: A Case for Value-Based Care | | | | 239 usual care | | | | | | | | direct variable | | | | |
| Morrisey, R. | r manelal O | succines in Enablies. A case for value-based calle | | | | patients. All diagnosed with type | | | | | | | | costs as an estimation of | | | | |
| Ortwine, K. | 2020 | | US US | S; California | | 1 or 2 diabetes. | Diabetes | Internal Medicine | | partial care path | Direct | provider | provider | total costs | Direct costing | implemented | | no |
| Ramirez, M. M. | | | | | | | | | | | | | | | ······ · | | | |
| Brennan, G. P. | | | | | | | | | | | | | | | | | | |
| | | alue-based care paradigm to compare physical therapy access | | | | | | | | | | | | | | | | |
| | to care mod | dels in cervical spine radiculopathy: a case report | | | | | | | | | | | | | Charges/Reimb | ur | | |
| | 2020 | | US US | S; Florida | | case study; 39 yo female | Physiotherapy | Neurology | | partial care path | Direct and indirec | payer, | pour pot | none, reimbursements | Charges/Reimbursemen sement-based t-based patient OoO | NI/A | cost to patient, reimbursement | 20 |
| Ryan, S. P. | 2020 | | 0.3 US | o, r'iorida | | iemaie | a nysiomerapy | iventology | | partial care path | intect and indirec | , pauent | payer patient | reimbursements | roased patient OoO | N/A | rembursement | п0 |
| Plate, J. F. | | | | | | | | | | | | | | | | | | |
| Black, C. S. | Value-Base | ed Care Has Not Resulted in Biased Patient Selection: Analysis | | | | | | | | | | | | direct variable | | | | |
| Howell, C. B. | of a Single | Center's Experience in the Care for Joint Replacement Bundle | | | | 1248 total knee | orthopedics, joint | | | | | | | costs as an | | | | |
| Jiranek, W. A. Bolognesi, M. P. | | | | | | arthroplasty | replacement, total knee | | Orthopedic, | | | | | estimation of | | | | |
| Plate, J. F. | 2019 | | US US | S; North Carolina | | patients, | arthroplasty | Surgical | arthroplasty | full care path | Direct | provider | provider | total costs | Direct costing | implemented | | no |
| Plate, J. F. Rvan, S. P. | | | | | | | | | | | | | | | | | | |
| Ryan, S. P. Black, C. S. | No Change | s in Patient Selection and Value-Based Metrics for Total Hip | | | | | | | | | | | | | | | | |
| Howell, C. B. | Arthroplast | ty After Comprehensive Care for Joint Replacement Bundle | | | | 751 total hip | | | | | | | | direct variable costs as an | | | | |
| Jiranek, W. A. | Implementa | ation at a Single Center | | | | 751 total hip arthroplasty | orthopedics, joint replacement, total hip | | Orthopedic, | | | | | costs as an estimation of | | | | |
| Bolognesi, M. P. Saulor, T. M. | 2019 | | US US | S; North Carolina | | patients, | arthroplasty | Surgical | arthroplasty | full care path | Direct | provider | provider | total costs | Direct costing | implemented | | no |
| Abbott, M. M. | | | | | | | | | | | | | | | | | | |
| Meara, J. G. | | | | | | | | | | | | | | | | | | |
| | A microcos | sting approach for isolated, unilateral cleft lip care in the first | | | | | | | | | | | | | | | | |
| | year of life | | | | | | | | | | | | | | | | | |
| | | | | s | angle center, | 12 children, cleft lip | Pediatrics, cleft palate, plastic surgery | Pediatrics | Pediatric Plastic surgery | partial care path (full surgical episode) | Direct and indirec | t provider | provider | | Absorption costing - | | | yes se sheet |
| | 2011 | | 118 116 | S: Maccaahucatt | | | | 1 culatrics | surgery | | indect and indirec | providef | | Migrogotin - | | Papar only | | sneet |
| Regan D K | 2011 | | US US | S; Massachusetts ro | etrospective | Tepan | | | | ourBrent chroniet) | | | provider | Microcosting | ABC | Paper only | | |
| Regan, D. K. Manoli, A. | | | US US | S; Massachusetts r | etrospective | repan | | | | | | | provider | Microcosting | ABC | Paper only | | |
| Manoli, A. Hutzler, L. | Impact of D | Diabetes Mellitus on Surgical Quality Measures After Ankle | | S; Massachusetts n | etrospective | repan | <u>.</u> | | | | | | provider | Microcosting | ABC | Paper only | | |
| Regan, D. K. Manoli, A. Hutzler, L. Konda, S. R. | Impact of D Fracture Su | Diabetes Mellitus on Surgical Quality Measures After Ankle rrgery: Implications for "Value-Based" Compensation and "Pay | | S; Massachusetts n | | 58,748 patients, | | | | | | | provider | Microcosting | ABC | Paper only | | |
| Manoli, A. Hutzler, L. Konda, S. R. | Impact of D Fracture Su for Perform | Diabetes Mellitus on Surgical Quality Measures After Ankle urgery: Implications for "Value-Based" Compensation and "Pay nance" | , | S; Massachusetts n | | 58,748 patients, 7501 with Diabetes | | | | | | | provider | none, | Charges/Reimbursemen | | mean total | |
| Manoli, A. Hutzler, L. Konda, S. R. Egol, K. A. | Impact of D Fracture Su | Diabetes Mellitus on Surgical Quality Measures After Ankle urgery: Implications for "Value-Based" Compensation and "Pay nance" | , | S; Massachusetts n | | 58,748 patients, | Diabetes | Internal Medicine | | unspecified | Direct and indirec | | payer | | | Paper only N/A | mean total hospital charges | no |
| Manoli, A. Hutzler, L. Konda, S. R. Egol, K. A. Yu, Y. R. | Impact of D Fracture Su for Perform | Diabetes Mellitus on Surgical Quality Measures After Ankle urgery: Implications for "Value-Based" Compensation and "Pay nance" | , | S; Massachusetts n S; New York | | 58,748 patients, 7501 with Diabetes | Diabetes | Internal Medicine | | | Direct and indirec | | | none, | Charges/Reimbursemen | | | no |
| Manoli, A. Hutzler, L. Konda, S. R. Egol, K. A. | Impact of E Fracture Su for Perform 2015 | Diabetes Mellitus on Surgical Quality Measures After Ankle rrgery. Implications for "Value-Based" Compensation and "Pay annee" | US US | S; Massachusetts n S; New York s n | ingle center, etrospective, | 58,748 patients, 7501 with Diabetes | Diabetes | Internal Medicine | | | Direct and indirec | | | none, | Charges/Reimbursemen | | | no |
| Manoli, A. Hutzler, L. Konda, S. R. Egol, K. A. Yu, Y. R. Abbas, P. I. | Impact of E Fracture Su for Perform 2015 Time-driver | Diabetes Mellitus on Surgical Quality Measures After Ankle gragery. Implications for "Value-Based" Compensation and "Pay ance" activity-based costing: A dynamic value assessment model in | US US | S; Massachusetts n S; New York s n d | ingle center, etrospective, lirect | 58,748 patients, 7501 with Diabetes | Diabetes | Internal Medicine | | | Direct and indirec | | | none, | Charges/Reimbursemen | | | no |
| Manoli, A. Hutzler, L. Konda, S. R. Egol, K. A. Yu, Y. R. Abbas, P. I. Smith, C. M. Carberry, K. E. Ren, H. | Impact of E Fracture Su for Perform 2015 | Diabetes Mellitus on Surgical Quality Measures After Ankle gragery. Implications for "Value-Based" Compensation and "Pay ance" activity-based costing: A dynamic value assessment model in | US US | S; Massachusetts n S; New York s n d o o | ingle center, etrospective, lirect observation, | 58,748 patients, 7501 with Diabetes Mellitus | | | Padiatrie | unspecified | | | | none, | Charges/Reimbursemen Ł-based | | | |
| Manoli, A. Hutzler, L. Konda, S. R. Egol, K. A. Yu, Y. R. Abbas, P. I. Smith, C. M. Carberry, K. E. Ren, H. Patel, B. | Impact of E Fracture Su for Perform 2015 Time-driver | Diabetes Mellitus on Surgical Quality Measures After Ankle gragery. Implications for "Value-Based" Compensation and "Pay ance" activity-based costing: A dynamic value assessment model in | US US | S; Massachusetts n S; New York s n d d o p | ingle center, etrospective, lirect observation, process | 58,748 patients, 7501 with Diabetes Mellitus 207 patients total, 6 | Pediatrics, appendicitis, | | Pediatric appendicitis | | | t payer | | none, | Charges/Reimbursemen | | | |
| Manoli, A. Hutzler, L. Konda, S. R. Egol, K. A. Yu, Y. R. Abbas, P. I. Smith, C. M. Carberry, K. E. Ren, H. Patel, B. Mushtens, I. G. Rice-Townsend, S. | Impact of E Fracture Su for Perform 2015 Time-drived pediatric ap | Diabetes Mellitus on Surgical Quality Measures After Ankle gragery. Implications for "Value-Based" Compensation and "Pay ance" activity-based costing: A dynamic value assessment model in | US US | S; Massachusetts n S; New York s n d d o p | ingle center, etrospective, lirect observation, process | 58,748 patients, 7501 with Diabetes Mellitus | | | Pediatric appendicitis | unspecified full care path (surgica | | t payer | | none, reimbursements | Charges/Reimbursemen 1-based Absorption costing - | N/A | | yes se |
| Manoli, A. Hutzler, L. Konda, S. R. Egol, K. A. Yu, Y. R. Abbas, P. I. Smith, C. M. Carberry, K. E. Ren, H. Carberry, K. E. Ren, H. Budstare I. C. Nuchtare I. C. Rice-Townsend, S. Barnes, J. N. | Impact of D Fracture Su for Perform 2015 Time-driver pediatric ap 2017 | Diabetes Mellitus on Surgical Quality Measures After Ankle argery. Implications for "Value-Based" Compensation and "Pay ance" n activity-based costing: A dynamic value assessment model in ppendicitis | US US | S; Massachusetts n S; New York s n d d o p | ingle center, etrospective, lirect observation, process napping | 58,748 patients, 7501 with Diabetes Mellitus 207 patients total, 6 phases of care | Pediatrics, appendicitis, | | | unspecified full care path (surgica | | t payer | | none, reimbursements | Charges/Reimbursemen 1-based Absorption costing - | N/A | | yes se |
| Manoli, A. Hutzler, L. Konda, S. R. Egol, K. A. Yu, Y. R. Abbas, P. I. Smith, C. M. Carberry, K. E. Ren, H. Patel, B. Mushtaren, J. G. Barnes, J. N. Hall, M. | Impact of E Fracture Su for Perform 2015 Time-drived pediatric ap 2017 Variation in | Diabetes Mellitus on Surgical Quality Measures After Ankle gragery. Implications for "Value-Based" Compensation and "Pay ance" n activity-based costing: A dynamic value assessment model in ppendicitis | US US | S; Massachusetts n S; New York s n d d o p | ingle center, etrospective, lirect observation, process mapping | 58,748 patients, 7501 with Diabetes Mellitus 207 patients total, 6 | Pediatrics, appendicitis, simple appendicitis | | | unspecified full care path (surgica | | t payer | | none, reimbursements | Charges/Reimbursemen 1-based Absorption costing - | N/A | hospital charges | yes se |
| Manoli, A. Hutzler, L. Konda, S. R. Egol, K. A. Yu, Y. R. Abbas, P. I. Smith, C. M. Carberry, K. E. Ren, H. Patel, B. <u>Mushtana I. G.</u> <u>Mushtana I. G.</u> Martes, J. N. Hall, M. Baxter, J. L. | Impact of D Fracture Su for Perform 2015 Time-driver pediatric ap 2017 Variation in and manage | Diabetes Mellitus on Surgical Quality Measures After Ankle argery. Implications for "Value-Based" Compensation and "Pay ance" n activity-based costing: A dynamic value assessment model in ppendicitis | US US | S; Massachusetts n S; New York s n d d o p | ingle center, etrospective, lirect bservation, process mapping | 748 patients, 7501 with Diabetes Mellitus 207 patients total, 6 phases of care 13,328 patients, 34 children's hospitals, 25 states in US, | Pediatrics, appendicitis, simple appendicitis | | appendicitis | unspecified full care path (surgica | | t payer | | none, reimbursements TDABC | Charges/Reimbursemen 1-based Absorption costing - TDABC | N/A | hospital charges charges transformed with | yes se sheet |
| Manoli, A. Hutzler, L. Konda, S. R. Egol, K. A. Yu, Y. R. Abbas, P. I. Smith, C. M. Carberry, K. E. Ren, H. Patel, B. Mushtaren, J. G. Barnes, J. N. Hall, M. | Impact of I Fracture Su for Perform 2015 Time-driver pediatrica 2017 Variation in and manage Implication | Diabetes Mellitus on Surgical Quality Measures After Ankle argery: Implications for "Value-Based" Compensation and "Pay ance" n activity-based costing: A dynamic value assessment model in prendicitis n practice and resource utilization associated with the diagnosis enem of appendentists at freestanding children's hospitals: s for value-based comparative analysis | US US US US | S; Massachusetts n S; New York S; New York S; Texas n S; Texas | ingle center, etrospective, lirect observation, process napping | 58,748 patients, 7501 with Diabetes Mellitus 207 patients total, 6 phases of care 13,328 patients, 34 children's hospitals, 25 states in US, acute appendicitis, | Pediatrics, appendicitis, simple appendicitis | Pediatrics | appendicitis Pediatric | unspecified full care path (surgical episode) | Direct and indirec | t payer | payer | none, reimbursements TDABC | Charges/Reimbursemen +based Absorption costing - TDABC Charges/Reimbursemen | N/A Paper only | hospital charges charges transformed with cost-to-charge | yes se sheet |
| Manoli, A. Hutzler, L. Konda, S. R. Egol, K. A. Yu, Y. R. Abbas, P. I. Smith, C. M. Carberry, K. E. Ren, H. Smith, C. M. Carberry, K. E. Ren, H. Smith, C. M. Carberry, K. E. Barnes, J. N. Hall, M. Bastrer, J. L. Rangel, S. J. | Impact of D Fracture Su for Perform 2015 Time-driver pediatric ap 2017 Variation in and manage | Diabetes Mellitus on Surgical Quality Measures After Ankle argery: Implications for "Value-Based" Compensation and "Pay ance" n activity-based costing: A dynamic value assessment model in prendicitis n practice and resource utilization associated with the diagnosis enem of appendentists at freestanding children's hospitals: s for value-based comparative analysis | US US US US | S; Massachusetts n S; New York s n d d o p | ingle center, etrospective, lirect observation, process napping | 748 patients, 7501 with Diabetes Mellitus 207 patients total, 6 phases of care 13,328 patients, 34 children's hospitals, 25 states in US, | Pediatrics, appendicitis, simple appendicitis | Pediatrics | appendicitis | unspecified full care path (surgica | | t payer | | none, reimbursements TDABC | Charges/Reimbursemen +based Absorption costing - TDABC Charges/Reimbursemen | N/A | hospital charges charges transformed with | yes se sheet |
| Manoli, A. Hutzler, L. Konda, S. R. Egol, K. A. Yu, Y. R. Abbas, P. I. Smith, C. M. Carberry, K. E. Ren, H. Patel, B. <u>Nuclean I. G.</u> <u>Nuclean I. G.</u> Martes, J. N. Hall, M. Baxter, J. L. | Impact of I Fracture Su for Perform 2015 Time-driver pediatrica 2017 Variation in and manage Implication | Diabetes Mellitus on Surgical Quality Measures After Ankle argery: Implications for "Value-Based" Compensation and "Pay ance" n activity-based costing: A dynamic value assessment model in prendicitis n practice and resource utilization associated with the diagnosis enem of appendentists at freestanding children's hospitals: s for value-based comparative analysis | US US US US | S; Massachusetts n S; New York S; New York S; Texas n S; Texas | ingle center, etrospective, lirect observation, process napping | 58,748 patients, 7501 with Diabetes Mellitus 207 patients total, 6 phases of care 13,328 patients, 34 children's hospitals, 25 states in US, acute appendicitis, | Pediatrics, appendicitis, simple appendicitis | Pediatrics | appendicitis Pediatric | unspecified full care path (surgical episode) | Direct and indirec | t payer | payer | none, reimbursements TDABC | Charges/Reimbursemen +based Absorption costing - TDABC Charges/Reimbursemen | N/A Paper only | hospital charges charges transformed with cost-to-charge | yes se sheet |
| Manoli, A. Hurzler, I. Konda, S. R. Egol, K. R. Kabas, P. I. Abbas, P. I. Abbas, P. I. Abbas, P. I. Carberry, K. E. Carberry, K. E. Carberry, K. E. Carberry, K. E. Ren, H. M. Baster, J. L. Rangel, S. J. Ahluwalia, R. | Impact of E Fracture Su for Perform 2015 Time-driven pediatric ap 2017 Variation in and manage Implication 2014 | Diabetes Mellitus on Surgical Quality Measures After Ankle gragery. Implications for "Value-Based" Compensation and "Pay ance" an activity-based costing: A dynamic value assessment model in pendicitis | US US US US | S; Massachusetts n S; New York S; Texas n S; Massachusetts | ingle center, etrospective, firect boservation, rocess napping | 58,748 patients, 7501 with Diabetes Mellitus 207 patients total, 6 phases of care 13,328 patients, 34 children's hospitals, 25 states in US, acute appendicitis, | Pediatrics, appendicitis, simple appendicitis | Pediatrics | appendicitis Pediatric | unspecified full care path (surgical episode) | Direct and indirec | t payer | payer | none, reimbursements TDABC | Charges/Reimbursemen +based Absorption costing - TDABC Charges/Reimbursemen | N/A Paper only | hospital charges charges transformed with cost-to-charge | yes se sheet |
| Manoli, A. Hutzler, I. Konda, S. R. Egol, K. A. Yu, Y. R. Abbas, P. I. Sonth, C. M. Carberry, K. E. Ren, H. Patel, B. Noshatara, I.G. Rice-Townsend, S. Barnes, J. N. Hall, M. Baster, J. L. Rangel, S. J. Ahluvalia, R. Cook, J. Raheman, F. Karuppaiah, K. | Impact of IC Fracture Su for Perform 2015 Time-drive pediatric ap 2017 Variation in and manage Implication 2014 Improving (| Diabetes Mellitus on Surgical Quality Measures After Ankle argery: Implications for "Value-Based" Compensation and "Pay ance" a activity-based costing: A dynamic value assessment model in prendicitis practice and resource utilization associated with the diagnosis energy of a pressure utilization associated with the diagnosis sentent of appendentists at freestanding children's hospitals: s for value-based comparative analysis | US US US US | S, New York S, New York S, New York S, New York S, Massachusetts S | ingle center, etrospective, lirect observation, roccess mapping | 58,748 patients, 7501 with Diabetes Mellitus 207 patients total, 6 phases of care 13,328 patients, 34 children's hospitals, 25 states in US, acute appendicitis, | Pediatrics, appendicitis, simple appendicitis | Pediatrics | appendicitis Pediatric | unspecified full care path (surgical episode) | Direct and indirec | t payer | payer | none, reimbursements TDABC | Charges/Reimbursemen +based Absorption costing - TDABC Charges/Reimbursemen | N/A Paper only | hospital charges charges transformed with cost-to-charge | yes se sheet |
| Manoli, A. Hutzler, I. Konda, S. R. Egol, K. A. Vu, Y. R. Abbas, P. I. Smith, C. M. Carberry, K. E. Ren, H. Carberry, K. E. Ren, H. Barries, J. N. Hall, M. Barries, J. N. Hall, M. Barter, J. L. Rangel, S. J. Ahluwalia, R. Cook, J. Ranheman, F. Karuppain, K. | Impact of IC Fracture Su for Perform 2015 Time-drive pediatric ap 2017 Variation in and manage Implication 2014 Improving (| Diabetes Mellitus on Surgical Quality Measures After Ankle argery: Implications for "Value-Based" Compensation and "Pay ance" a activity-based costing: A dynamic value assessment model in predictis practice and resource utilization associated with the diagnosis enert of appendentis at freestanding children's hospitals: is for value-based comparative analysis the efficiency of ankle fracture care through home care and day | US US US US | S; Massachusetts n S; New York S; Texas S; Massachusetts S S | ingle center, etrospective, firect boservation, rocess napping | 58,748 patients, 7501 with Diabetes Mellitus 207 patients total, 6 phases of care 13,328 patients, 34 children's hospitals, 25 states in US, acute appendicitis, | Pediatrics, appendicitis, simple appendicitis | Pediatrics | appendicitis Pediatric | unspecified full care path (surgica episode) unspecified | Direct and indirec | t payer | payer | none, reimbursements TDABC | Charges/Reimbursemen +based Absorption costing - TDABC Charges/Reimbursemen | N/A Paper only | hospital charges charges transformed with cost-to-charge | yes se sheet h no |
| Manoli, A. Hutzler, L. Konds, S. R. Egol, K. A. Yu, Y. R. Abbas, P. I. Smith, C. M. Carberry, K. E. Ren, H. Patel, B. Nakohar, I. G. Nakohar, I. G. Barnes, J. N. Hall, M. L. Barnes, J. N. Hall, M. L. Barnes, J. N. Hall, M. L. Barnes, J. S. Alturyanak, K. Cook, J. Favatholizado, A. | Impact of IC Fracture Su for Perform 2015 Time-drive pediatric ap 2017 Variation in and manage Implication 2014 Improving (| Diabetes Mellitus on Surgical Quality Measures After Ankle argery: Implications for "Value-Based" Compensation and "Pay ance" a activity-based costing: A dynamic value assessment model in predictis practice and resource utilization associated with the diagnosis enert of appendentis at freestanding children's hospitals: is for value-based comparative analysis the efficiency of ankle fracture care through home care and day | US US US US US US | S, Massachusetts n S, New York S, Texas n S, Massachusetts S, Massachusetts P | ingle center, etrospective, lirect observation, roccess napping | 58,748 patients, 7501 with Diabetes Mellitus 207 patients total, 6 phases of care 13,328 patients, 34 children's hospitals, 25 states in US, acute appendicitis, | Pediatrics, appendicitis, simple appendicitis Pediatrics, appendicitis | Pediatrics | appendicitis Pediatric appendicitis | unspecified full care path (surgical episode) | Direct and indirec | t payer t provider t payer | payer | none, reimbursements TDABC | ChargesReimbursemen +based Absorption costing - TDABC ChargesReimbursemen +based | N/A Paper only | hospital charges charges transformed with cost-to-charge | yes sa sheet h no |
| Manoli, A. Hutzler, L. Konda, S. R. Egol, K. A. Egol, K. A. Yu, Y. R. Abbas, P. I. Abbas, P. I. Carberry, K. E. Ree-Townsend, S. Barnes, J. N. Mice-Townsend, S. Barnes, J. N. Hall, M. Baster, J. L. Rangel, S. J. Abhrowian, F. Karuppaina, K. Colegato, Stone, T. Colegato, Stone, Y. Castaro, Y. Basto, J. Chahal, R., Kasarahona V. Basto, J. Chahal, R., | Impact of IC Fracture Su for Perform 2015 Time-driver pediatric ap 2017 Variation in and manage Implication 2014 Improving 1 surgery unit | Diabetes Mellitus on Surgical Quality Measures After Ankle argery: Implications for "Value-Based" Compensation and "Pay ance" a activity-based costing: A dynamic value assessment model in predictis practice and resource utilization associated with the diagnosis enert of appendentis at freestanding children's hospitals: is for value-based comparative analysis the efficiency of ankle fracture care through home care and day | US US US US US US | S, Massachusetts n S, New York S, Texas n S, Massachusetts S, Massachusetts P | ingle center, etrospective, baservation, roccess napping ingle center, roccess | 58,748 patients, 7501 with Diabetes Mellitus 207 patients total, 6 phases of care 13,328 patients, 34 children's hospitals, acute appendicitis, age 3-18 | Pediatrics, appendicitis simple appendicitis Pediatrics, appendicitis trauma, orthopedics, | Pediatrics | appendicitis Pediatric appendicitis Orthopedic | unspecified full care path (surgical episode) unspecified full care path (surgical | Direct and indirec | t payer t provider t payer | payer provider payer | none, reimbursements TDABC none, reimbursements | Charges/Reimbursemen +-based Absorption costing - TDABC Charges/Reimbursemen +-based Absorption costing - | N/A Paper only N/A | hospital charges charges transformed with cost-to-charge | yes si sheet h no yes si |
| Manoli, A. Hutzler, L. Konds, S. R. Egol, K. A. Yu, Y. R. Abbas, P. I. Smith, C. M. Carberry, K. E. Ren, H. Patel, B. Nakohar, I. G. Nakohar, I. G. Barnes, J. N. Hall, M. L. Barnes, J. N. Hall, M. L. Barnes, J. N. Hall, M. L. Barnes, J. S. Alturyanak, K. Cook, J. Favatholizado, A. | Impact of E Fracture Su for Perform 2015 Time-driver pediatric ap 2017 Variation in and manage Implication 2014 Improving 1 surgery uni 2020 | Diabetes Mellitus on Surgical Quality Measures After Ankle grayry. Implications for "Value-Based" Compensation and "Pay ance" a activity-based costing: A dynamic value assessment model in pendicitis a practice and resource utilization associated with the diagnosis ement of appendicitis at freestanding children's hospitals: is for value-based comparative analysis the efficiency of ankle fracture care through home care and day is: Delivering safe surgery on a value-based healthcare model | US US US US US US | S, Massachusetts n S, New York S, Texas n S, Massachusetts S, Massachusetts P | ingle center, etrospective, baservation, roccess napping ingle center, roccess | 58,748 patients, 7501 with Diabetes Mellitus 207 patients total, 6 phases of care 13,328 patients, 34 children's hospitals, acute appendicitis, age 3-18 | Pediatrics, appendicitis simple appendicitis Pediatrics, appendicitis trauma, orthopedics, | Pediatrics | appendicitis Pediatric appendicitis Orthopedic | unspecified full care path (surgical episode) unspecified full care path (surgical | Direct and indirec | t payer t provider t payer | payer provider payer | none, reimbursements TDABC none, reimbursements | Charges/Reimbursemen +-based Absorption costing - TDABC Charges/Reimbursemen +-based Absorption costing - | N/A Paper only N/A | hospital charges charges transformed with cost-to-charge | yes si sheet h no yes si |
| Manoli, A. Hurzler, L. Konda, S. R. Egol, K. A. Ya, V. R. Manoli, C. M. Carkery, K. E. Ren, H. Patel, B. Nachten, I.C. Rice-Townsend, S. Barnes, J. N. Hall, M. Baxter, J. L. Rangel, S. J. Ahlrowalia, R. Cook, J. Karappania, K. Colegan, F. Karappania, K. Colegan, F. Karappania, K. Colegan, Store, T. Nashon, V. Basto, J. Chahal, R., | Impact of IC Fracture Su for Perform 2015 Time-driver pediatric ap 2017 Variation in and manage Implication 2014 Improving t surgery unit 2020 Time-driver | Diabetes Mellitus on Surgical Quality Measures After Ankle gragry: Implications for "Value-Based" Compensation and "Pay ance" a activity-based costing: A dynamic value assessment model in pendicitis n practice and resource utilization associated with the diagnosis ement of appendicitis at freestanding children's hospitals: is for value-based comparative analysis the efficiency of ankle fracture care through home care and day is: Delivering safe surgery on a value-based healthcare model mactivity-based costing to model the utility of parallel | US US US US US US | S, Massachusetts n S, New York S, New York S, Texas n S, Texas n S, Texas n S, Texas n S, K, London n | ingle center, etrospective, firect soccess napping ingle center, rocospective, roccess napping ingle center, | 58,748 patients, 7501 with Diabetes Mellitus 207 patients total, 6 phases of care 13,328 patients, 34 children's hospitals, acute appendicitis, acute appendicitis, age 3-18 53 trasuma patients | Pediatrics, appendicitis simple appendicitis Pediatrics, appendicitis trauma, orthopedics, | Pediatrics | appendicitis Pediatric appendicitis Orthopedic | unspecified full care path (surgica episode) unspecified full care path (surgica episode) | Direct and indirec | t payer t provider t payer | payer provider payer | none, reimbursements TDABC none, reimbursements | Charges/Reimbursemen +-based Absorption costing - TDABC Charges/Reimbursemen +-based Absorption costing - | N/A Paper only N/A | hospital charges charges transformed with cost-to-charge | yes se sheet h no yes se |
| Manoli, A. Hurzler, L. Konda, S. R. Egol, K. A. Ya, V. R. Manoli, C. M. Carkery, K. E. Ren, H. Patel, B. Nachten, I.C. Rice-Townsend, S. Barnes, J. N. Hall, M. Baxter, J. L. Rangel, S. J. Ahlrowalia, R. Cook, J. Karappania, K. Colegan, F. Karappania, K. Colegan, F. Karappania, K. Colegan, Store, T. Nashon, V. Basto, J. Chahal, R., | Impact of IC Fracture Su for Perform 2015 Time-driver pediatric ap 2017 Variation in and manage Implication 2014 Improving t surgery unit 2020 Time-driver | Diabetes Mellitus on Surgical Quality Measures After Ankle grayry. Implications for "Value-Based" Compensation and "Pay ance" a activity-based costing: A dynamic value assessment model in pendicitis a practice and resource utilization associated with the diagnosis ement of appendicitis at freestanding children's hospitals: is for value-based comparative analysis the efficiency of ankle fracture care through home care and day is: Delivering safe surgery on a value-based healthcare model | US US US US US US | S, Massachusetts n S, New York S, Yew York S, Texas n S, Massachusetts S, | ingle center, etrospective, lirect soccess napping ingle center, rocess napping | 58,748 patients, 7501 with Diabetes Mellitus 207 patients total, 6 phases of care 13,328 patients, 34 children's hospitals, acute appendicitis, age 3-18 | Pediatrics, appendicitis simple appendicitis Pediatrics, appendicitis trauma, orthopedics, | Pediatrics | appendicitis Pediatric appendicitis Orthopedic | unspecified full care path (surgical episode) unspecified full care path (surgical | Direct and indirec | t payer t provider t payer | payer provider payer | none, reimbursements TDABC none, reimbursements | Charges/Reimbursemen +-based Absorption costing - TDABC Charges/Reimbursemen +-based Absorption costing - | N/A Paper only N/A | hospital charges charges transformed with cost-to-charge | yes se sheet h no yes se |

| Kadakia, R. J., Ahearn, B.M., Tenenbaum, S., Bariteau, J.T. | Costs Associated With Geriatric Ankle Fractures, Operative Versus | | | | | | | | | | | | | | | | |
|---|---|--------|-------------------|------------------------------------|---|--|-------------------|-----------------|--|---------------------|----------|---------------|-------------------------|---|----------------|--|---------|
| | Nonoperative Management | | | | | re trauma, orthopedics, | | Orthopedic | | | | | none, | Charges/Reimbursemen | | medicare | |
| urkley, R. | 2017 | US | US; Georgia | | patients | geriatrics, ankle fracture | Surgical | fracture | partial care path | Direct and indirect | payer | payer | reimbursemen | s t-based | N/A | reimbursement | ts no |
| obader, M. J. ang, J. au, S. ge. R. D. | Reducing Cancer Costs Through Symptom Management and Triage Pathways | | | | | | | | | | | | | | | | |
| | 2019 | US | US; Florida | | 10417 ER Events, 1879 unique patien | Emergency care, Acute | Oncology | | partial care path | Direct and indirect | naver | payer | none, reimbursemen | Charges/Reimbursemen s t-based | N/A | medicare claim | ps no |
| cLaughlin, N. | 2017 | 00 | 00,110110 | | 1075 unique patien | is care, oncorogy | Oneology | | partial care pain | Direct and mancer | puyer | puyer | remou senen | 5 toused | | incurcure chann | |
| lartin, N. A. padhyaya, P. ari, A. A. uxey, F. | Assessing the cost of contemporary pituitary care | | | | | | | | | | | | | | | | |
| ang, M. B. | 2014 | US | US; California | single center, | 27 neurosurgical | Neurosurgical, pituitary adenoma | Commined | N | partial care path (full surgical episode) | Direct and indirect | | | ABC | Absorption costing - ABC | incolors and a | | yes see |
| leaney A P lersh F. H | 2014 | 08 | US; California | retrospective | patients | adenoma | Surgical | Neurosurgery | surgical episode) | Direct and indirect | provider | provider | ABC | ABC | implemented | | sheet |
| aeger, K. A. eifert, S. N. im, J. | Patterns of Health Care Costs Due to External Ventricular Drain Infections | | | | External ventricula | | | | | | | | | | | | |
| angayach, N. S. | | | | | drain (EVD) | 1 | | | | | | | | Absorption costing - | | | |
| Weiss, N. | 2019 | US | US; New York | | infection patients | Neurosurgery | Surgical | Neurosurgery | partial care path | Direct and indirect | provider | provider | unspecified | unspecified/generic | implemented | | no |
| Aeara, J. G. Jughes, C. D. Sanchez, K. Catallozzi, L. Clark, R. | Optimal Outcomes Reporting (OOR): A New Value–Based Metric for Outcome Reporting Following Cleft Palate Repair | | | Retrospective, | 94 patients were identified who , underwent primary | | | | | | | | B 14 B 1 | | | | |
| Kummer, A. W. | 2020 | US | US: Massachusett | single-center ts_cohort analysi | cleft palate repair b is the same surgeon | y Cleft palate, Palatoplasty plastic surgery | /, Surgical | Plastic surgery | full care path | Direct and indirect | provider | provider | Relative Value Units | Absorption costing - unspecified/generic | Paper only | | no |
| akovljevic, M. | | | 0.03 | | | June on Bril | | | tan and pain | | | - Jun - Land | 0.000 | | p | | |
| ugic, A. ankovic, A. agovic, A. | Radiation therapy remains the key cost driver of oncology inpatient treatment | | | | | | | | | | | | | | | | |
| | | | | | 2544 complex | | | | | | | | Microcosting | | | | |
| 1. 8.0 | 2015 | Serbia | Serbia | | oncology patients | Oncology | Oncology | | partial care path | Direct | provider | provider | direct costs on | ly Direct costing | unspecified | | no |
| aidan, R. S. e, W. an, C. C. hao. H. | Total and out-of-pocket costs of different primary management strategi | 25 | | | | | | | | | | | | | | | |
| auh-Hain, J. A. | in ovarian cancer | | | | | | | | | | Payer, | | none, | Charges/Reimbursemen sement-ba | eimbur | | |
| leming, N. D. | 2019 | US | US; Texas | | 12761 patients | Gynecology, oncology, ovarian cancer | obstetrics | | unspecified | Direct and indirect | | paver patient | reimbursemen | | | charges | no |
| enfant, L. awczyn, G. Tim, S. aninsharifi, A. aouk, J. | Single-institution Cost Comparison: Single-port Versus Multiport Robo Prostatectomy | | | Retrospective, single-center | | Oncology, prostate | | | | | | | | Absorption costing - | | | yes see |
| Jemmila, M. R. | 2020 | US | US; Ohio | cohort | 175 patients | cancer, surgical | Oncology | | partial care path | Direct and indirect | provider | provider | unspecified | unspecified/generic | unspecified | | sheet |
| 'ain-Nielsen, A. H. Vahl, W. L. 'ander Kolk, W. E. akubus, J. L. | Regional collaborative quality improvement for trauma reduces complications and costs | | | | 72084 episodes of | | emergency care & | | | | | | | Charges/Reimbursemen | | price- standardized payments, claims, DRG | |
| Aikhail, J. N. Birkmauer, N. J. | 2014 | US | US; Texas | | acute trauma care | Acute care | acute care | | partial care path | Direct and indirect | payer | payer | none, reimbursemen | s t-based | N/A | prices | no |
| ilAshqar, A. ioktepe, M. E. ilic, G. S. | | | | | | | | | | | | | | | | 1 | |
| orahay, M. A. | Predictors of the cost of hysterectomy for benign indications | | | | 1847 female | | | | | | | | | | | | |
| | | | | | hysterectomy | gynecology, obstetrics, | | | | | | | | Charges/Reimbursemen | | | |
| laghavi, A. O. | 2021 | US | US; Maryland | | patients | Vaginal hysterectomy | obstetrics | | unspecified | Direct and indirect | payer | payer | none; charges | t-based | N/A | charges | no |
| ionzalez, R. J. cott, J. G. im, Y. | Staged reconstruction brachytherapy has lower overall cost in recurrent soft-tissue sarcoma | | | | | | | | | | | | | | | | |
| buodeh, Y. A. trom, T. J. | | | | | 22 soft-tissue | Oncology, soft-tissue | | | | | | | | Charges/Reimbursemen | | | |
| ohovorrio M | 2017 | US | US; Florida | | sarcoma patients | sarcoma | Oncology | | full care path | unspecified | payer | payer | none; charges | t-based | N/A | charges | no |
| avanesarajah, V. irby, D. J. in, A. /erner, B. C. | Cost Variation of Anterior Cervical Fusions in Elderly Medicare Beneficiaries | | | | | | | | | | | | | | | | |
| assanzadeh, H. | areaCIP-IdLICS | | | | | orthopedics, geriatrics, elective anterior cervical | | Orthopedic | | | | | none, | Charges/Reimbursemen | | | |
| | 2017 | US | US; unspecified | | 21,853 patients | fusions | Surgical | fracture | unspecified | Direct and indirect | payer | payer | reimbursemen | s t-based | N/A | reimbursement | ts no |
| u, A. ttel, J. | | | | | | | | | | | | | | | | | |
| rentice, H. A. appuzzo, J. M. ashemi, H. | A Cost Analysis of Regional Versus General Anesthesia for Carotid Endarterectomy | | | | | Neurosurgery, | | | | | | | | | | | |
| lukherjee, D. | 2017 | US | US; Virginia | | 346 patients | anasthesia, carotid endarterectomy | Surgical | Neurosurgery | unenasified | direct | providar | provider | unchasif - J | Direct costing | implemented | | |
| irsch, D. B. | 2017 | 03 | US, Virginia | | 540 patients | enuarterectomy | Surgical | rveurosurgery | unspecified | unect | provider | provider | unspecified | Direct costing | implemented | | по |
| faslow, A. L. tolzenbach, M. fcCall, A. | Association of Positive Airway Pressure Use With Acute Care Utilization and Costs | on | | | | Sleep medicine, sleep | | | | | | | | | | | |
| | | | | | | apnea, Obstructive Sleep | | | | | | | | Absorption costing - | | | |
| | 2019 | US | US: North Carolin | | 1098 patients | Apnea | Internal Medicine | | partial care path | Direct and indirect | | | unspecified | unspecified/generic | | | |

 BMJ Open

| Predictors of adverse discharge disposition in adult spinal deformity any | 1 | | | | | | | | | | | | | |
|---|--|--|---|--|---|--|--|---|--|-------------------------|---|-------------|--|------|
| associated costs | | | | | | | | | | | | | | |
| | | | | | | | | | | none, | Charges/Reimbursemen | | | |
| 2018 | USU | JS; New York | 2408 patients | orthopedic, surgical | Surgical | Spine | partial care path | unspecified p | ayer payer | reimbursement | is t-based | N/A | reimbursemer | ats |
| | | | | | | | | | | | | | | |
| Effectiveness of whole-exome sequencing and costs of the traditional | | | | | | | | | | | | | | |
| diagnostic trajectory in children with intellectual disability | | | | Constine Bedistries | | | | | | | | | | |
| 2016 | The Netherlands T | he Netherlands | 17 patients | | Pediatrics | Pediatric other | full care path | Direct p | rovider provider | approach | Direct costing | implemented | | |
| | | | | | | | | | | | | | | _ |
| Factors associated with high-cost hospitalizations in elderly ovarian | | | | ovarian cancer, anterio | e . | | | | | | | | | |
| cancer patients | | | | fusion, anterior cervica | id al | | | | | | | | | |
| | | | | fusion, cervical spine, | | | | | | none, | Charges/Reimbursemen | | | |
| 2020 | 080 | JS; Virginia | 21853 patients | cervical spondylosis | Uncology | | partial care path | Direct and indirect p | ayer payer | reimbursement | s t-based | N/A | reimbursemer | at |
| | | | | | | | | | | | | | | |
| Variation of the Inpatient Cost of Care in the Treatment of Isolated | | | | | | | | | | | | | | |
| Genatric Intertrochanteric Hip Fractures | | single on | tor | orthonadios gariatrios | | Orthonadia | partial care path (full | | | | Absorption posting | | | |
| 2020 | US U | JS; Minnesota retrospec | tive 287 patients | hip fracture, surgical | Surgical | fracture | surgical episode) | Direct and indirect p | rovider provider | ABC | Absorption costing - ABC | implemented | | |
| | | | | | | | | | | | | | | |
| Resource Lise and Medicare Costs During Law Navigation for Coristria | | | | | | | | | | | | | | |
| Patients With Cancer | | | | Geriatrics. oncology F | De | | | | | | | | | |
| | | | | Novo Metastatic Breas | at | | | | | none, | Charges/Reimbursemen | | | |
| 2018 | US U | JS; Alabama | 988 patients | Cancer | Oncology | | partial care path | Direct and indirect p | ayer payer | reimbursement | s t-based | N/A | reimbursemer | at |
| | | | | | | | | | | | | | | |
| | ĩ | | | Surgical, acute care, | | | | | | none; charges, | | | charges, | |
| health care | | | 101022 | acute cholecystitis, | | | | | | transformed wi | ith Character Desire barrantee | | transformed v | with |
| 2015 | US U | JS; Massachusetts | 191032 patient records | aparoscopic cholecystectomy | Surgical | Gallbladder | unspecified | | | cost-to-charge ratio | t-based proxy | N/A | cost-to-charge ratio | e |
| | | | | | | | | | | | | | | |
| Patient support program increased medication adheses with laws to | | | | | | | | | | | | | | |
| Patient support program increased medication adherence with lower tota health care costs despite increased drug spending | | | | | | | | | | | | | | |
| | | | | | | | | | | | Charges/Reimbursemen | | | |
| 2019 | USU | JS; various states | 1134 patients | Multiple | multiple | | unspecified | Direct and indirect p | ayer payer | none; charges | t-based | N/A | charges | |
| | | | | | | | | | | | | | | |
| | | | | Cardiology, surgical, | | | | | | none; charges, | | | charges, | |
| and duration of stay | | | | thrombocytopenia, | | | | | | | | | transformed v | |
| 2018 | US U | JS; California | 13943 patients | | Surgical | Cardiac/Thoracic | unspecified | Direct and indirect p | ayer payer | cost-to-charge ratio | t-based proxy | N/A | ratio | 8 |
| | | | | | | | | | | | | | | |
| Increased Health Care Costs and Onioid Use in Patients with Anviety a | d. | | | | | | | | | | | | | |
| Depression Undergoing Rotator Cuff Repair | - | | | orthopedic, surgical. | | | | | | | | | | |
| | | | | depression, Rotator Cu | | Orthopedic rotato | | | | | Charges/Reimbursemen | | | |
| 2020 | US U | JS; Kentucky | 170329 patients | Repair | Surgical | cuff repair | partial care path | Direct and indirect p | ayer payer | none; charges | t-based | N/A | charges | |
| | | | | | | | | | | | | | | |
| Impact of incisional hernia development following abdominal operation | J. | | | | | | | | | | | | | |
| on total neutricare cost | | | | Surgical hernia | | | | | | | Charges/Reimbursemer | | | |
| 2018 | USU | JS; Texas | 14290 patients | Incisional hernia | Surgical | Abdominal | full care path | Direct and indirect p | ayer payer | none; charges | | N/A | charges | |
| | | | | | | | | | | | | | | |
| Health care utilization and the cost of posttraumatic acute respiratory | | | | | | | | | | | | | | |
| distress syndrome care | | | | | | | | | | | | | | |
| 2010 | | | | | emergency care & | ŝ. | | | | | Charges/Reimbursemen | | | |
| 2018 | US U | us; california | 1552 patients | Acute care, trauma care | e acute care | | unspecified | Direct and indirect p | ayer payer | none; charges | t-based | N/A | charges | |
| | | | | | | | | | | | | | | |
| Functional and patient-reported outcome versus in-hospital costs after | , | | | | | | | | | | | | | |
| susanane acute suoturai nematoma (t-ASDri), a neurosurgical paradox: | | | | Acute care, brain injury acute subdural | | ¢. | | | | | Absorption costing - | | | |
| 2019 | The Netherlands T | he Netherlands | 108 patients | | | - | partial care path | Direct and indirect p | rovider provider | reference pricit | | Paper only | | |
| | | | | | | | | | | | | | | |
| Surgical site infection in orthopedic trauma: A case-control study | | | | | | | | | | | | | | |
| evaluating risk factors and cost | | | | | | | | | | | | | | |
| 2015 | | 10 m | 70 | | | | | | | | Charges/Reimbursemen | | | |
| 2015 | USU | S; Tennessee | 78 patients | orthopedic, surgical | Surgical | Orthopedic | unspecified | Direct and indirect p | ayer payer | none; charges | t-based | N/A | charges | — |
| | | | | | | | | | | | | | | |
| Cost and complications of local therapies for early-stage breast cancer | | | | | | | | | | | | | | |
| | | | 105 211 female | | | | | | | | Charges/Reimbursemen | | | |
| | | | | | | | | | | | | | | |
| | associated costs 2018 2019 Effectiveness of whole-ecome sequencing and costs of the traditional diagnostic trajectory in children with intellectual disability 2016 Factors associated with high-cost hospitalizations in elderly ovarian cancer patients 2020 Variation of the Inpatient Cost of Care in the Treatment of Isolated Corriante Intertochanteric Hip Factures 2020 Patients With Cancer 2020 Patients with Cancer 2021 Patients support program increased medication adherence with lower total health care 2021 Patient support program increased medication adherence with lower total health care 2021 Patient support program increased medication adherence with lower total health care 2021 Patient support program increased medication adherence with lower total health care 2021 Patient support program increased medication adherence with lower total health care 2021 Patient support program increased medication adherence with lower total health care 2021 Patient support program increased medication adherence with lower total health care 2021 Patient support program increased medication adherence with lower total health care 2021 Patient support program increased medication adherence with lower total health care 2021 Patient support program increased medication adherence with lower total health care 2021 Patient support program increased medication adherence with lower total health care 2021 Patient support program increased medication adherence with lower total health care costs and Opiold Use in Patients with Anxiety an Depression Undergoing Restor Cuff Repair 2020 Patient support of incisional hernia development following addominal operations on rotal healthcare cost 2021 Patients adherence utilization and the cost of postraumatic acute respiratory distress syndrome care 2021 Patients Patient care utilization and the cost of postraumatic acute respiratory distress syndrome care 2021 Patients Patient Pati | 2018 US U Effectiveness of whole-ecome sequencing and costs of the traditional diagnostic trajectory in children with intellectual disability Interventional diagnostic trajectory in children with intellectual disability 2016 The Netherlands Intel Netherlands Intel Netherlands 2020 US US Intel Netherlands 2021 US US Intel Netherlands 2021 US US Intel Netherlands 2021 US US Intel Netherlands 2015 US US Intel Netherlands 2016 US US Intel Netherlands 2017 US US Intel Netherlands 2018 US US Intel Netherlands 2019 Intervessel Health Care Cores and Opioid Use in Patients with Anxiety and Depression Indergoing Rotator Curf Repair Intel Netherlands 2018 US US Intel Netherlands 2018 US US Int | auscitated costs 2018 LS US US, New York 2018 The Netherlands International diagnostic trajectory in children with interlectual disability 2019 The Netherlands The Netherlands 2010 US US, Vargina 2020 US US, Vargina 2020 US US, Vargina 2020 US US, Maneeda ingle cell 2021 US US, Maneeda ingle cell 2023 US US, Maneeda ingle cell 2031 US US, Maneeda ingle cell 2032 US US, Maneeda ingle cell 2033 US US, Maneeda ingle cell 2034 US US, Maneeda ingle cell 2035 US US, Maneeda ingle cell 2036 US US, Varianas state Institut support program increased ding specific 2037 US US, Varianas Institut support program increased fung specific Institut support program increased fung specific Institut support program increased fung specific 2035 US | auxented outs US US, New York 2408 patients 2014 The Netherlands The Netherlands 17 parents 2016 The Netherlands The Netherlands 17 parents 2017 US US, Virginia 2153 parents 2019 US US, Virginia 2153 parents 2020 US US, Virginia 2153 parents 2030 US US, Virginia 2153 parents 2040 US US, Mancosa Single center, instructure functional stature function stature funce functional stature funce funce functional statur | anomalia IS U.S. Ner Vol. 208 patients orthoppedia, signalization of the induced and balance of the induced | axis detects 15 U.S. Wey Yok 248 patients orthopdie, single Single 201 The Nederlands 17 U.S. Way Yok 248 patients orthopdie, single Names 203 The Nederlands 17 patients Generits-Nedrikes, weight of the Nederlands Orderlands Names Single Action Sin | instantions in the second of the forwards of the forwards in the second of the forwards in the second of the forwards in the second of the sec | anisal data Signal Si | and controls I UNA VIA 20 propersy on physics, regis on physics, | | matrix matrix< | | Note that is the state of the | |

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| Lentz, T. A. Rhon, D. I. George, S. Z. | Predicting Opioid Use, Increased Health C: for Musculoskeletal Pain: What Factors Me Disability? | are Utilization and High Costs ediate Pain Intensity and | | | | | | | | | | | | |
|---|---|---|--------------------|---------------------------------|----------------------------------|--|---------------|-----------------------|-------------------------|------------------------------|----------|--|---|-------------|
| | 2020 | US | US; Washington | | 283 patients | Pain, Musculoskeletal Pain | Pain medicine | | partial care path | Direct and indirect provider | provider | unspecified | Absorption costing - unspecified/generic | unspecified |
| Kaul, S. Korgenski, E. K. Ying, J. Ng, C. F. | A retrospective analysis of treatment- relate pediatric, adolescent, and young adult acute | | | | | Oncology, leukemia, | | | | | | | | |
| Smits-Seemann, R. R. Nelson, R. E. Andrewe S | 2016 | US | US; Utah | single center, retrospective | 505 patients | acute lymphoblastic leukemia | Pediatrics | Pediatric Oncology | partial care path | Direct and indirect provider | provider | ABC | Absorption costing - ABC | implemented |
| Silva-Velazco, J. Dietz, D. W. Stocchi, L. Costedio, M. Gorgun, E. | Considering Value in Rectal Cancer Surger Outcomes Based on the Open, Laparoscopi Proctectomy | | | | | | | | partial care path | | | | Absorption costing - | |
| Kalady, M. F. Koceler H Canizares, M. F. | 2017 | US | US; Ohio | | 488 patients | Oncology, rectal cancer | Oncology | | (surgical episode) | Direct and indirect provider | provider | unspecified | unspecified/generic | unspecified |
| Feldman, L. Miller, P. E. Waters, P. M. Bae, D. S. | Complications and Cost of Syndactyly Rec States: Analysis of the Pediatric Health Infe | ormation System | | | 38 hospitals, 2047 | Pediatrics, orthopedic, surgical, Syndactyly | | | | provider | | none; charges, transformed with cost-to-charge | Charges/Reimbursemen | |
| Vuong, B | 2017 | US | US; Massachuset | ts | procedures | Reconstruction | Pediatrics | Pediatric surgical | partial care path | Direct and indirect (proxy) | payer | ratio | t-based proxy | N/A |
| Dehal, A Uppal, A Stern, S L Mejia, J | What Are the Most Significant Cost and Va Resection in an Integrated Healthcare Syste | alue Drivers for Pancreatic m? | | | | Surgical. Pancreas. | | | | | | | Absorption costing - | |
| Weerasinghe, R Kanoor V Sanaiha, Y. | 2018 | US | US; California | | 796 patients | Pancreatic Resection | Surgical | Endocrine | partial care path | Direct and indirect provider | provider | unspecified | unspecified/generic | unspecified |
| Mantha, A. Ziaeian, B. Juo, Y. Y. Shemin, R. J. Benharash, P. | Trends in Readmission and Costs After Tra Surgical Aortic Valve Replacement in Patie | ents With Renal Dysfunction | | | 350,609 isolated aortic valve | Cardiology, Renal, Aortic Repair, Thoracic Endovascular Aortic | | | | provider | | none; charges, transformed with cost-to-charge | Charges/Reimbursemen | |
| Chatfield, S. C. | 2020 | US | US; LA | | replacements | Repair | Surgical | Cardiac/Thoracic | partial care path | Direct and indirect (proxy) | payer | ratio | t-based proxy | N/A |
| Volpicelli, F. M. Adler, N. M. Kim, K. L. Jones, S. A. Francois, F. Shak, P. C. Chawla, S. S. | Bending the cost curve: time series analysis programme at an academic medical centre 2019 | s of a value transformation | US; New York | single center, retrospective | 74 projects, 160434 patients, | Multiple | multiple | | partial care path | Direct provider | provider | ABC | Direct costing | implemented |
| Cnawia, S. S. Whitson, A. J. Schiffman, C. J. Matsen, F. A. Hsu, J. E. | Drivers of lower inpatient hospital costs an health-related quality of life for patients un ream-and-run arthroplasty | | | | | orthopedics, athroplasty, total shoulder and ream-and-run | | Orthopedic. | | | | unspecified; Hospital accounting data not otherwise | Absorption costing - | |
| | 2020 | US | US; Washington | | 433 patients | arthroplasty | Surgical | arthroplasty | unspecified | Direct and indirect provider | provider | specified | unspecified/generic | implemented |
| Klink, A. J. Chmielowski, B. Feinberg, B. Ahsan, S. Nero, D. | Health Care Resource Utilization and Costs Patients with Metastatic Melanoma in the U | | | | | | | | | | | none, | Charges/Reimbursemen | |
| Liu, F. X. Chotai. S. | 2019 | US | US; various states | i | 1599 patients | Oncology, melanoma | Oncology | | unspecified | Direct and indirect payer | payer | reimbursements | | N/A |
| Sivaganesan, A. Parker, S. L. Sielatycki, J. A. McGirt, M. J. | Drivers of Variability in 90-Day Cost for E Discectomy and Fusion for Cervical Degen | | | | | Spine, cervical | | | | | | none, | Charges/Reimbursemen | |
| Devin, C. J. | 2018 | US | US; Tennessee | | 445 patients | degenerative disease | Surgical | Spine | partial care path | Direct and indirect payer | payer | reimbursements | | N/A |
| Sanaiha, Y. Kavianpour, B. Downey, P. Morchi, R. Shemin, R. J. Benharash, P. | National Study of Index and Readmission I Thoracic Endovascular Aortic Repair in Pa | tients With Renal Disease | | | | Cardiology, Surgical, Aortic repair, Renal | | | | provide | | | Charges/Reimbursemen | |
| Jain, N. | 2020 | US | US; California | | 121046 patients | Disease | Surgical | Cardiac/Thoracic | unspecified | Direct and indirect (proxy) | payer | ratio | t-based proxy | N/A |
| Brock, J. L. Phillips, F. M. Weaver, T. Khan, S. N. | Chronic preoperative opioid use is a risk fa complications, resource use, and costs after | | | | | Spine, cervical | | | | | | none, | Charges/Reimbursemen | |
| Featherall, J. | 2018 | US | US; various state | 3 | 29101 patients | degenerative disease | Surgical | Spine | partial care path | Direct and indirect payer | payer | reimbursements | t-based | N/A |
| Peanteran, J. Brigati, D. P. Arney, A. N. Faour, M. Bokar, D. V. Murray, T. G. | Effects of a Total Knee Arthroplasty Care I Patient Experience: Toward Measuring the | Pathway on Cost, Quality, and Triple Aim | | | | orthopedics, total knee | | Orthopedic, | full care path (surgica | 1 | | Relative Value | | |
| Murray, T. G. Mollov R M Ackerman R S | 2019 | US | US; Ohio | | 6760 surgeries | athroplasty | Surgical | arthroplasty | episode) | Direct provider | provider | Unit costing | Direct costing | implemented |
| Hirschi, M. Alford, B. Evans, T. Kiluk, J. V. | Enhanced REVENUE After Surgery? A Co Recovery Pathway for Mastectomy Decrea | | | | | | | | | | | | | |
| Patel, S. Y. | 2019 | US | US; unspecified | | 103 patients | Oncology, mastectomy | Oncology | | unspecified | Direct and indirect payer | payer | none; charges | Charges/Reimbursemen t-based | N/A |
| | | | | | | | | | | | | | | |

charges, transformed with cost-to-charge ratio

charges, transformed with cost-to-charge ratio

claims

reimbursements n

charges, transformed with cost-to-charge ratio

charges

yes see second sheet

no

yes see second sheet

| Williams, S. B. Shan, Y. | | | | | | | | | | | | | | | | |
|-------------------------------------|--|-----|--------------------|---------------------|-----------------|--|-------------------|---------------------------------------|---|-----------------------------------|---------------|----------|-----------------------------------|--|----------------|---------------------------------|
| Jazzar, U. Mehta, H. B. | Comparing Survival Outcomes and Costs Associated With Radical Cystectomy and Trimodal Therapy for Older Adults With Muscle- | | | | | | | | | | | | | | | |
| Baillargeon, J. G. Huo, J. | Invasive Bladder Cancer | | | | | Oncology, urology, | | | | | | | ione, | Charges/Reimbursemen | | |
| Sanagara A I | 2018 | US | US; various states | 8 | 3200 patients | surgical, bladder cancer | r Oncology | | partial care path | Direct and indirect paye | r payer | re | eimbursements | t-based | N/A | charges |
| Schilling, P. L. He, J. | | | | | | | | | | | | | | | | |
| Chen, S. Placzek, H. | Risk-Adjusted Cost Performance for 90-Day Total Hip Arthroplasty | | | | | | | | | | | | | | | |
| Placzek, H. Bini, S. A. | Episodes: Comparing US Hospitals Nationwide Before CJR | | | | | | | | | | | | | | | |
| | 2020 | US | US; various states | s | 366380 patients | Surgical | Surgical | Orthopedic, arthroplasty | partial care path | Direct and indirect paye | r payer | | ione, eimbursements | Charges/Reimbursemen s t-based | N/A | charges |
| Lott, A. | | | | | | | | | ,,, | | | | | | | |
| Haglin, J. Saleh. H. | Using a Validated Middle-Age and Geriatric Risk Tool to Identify Early | | | | | | | | | | | | inspecified; | | | |
| Hall, J. | (48 Hours) Hospital Mortality and Associated Cost of Care | | | | | | | | | | | | Hospital accounting data | | | |
| Egol, K. A. Konda, S. R. | | | | | | Acute care, geriatrics, | | \$ <u>.</u> | | | | nc | not otherwise | | | |
| Ackerman, S. J. | 2018 | US | US; various states | s | 1486 patients | Emergency care | acute care | | partial care path | Direct prov | ider provider | sp | pecified | Direct costing | implemented | |
| Knight, T. | | | | | | | | | | | | | | | | |
| Wahl, P. M. Cartwright, C. P. | Health care utilization and costs following amplified versus non-amplifie molecular probe testing for symptomatic patients with suspected | a | | | | | | | | | | | | | | |
| Cartwright, C. I. | vulvovaginitis: A us commercial payer population | | | | | Concerdance abatatrias | | | | | | _ | ione. | Charges/Reimbursemen | | |
| | 2019 | US | US; various states | s | 313145 patients | Gynecology, obstetrics, vulvocvaginitis | obstetrics | | unspecified | Direct and indirect paye | r payer | | eimbursements | t-based | N/A | charges |
| Peard, L. | | | | | | | | | | | | | | | | |
| Goodwin, J. Hensley, P. | Examining and Understanding Value: The Impact of Preoperative | | | | | | | | | | | w | inspecified; | | | |
| Dugan, A. | Characteristics, Intraoperative Variables, and Postoperative Complication on Cost of Robot-Assisted Laparoscopic Radical Prostatectomy | 15 | | | | Surgical, robot, Robot- | | | | | | H | Hospital accounting data | | | |
| Bylund, J. Harris, A. M. | 2019 | 110 | | | | Assisted Laparoscopic | | D | | | | nc | not otherwise | Absorption costing - | | |
| Patel, M. I. | 2019 | US | US; Kentucky | | 275 patients | Radical Prostatectomy | Surgical | Prostatectomy | partial care path | Direct and indirect prov | ider provider | sp | pecified | unspecified/generic | implemented | |
| Ramirez, D. | Lay health worker-led cancer symptom screening intervention and the | | | | | | | | | | | | | | | |
| Agajanian, R. Agajanian, H. | effect on patient-reported satisfaction, health status, health care use, and | | | | | | | | | | | | | | | |
| Bhattacharya, J. | total costs: Results from a tri-part collaboration | | | | | | | | | | | n | ione, | Charges/Reimbursemen | | |
| | 2020 | US | US; California | | 425 enrollees | Oncology | Oncology | | partial care path | Direct and indirect paye | r payer | re | eimbursements | t-based | N/A | charges |
| Harris, A. M. Hensley, P. | | | | | | | | | | | | | | | | |
| Goodwin, J. | Examining and Understanding Value: The Cost of Preoperative | | | | | | | | | | | ur | inspecified; Tospital | | | |
| Dugan, A. Peard, L. | Characteristics, Intraoperative Variables and Postoperative Complication of Minimally Invasive Partial Nephrectomy | s | | | | | | | | | | | Hospital accounting data | | | |
| Bell, J. R. | 2019 | US | US: Kentucky | | 216 | Urology, surgical, | Committee 1 | kidnev | and the second | Discut and indiscut | dan marid | | not otherwise | Absorption costing - | incolour and a | |
| Bhaladi A Stearns, L. J. | 2019 | 08 | US; Kentucky | | 215 patients | Nephrectomy | Surgical | kidney | partial care path | Direct and indirect prov | ider provider | sp | pecified | unspecified/generic | implemented | |
| Narang, S. | Assessment of Health Care Utilization and Cost of Targeted Drug | | | | | | | | | | | | | | | |
| Albright, R. E. Hammond, K. | Delivery and Conventional Medical Management vs Conventional | | | | | | | | | | | | | | | |
| Xia, Y. | Medical Management Alone for Patients With Cancer-Related Pain | | | | | Oncology, Pain, pain | | | | | | | | Charges/Reimbursemen | | |
| Richter, H. B. | 2019 | US | US; various states | \$ | 5215 patients | management | Oncology | | partial care path | Direct and indirect paye | r payer | n | ione; charges | t-based | N/A | charges |
| McCreary, D. L. Dugarte, A. J. | | | | | | | | | | | | | | | | |
| Vang, S. | Patient-Level Value Analysis: An Innovative Approach to Optimize Care | | | single center, | | | | | | | | | | | | |
| Plowman, B. Williams, B. R. | Delivery | | | prospective, | | | | | | | | | | | | |
| Parikh, H. R. | 2019 | US | US: Minnesota | process mapping | 67 patients | orthopedics | Surgical | Orthopedic fracture | partial care path (full surgical episode) | Direct and indirect prov | ider provider | т | TDABC | Absorption costing - TDABC | Paper only | |
| Caloway, C. | | | ,inicood | single center, | - panting | | | | -mgren episode) | inter and mancer prov | Potner | | | | - apar only | |
| Yamasaki, A. Callans, K. M. | Ourself in the bounder from a second second | | | retrospective, | | | | | | | | | | | | |
| Shah, M. | Quantifying the benefits from a care coordination program for tracheostomy placement in neonates | | | direct observation. | | | | | | | | | | | | |
| Kaplan, R. S. Hartnick, C. | | | | pre and post | | Neonatal, pediatrics, | | | | | | | | Absorption costing - | | |
| Navarro, S. M. | 2020 | US | US; Massachuset | ts comparison | 10 patients | tracheostomy, surgical | Pediatrics | Pediatric Neonat | al partial care path | Direct and indirect prov | ider provider | T! | TDABC | TDABC | Paper only | |
| Wang, E. Y. | | | | | | | | | | | | | | | | |
| Haeberle, H. S. Mont, M. A. | Machine Learning and Primary Total Knee Arthroplasty: Patient | | | | | | | | | | | n | ione; charges, | | | charges, |
| Krebs, V. E. | Forecasting for a Patient-Specific Payment Model | | | | | | | 0.4 | | | | tra | ransformed with | | | transformed w |
| Patterson, B. M. Romkumar, P. N. | 2018 | US | US; New York | | 141446 patients | orthopedics, total knee arthroplasty | Surgical | Orthopedic, arthroplasty | partial care path (surgical episode) | prov Direct and indirect (prov | | c0 17 | ost-to-charge atio | Charges/Reimbursemen t-based proxy | N/A | cost-to-charge ratio |
| Skill, N. J. | | | | | | | | , , , , , , , , , , , , , , , , , , , | (| data | | | | | | |
| Butler, J. O'Brien, D. C. | Einenaid Burdan of Liner Trans-Letter Describer for Here's 201 | | | | | | | | | | | | | | | |
| Kays, J. K. | Financial Burden of Liver Transplant vs Resection for Hepatocellular Carcinoma | | | | | | | | | | | | | | | |
| Kubal, C. Liangpunsakul, S. | | | | | | | | | | prov | ider | | | Charges/Reimbursemen | | |
| Ninod N Robinson, Jamie R. | 2019 | US | US; Indiana | | 44 patients | Oncology, renal | Oncology | | partial care path | Direct and indirect (pro- | ty) payer | nc | none; charges | t-based | N/A | charges |
| Avritscher, Elenir B.C. | | | | | | | | | | | | | | | | |
| Gay, James C. Willis, Zachary I. | Measuring the Value of a Clinical Practice Guideline for Children With | | | | | | | | | | | n | ione; charges, | Absorption | | |
| Putnam, Luke R. | Perforated Appendicitis | | | | | | | D. F | | | | tra | ransformed with | th costing - | | |
| Anglemver Andrew | 2017 | US | US; Tennessee | | 313 patients | Appendicitis, Pediatrics | s Pediatrics | Pediatric appendicitis | partial care path (surgical episode) | prov Direct and indirect paye | | | ost-to-charge atio | Charges/Reimbursemen unspecified/g t-based proxy ic | gener N/A | charges |
| Labovitz, J. M. | | | , | | | | | | (| puje | , | | | | | |
| | Forecasting the Value of Podiatric Medical Care in Newly Insured | | | | | | | | | | | | | | | |
| Kominski, G. F. | Forecasting the value of Fourarie Medical Care in Newly Insured | | | | | | | | | | | | | | | charges, |
| Kominski, G. F. | Diabetic Patients During Implementation of the Affordable Care Act in | | | | | | | | | | | | tone; charges, ransformed with | th | | |
| | Diabetic Patients During Implementation of the Affordable Care Act in California | US | US; California | | | | Internal Medicine | | | prov | ider | tra | ransformed with | h Charges/Reimbursemen | N/A | transformed w cost-to-charge |

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| Johnson, J. T. Scholtens, D. M. | | | | | | | | | | | | | | | | |
|--|--|--|----------------|--|---|--|---|--|---|---|--|----------|---|--|--|--|
| | | | | | | | | | | | | | | | | |
| Kuang, A. | | Does value vary by center surgical volume for neonates with truncus | | | | | | | | | | | none; charges, | | | charges, |
| eng, X. Y. | | arteriosus? A multicenter study | | | | Neonatal, pediatrics, | | | | | | | transformed with | | | transformed with |
| tayeb, O. M. st, L. A. | | | | | | surgical, cardiology, | | | | | provider | | | Charges/Reimbursemen | | cost-to-charge |
| rino B S | 2020 | | US | US; various states | 1024 neonates | thoracic surgery | Pediatrics | Pediatric Neonatal | full care path | Direct and indirect | (proxy) | payer | ratio | t-based proxy | N/A | ratio no |
| muta, J. M. | | | | | | | | | | | | | | | | |
| varro, S. M. eberle, H. S. | | | | | | | | | | | | | | | | |
| ieberie, H. S. ilm, J. M. | | Predicting Inpatient Payments Prior to Lower Extremity Arthroplasty | | | | | | | | | | | | | | |
| amath. A. F. | | Using Deep Learning: Which Model Architecture Is Best? | | | | orthopedics, total hip | | | | | | | | | | |
| haffer, J. L. | 2019 | | US | US: New York | 295605 patients | arthroplasty, total knee | | Orthopedic, | | | | | none, | Charges/Reimbursemen | N/A | payment, cost to |
| ifi. C. | 2019 | | US | US; New York | 295605 patients | arthroplasty | Surgical | arthroplasty | full care path | Direct and indirect | payer | payer | reimbursements | t-based | N/A | payor no |
| azzulino. A. | | | | | | | | | | | | | | | | |
| ark, C. | | National Trends for Primary and Revision Lumbar Disc Arthroplasty | | | | | | | | | | | | | | |
| aratta, J. | | Throughout the United States | | | | | | | | | | | none; charges, | | | charges, |
| ouie, P. K. | | | | | | | | Orthopedic, | | | provider | | transformed with | Charges/Reimbursemen | | transformed with cost-to-charge |
| illingford, J. N. | 2018 | | US | US; various states | 12957 patients | Athroplasty | Surgical | arthroplasty | unspecified | Direct and indirect | | payer | ratio | t-based proxy | N/A | ratio no |
| ing, M. S. | | | | | pantono | | | | | | (1001) | ju). | | | | |
| ilmer, M. B. | | | | | | | | | | | | | | | | |
| hah, A. K. | | Three-year results of a prospective statewide insurance coverage pilot for | | | | | | | | | | | | | | |
| hambers, L. C. | | proton therapy: Stakeholder collaboration improves patient access to care | | | | | | | | | | | | | | |
| arlock, L. B. felson, B. B. | | | | | | | | | | | | | | Charges/Reimbursemen | | |
| and C I | 2020 | | US | US; Texas | 32 patients | Oncology | Oncology | | partial care path | Direct and indirect | payer | payer | none; charges | t-based | N/A | charges no |
| ukdad, L. | | | | | | | | | | | | | | | | |
| lantha, A. | | Readmission and resource utilization after orthotopic heart transplant | | | | | | | | | | | | | | |
| guayo, E. anaiha, Y. | | versus ventricular assist device in the National Readmissions Database, | | | | | | | | | | | none; charges, | | | charges, |
| anaina, Y. 10, Y. Y. | | 2010-2014 | | | | Thoracic surgery, | | | | | | | transformed with | | | transformed with |
| iaeian, B. | | | | | | Cardiology, heart failure | 2, | | | | provider | | cost-to-charge | Charges/Reimbursemen | | cost-to-charge |
| amin P I | 2018 | | US | US; California | 12111 patients | heart transplant, VADs | Surgical | Cardiac/Thoracic | unspecified | Direct and indirect | (proxy) | payer | ratio | t-based proxy | N/A | ratio no |
| ankel, W. C. | | | | | | | | | | | | | | | | |
| avarro, S. M. aeberle, H. S. | | a construction of the second sec | | | | | | | | | | | | | | |
| aeberie, H. S. amanathan, D. | | Optimizing the Volume-Value Relationship in Laminectomy: An Evidence-Based Analysis of Outcomes and Economies of Scale | | | | | | | | | | | none; charges, | | | charges, transformed with |
| amkumar, P. N. | | Evidence-based Analysis of Outcomes and Economies of Scale | | | | | | | | | | | transformed with | | | transformed with |
| | 2019 | | US | US; New York | 67758 patients | orthopedic, laminectom surgical | y, Surgical | Spine | uneposition | Direct and indirect | provider (provu) | Ballar | cost-to-charge ratio | Charges/Reimbursemen t-based proxy | N/A | cost-to-charge ratio no |
| oucek, D. M. | 2019 | | 05 | US, INCW TORK | 07738 patients | sargicar | Surgical | Spine | unspecified | Direct and indirect | (proxy) | payer | ratio | e-oaseu proxy | NA | rauo no |
| d, A. K. | | | | | | | | | | | | | | | | |
| ckhauser, A. W. | | Resource Utilization for Initial Hospitalization in Pediatric Heart | | | | | | | | | | | | | | |
| eng, H. Y. C. | | Transplantation in the United States | | | | | | | | | | | none; charges, | | | charges, |
| heng, X. | | | | | | | | | | | provider | | transformed with cost-to-charge | Charges/Reimbursemen | | transformed with cost-to-charge |
| 'ilkes, J. F. | 2018 | | US | US; Pennsylvania | 1629 patients | Pediatrics, cardiology | Pediatrics | Pediatric surgical | unspecified | Direct and indirect | | paver | ratio | t-based proxy | N/A | ratio no |
| eller, D. S. | 2010 | | 00 | 05, remsyrrana | 1025 patients | reducties, endiology | r cultures | reduitite surgicui | unspectited | Direct and maneer | ([404]) | puyer | Tutto | roused proxy | | iuto ito |
| hang, J. | | | | | | | | | | | | | | | | |
| Chand, M. | | Opioid-free colorectal surgery: a method to improve patient & financial | | | | | | | | | | | | | | |
| | | outcomes in surgery | | | | | | | | | | | | | | |
| | | | | | | Surgical, Laparoscopic | | | | | | | | Charges/Reimbursemen | | |
| | 2019 | | US | US; various states | 50098 cases | colorectal surgery | Surgical | Colon/Rectal | unspecified | Direct and indirect | payer | payer | none; charges | t-based | N/A | charges no |
| eilly, R. F. | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | unspecified; | | | |
| | | | | | | | | | | | | | Hospital | | | |
| | | Creating a Value Dashboard for orthopedic Surgical Procedures | | | | | | | | | | | | | | |
| | | Creating a Value Dashboard for orthopedic Surgical Procedures | | | | Orthopeadics, total knee | | | | | | | accounting data | | | |
| | 2020 | Creating a Value Dashboard for orthopedic Surgical Procedures | Laboration | T shares | (universite data | arthroplasty, total hip | e Suminal | Orthopedic, | | Direct | | | not otherwise | Direct and in a | in a law and a d | |
| illar D E | 2020 | Creating a Value Dashboard for orthopedic Surgical Procedures | Lebanon | Lebanon | 6 surgeons' data | | Surgical | Orthopedic, arthroplasty | unspecified | Direct | provider | provider | | Direct costing | implemented | no |
| filler, P. E. juha, A. | 2020 | Creating a Value Dashboard for orthopedic Surgical Procedures | Lebanon | Lebanon | 6 surgeons' data | arthroplasty, total hip | Surgical | | unspecified | Direct | provider | provider | not otherwise | Direct costing | implemented | no |
| uha, A. hera, R. | 2020 | | Lebanon | Lebanon | 6 surgeons' data | arthroplasty, total hip | Surgical | | unspecified | Direct | provider | provider | not otherwise specified | Direct costing | implemented | no |
| uha, A. hera, R. houairi, F. | 2020 | Creating a Value Dashthoard for orthopedic Surgeal Procedures National Trends in Healthcare-Associated Infections for Five Common Cardiovascular Conditions | Lebanon | Lebanon | 6 surgeons' data | arthroplasty, total hip | Surgical | | unspecified | Direct | provider | provider | not otherwise specified none; charges, | L | implemented | no charges, transformed with |
| uha, A. nera, R. nouairi, F. nmad, T. | 2020 | National Trends in Healthcare-Associated Infections for Five Common | Lebanon | Lebanon | | arthroplasty, total hip arthroplasty | Surgical | | unspecified | | | provider | not otherwise specified none; charges, transformed with | i | implemented | transformed with |
| uha, A. nera, R. nouairi, F. nmad, T. | 2020 | National Trends in Healthcare-Associated Infections for Five Common | Lebanon | Lebanon US; various states | 6 surgeons' data 17889852 hospitalizations | arthroplasty, total hip | surgical | | unspecified | | provider | provider | not otherwise specified none; charges, transformed with | L | implemented N/A | |
| uha, A. hera, R. houairi, F. hmad, T. asir, K. ddison, D. | 2020 | National Trends in Healthcare-Associated Infections for Five Common | | | 17889852 | arthroplasty, total hip arthroplasty Cardiology, | Surgical | | | | provider | | not otherwise specified none; charges, transformed with cost-to-charge ratio | Charges/Reimbursemen | | transformed with cost-to-charge |
| uha, A. hera, R. houairi, F. hmad, T. asir, K. <u>ddicon D</u> onda, Sanjit R. ott, Ariana | 2020 | National Trends in Healthcare-Associated Infections for Five Common Cardiovascular Conditions | | | 17889852 | arthroplasty, total hip arthroplasty Cardiology, | Surgical | | | | provider | | not otherwise specified none; charges, transformed with cost-to-charge ratio unspecified; Hospital | Charges/Reimbursemen | | transformed with cost-to-charge |
| hha, A. hera, R. houairi, F. hmad, T. asir, K. ddicon. D onda, Sanjit R. ott, Ariana | 2020 | National Trends in Healthcare-Associated Infections for Five Common Cardiovascular Conditions | | | 17889852 | arthroplasty, total hip arthroplasty Cardiology, cardiovascular | Surgical Cardiology | arthroplasty | | | provider | | not otherwise specified none; charges, transformed with cost-to-charge ratio unspecified; Hospital accounting data | Charges/Reimbursemen | | transformed with cost-to-charge |
| ha, A. hera, R. houairi, F. humad, T. hsir, K. <u>tdicon D</u> onda, Sanjit R. htt, Ariana | 2020 | National Trends in Healthcare-Associated Infections for Five Common Cardiovascular Conditions | US | US; various states | 17889852 hospitalizations | arthroplasty, total hip arthroplasty Cardiology, cardiovascular Orthopeadics, Geriatrice | Surgical Cardiology | arthroplasty Orthopedic, | unspecified | Direct and indirect | provider (proxy) | payer | not otherwise specified none; charges, transformed with cost-to-charge ratio unspecified; Hospital accounting data not otherwise | Charges/Reimbursemen t-based proxy | N/A | transformed with cost-to-charge |
| has, A. hera, R. houairi, F. hmad, T. asir, K. <u>ddiasa D</u> noda, Sanjit R. Mt, Ariana gol, Kenneth A. | 2020 | National Trends in Healthcare-Associated Infections for Five Common Cardiovascular Conditions | | | 17889852 | arthroplasty, total hip arthroplasty Cardiology, cardiovascular | Surgical Cardiology | arthroplasty | | Direct and indirect | provider | payer | not otherwise specified none; charges, transformed with cost-to-charge ratio unspecified; Hospital accounting data | Charges/Reimbursemen | | transformed with cost-to-charge |
| uha, A. hera, R. houairi, F. hmad, T. asir, K. <u>ddison D.</u> onda, Sanjit R. ott, Ariana gol, Kenneth A. | 2020 | National Trends in Healthcare-Associated Infections for Five Common Cardiovascular Conditions | US | US; various states | 17889852 hospitalizations | arthroplasty, total hip arthroplasty Cardiology, cardiovascular Orthopeadics, Geriatrice | Surgical Cardiology | arthroplasty Orthopedic, | unspecified | Direct and indirect | provider (proxy) | payer | not otherwise specified none; charges, transformed with cost-to-charge ratio unspecified; Hospital accounting data not otherwise | Charges/Reimbursemen t-based proxy | N/A | transformed with cost-to-charge |
| has, A. hera, R. houairi, F. hmad, T. asir, K. <i>Atiana</i> gol, Kenneth A. | 2020 2019 2018 | National Trends in Healthcare-Associated Infections for Five Common Cardiovascular Conditions The coming hip and formar fracture bundle: A new inpatient risk stratification tool for care providers | US | US; various states | 17889852 hospitalizations | arthroplasty, total hip arthroplasty Cardiology, cardiovascular Orthopeadics, Geriatrice | Surgical Cardiology | arthroplasty Orthopedic, | unspecified | Direct and indirect | provider (proxy) | payer | not otherwise specified none: charges, transformed with cost-to-charge ratio unspecified; Hospital accounting data not otherwise specified unspecified; | Charges/Reimbursemen t-based proxy | N/A | transformed with cost-to-charge |
| uha, A. hera, R. houairi, F. hmad, T. sair, K. difeson D. Jonda, Sanjit R. stt, Ariana gol, Kenneth A. inegar, A. L. ckson, L. W. umbare, T. D. | 2020 2019 2018 | National Trends in Healthcare-Associated Infections for Five Common Cardiovascular Conditions The coming hip and femar fracture bundle: A new inpatient risk stratification tool for care providers | US | US; various states | 17889852 hospitalizations | arthroplasty, total hip arthroplasty Cardiology, cardiovascular Orthopsadics, Geriatrice total hip arthroplasty | Surgical Cardiology | arthroplasty Orthopedic, | unspecified | Direct and indirect | provider (proxy) | payer | not otherwise specified none; charges, transformed with cost-o-charge ratio unspecified; Hospital accounting data not otherwise specified Unspecified; Hospital | Charges/Reimbursemen t-based proxy | N/A | transformed with cost-to-charge |
| uha, A | 2020 2019 2018 | National Trends in Healthcare-Associated Infections for Five Common Cardiovascular Conditions The coming hip and formar fracture bundle: A new inpatient risk stratification tool for care providers | US | US; various states | 17889852 hospitalizations | arthroplasty, total hip arthroplasty Cardiology, cardiovascular Orthopeadies, Geriatric total hip arthroplasty Surgical, total hip | Surgical Cardiology | arthroplasty Orthopedic, arthroplasty | unspecified | Direct and indirect | provider (proxy) | payer | not otherwise specified none; charges, transformed with cost-to-charge ratio unspecified; Hospital accounting data not otherwise unspecified; Hospital accounting data | Charges/Reimbursemen t-based proxy Direct costing | N/A | transformed with cost-to-charge |
| uha, A | 2020 2019 2018 | National Trends in Healthcare-Associated Infections for Five Common Cardiovascular Conditions The coming hip and femar fracture bundle: A new inpatient risk stratification tool for care providers | US US | US; various states US; New York | 17880852 hospitalizations 173 patients | arthroplasy, total hip arthroplasy Cardiology, cardiovascular Orthopeadics, Geriatric total hip arthroplasy Surgical, total hip arthroplasy, Ince | Surgical Cardiology | arthroplasty Orthopedic, arthroplasty Orthopedic, | unspecified partial care path | Direct and indirect | provider (proxy) | payer | not otherwise specified none; charges, transformed with cost-o-charge ratio unspecified; Hospital accounting data not otherwise specified Hospital accounting data not otherwise | Charges/Reimbursemen t-based proxy Direct costing Absorption costing - | N/A | transformed with cost-to-charge |
| uha, A | 2020 2019 2018 | National Trends in Healthcare-Associated Infections for Five Common Cardiovascular Conditions The coming hip and femar fracture bundle: A new inpatient risk stratification tool for care providers | US | US; various states | 17889852 hospitalizations | arthroplasty, total hip arthroplasty Cardiology, cardiovascular Orthopeadies, Geriatric total hip arthroplasty Surgical, total hip | Surgical Cardiology | arthroplasty Orthopedic, arthroplasty | unspecified | Direct and indirect | provider (proxy) | payer | not otherwise specified none; charges, transformed with cost-to-charge ratio unspecified; Hospital accounting data not otherwise unspecified; Hospital accounting data | Charges/Reimbursemen t-based proxy Direct costing | N/A | transformed with cost-to-charge |
| uha, A hera, R houairi, F hmad, T siri, K <i>Atlicon D.</i> onda, Sanjit R ott, Ariana gol, Kenneth A vinegar, A. L kekson, L. W un, T. C anks, S. R tinger, T. P source V. D coque, G. B | 2020 2019 2018 | National Trends in Healthcare-Associated Infections for Five Common Cardiovascular Conditions The coming hip and femar fracture bundle: A new inpatient risk stratification tool for care providers | US US | US; various states US; New York | 17880852 hospitalizations 173 patients | arthroplasy, total hip arthroplasy Cardiology, cardiovascular Orthopeadics, Geriatric total hip arthroplasy Surgical, total hip arthroplasy, Ince | Surgical Cardiology | arthroplasty Orthopedic, arthroplasty Orthopedic, | unspecified partial care path | Direct and indirect | provider (proxy) | payer | not otherwise specified none; charges, transformed with cost-o-charge ratio unspecified; Hospital accounting data not otherwise specified Hospital accounting data not otherwise | Charges/Reimbursemen t-based proxy Direct costing Absorption costing - | N/A | transformed with cost-to-charge |
| uha, A | 2020 2019 2018 2019 | National Trends in Healthcare-Associated Infections for Five Common Cardiovascular Conditions The coming hip and femur fracture bundle: A new inpatient risk stratification tool for care providers A Surgeon Scorecard Is Associated with Improved Value in Elective Primary Hip and Knee Arthroplasty | US US | US; various states US; New York | 17880852 hospitalizations 173 patients | arthroplasy, total hip arthroplasy Cardiology, cardiovascular Orthopeadics, Geriatric total hip arthroplasy Surgical, total hip arthroplasy, Ince | Surgical Cardiology | arthroplasty Orthopedic, arthroplasty Orthopedic, | unspecified partial care path | Direct and indirect | provider (proxy) | payer | not otherwise specified none; charges, transformed with cost-o-charge ratio unspecified; Hospital accounting data not otherwise specified Hospital accounting data not otherwise | Charges/Reimbursemen t-based proxy Direct costing Absorption costing - | N/A | transformed with cost-to-charge |
| uba, A | 2020 2019 2018 2019 | National Trends in Healthcare-Associated Infections for Five Common Cardiovascular Conditions The coming hip and femar fracture bundle: A new inpatient risk stratification tool for care providers | US US | US; various states US; New York | 17880852 hospitalizations 173 patients | arthroplasy, total hip arthroplasy Cardiology, cardiovascular Orthopeadics, Geriatric total hip arthroplasy Surgical, total hip arthroplasy, Ince | Surgical Cardiology | arthroplasty Orthopedic, arthroplasty Orthopedic, | unspecified partial care path | Direct and indirect | provider (proxy) | payer | not otherwise specified none; charges, transformed with cost-o-charge ratio unspecified; Hospital accounting data not otherwise specified Hospital accounting data not otherwise | Charges/Reimbursemen t-based proxy Direct costing Absorption costing - | N/A | transformed with cost-to-charge |
| uha, A | 2020 2019 2018 2019 | National Trends in Healthcare-Associated Infections for Five Common Cardiovascular Conditions The coming hip and femur fracture bundle: A new inpatient risk stratification tool for care providers A Surgeon Scorecard Is Associated with Improved Value in Elective Primary Hip and Knee Arthroplasty Where Are the Opportunities for Reducing Health Care Spending Within | US US | US; various states US; New York | 17880852 hospitalizations 173 patients 470 patients | arthroplasy, total hip arthroplasy Cardiology, cardiovascular Octhopeadics. Goriatric total hip arthroplasy Surgical, total hip arthroplasy. Ince arthroplasy | Surgical Cardiology | arthroplasty Orthopedic, arthroplasty Orthopedic, | unspecified partial care path | Direct and indirect | provider (proxy) | payer | not otherwise specified rone; charges, rone; charges, ratio unspecified; Horital notorning data specified unspecified; Hospital accounting data not otherwise specified | Charges Reimbursemen t-based proxy Direct costing Absorption costing - unspecified generic | N/A | transformed with cost-to-charge |
| Jha, A. Jan, A. Jan, J. A. Jan, J. K. Jan, Jan, Jan, Jan, Jan, Jan, Jan, Jan, | 2020 2019 2018 2019 | National Trends in Healthcare-Associated Infections for Five Common Cardiovascular Conditions The coming hip and femur fracture bundle: A new inpatient risk stratification tool for care providers A Surgeon Scorecard Is Associated with Improved Value in Elective Primary Hip and Knee Arthroplasty Where Are the Opportunities for Reducing Health Care Spending Within Alternative Payment Models? | US US | US; various states US; New York US; Texas | 17889852 hospitalizations 173 patients 470 patients 3427 patients from | arthroplasy, total hip arthroplasy Cardiology, cardiovascular Orthopeadies, Geriatric total hip arthroplasy Surgical, total hip arthroplasy, knee arthroplasy | Surgical Cardiology , Surgical Surgical | arthroplasty Orthopedic, arthroplasty Orthopedic, | unspecified | Direct and indirect Direct Direct and indirect | provider (proxy) provider | payer | not otherwise specified none; charges, transformed with cost-to-charge ratio unspecified; Hospital accounting data not otherwise specified unspecified; Hospital accounting data not otherwise specified | Charges/Reimbursemen t-based proxy Direct costing Absorption costing - unspecified/generic | N/A | transformed with cost-to-charge ratio no no no |
| uhan, A. brar, R. houairi, F. humad, T. sairi, K. <i>Metson</i> , D. onda, Sanjir, R. yi, Ariana gol, Kenneth A. inegar, A. L. (keson, L. W. mbare, T. D. y, T. C. huks, S. R. finger, T. P. balance, W. B. Billiona, C. P. emrik, K. M. eckson, B. E. alitova, K. I. dilivan, M. M. Saogai P. B. | 2020 2019 2018 2019 | National Trends in Healthcare-Associated Infections for Five Common Cardiovascular Conditions The coming hip and femur fracture bundle: A new inpatient risk stratification tool for care providers A Surgeon Scorecard Is Associated with Improved Value in Elective Primary Hip and Knee Arthroplasty Where Are the Opportunities for Reducing Health Care Spending Within Alternative Payment Models? | US US | US; various states US; New York | 17880852 hospitalizations 173 patients 470 patients | arthroplasy, total hip arthroplasy Cardiology, cardiovascular Orthopeadies, Geriatric total hip arthroplasy Surgical, total hip arthroplasy, knee arthroplasy | Surgical Cardiology | arthroplasty Orthopedic, arthroplasty Orthopedic, | unspecified partial care path | Direct and indirect | provider (proxy) provider | payer | not otherwise specified rone; charges, rone; charges, ratio unspecified; Horital notorning data specified unspecified; Hospital accounting data not otherwise specified | Charges Reimbursemen t-based proxy Direct costing Absorption costing - unspecified generic | N/A | transformed with cost-to-charge |
| uhan, A uhan, A brear, R homair, F humad, T sair, K <i>ideom. D</i> onda, Sanjir R ya, K. Arianan sol, Kenneth A inegar, A. L (keson, L. W mbare, T. D u, T. C u, T. C mbars, S. R filams, C. P bulleta, W. B bulleta, K. E siliova, K. I dilova, J. L doty, H | 2020 2019 2018 2019 | National Trends in Healthcare-Associated Infections for Five Common Cardiovascular Conditions The coming hip and femur fracture bundle: A new inpatient risk stratification tool for care providers A Surgeon Scorecard Is Associated with Improved Value in Elective Primary Hip and Knee Arthroplasty Where Are the Opportunities for Reducing Health Care Spending Within Alternative Payment Models? | US US | US; various states US; New York US; Texas | 17889852 hospitalizations 173 patients 470 patients 3427 patients from | arthroplasy, total hip arthroplasy Cardiology, cardiovascular Orthopeadies, Geriatric total hip arthroplasy Surgical, total hip arthroplasy, knee arthroplasy | Surgical Cardiology , Surgical Surgical | arthroplasty Orthopedic, arthroplasty Orthopedic, | unspecified | Direct and indirect Direct Direct and indirect | provider (proxy) provider | payer | not otherwise specified none; charges, transformed with cost-to-charge ratio unspecified; Hospital accounting data not otherwise specified unspecified; Hospital accounting data not otherwise specified | Charges/Reimbursemen t-based proxy Direct costing Absorption costing - unspecified/generic | N/A | transformed with cost-to-charge ratio no no no |
| nha, A hera, R bouairi, F hunad, T sairi, K difference in the second second second second integar, A. L with Ariana and Solo Second S | 2020 2019 2018 2018 2019 2017 | National Trends in Healthcare-Associated Infections for Five Common Cardiovascular Conditions The coming hip and femur fracture bundle: A new inpatient risk stratification tool for care providers A Surgeon Scorecard Is Associated with Improved Value in Elective Primary Hip and Knee Arthroplasty Where Are the Opportunities for Reducing Health Care Spending Within Alternative Payment Models? Utilization of Interspinous Devices Throughout the United States Over a | US US | US; various states US; New York US; Texas | 17889852 hospitalizations 173 patients 470 patients 3427 patients from | arthroplasy, total hip arthroplasy Cardiology, cardiovascular Orthopeadies, Geriatric total hip arthroplasy Surgical, total hip arthroplasy, knee arthroplasy | Surgical Cardiology , Surgical Surgical | arthroplasty Orthopedic, arthroplasty Orthopedic, | unspecified | Direct and indirect Direct Direct and indirect | provider (proxy) provider | payer | not otherwise specified none; charges, transformed with cost-o-charge ratio unspecified; Hospital accounting data not otherwise specified Hospital accounting data not otherwise specified | Charges/Reimbursemen t-based proxy Direct costing Absorption costing - unspecified/generic | N/A | raniformed with cost-to-charge ratio no no no no no no no no |
| uha, A. A. bra, R. bouairi, F. hmad, T. sairi, K. Midson, D. moda, Sanjir, R. Hi, Ariana gol, Kenneth A. inegar, A. L. (kson, L. W. mbare, T. D. u, T. C. mks, S. R. filmegar, T. P. hults, M. Schemer, B. Hildman, C. P. marki, K. M. Schon, B. E. Lilman, C. P. marki, K. M. Schon, B. E. Lilman, C. P. marki, M. M. M. M. M. M. M. M. | 2020 2019 2018 2018 2019 2017 | National Trends in Healthcare-Associated Infections for Five Common Cardiovascular Conditions The coming hip and femur fracture bundle: A new inpatient risk stratification tool for care providers A Surgeon Scorecard Is Associated with Improved Value in Elective Primary Hip and Knee Arthroplasty Where Are the Opportunities for Reducing Health Care Spending Within Alternative Payment Models? | US US | US; various states US; New York US; Texas | 17889852 hospitalizations 173 patients 470 patients 3427 patients from | arthroplasy, total hip arthroplasy Cardiology, cardiovascular Orthopeadies, Geriatric total hip arthroplasy Surgical, total hip arthroplasy, knee arthroplasy | Surgical Cardiology , Surgical Surgical | arthroplasty Orthopedic, arthroplasty Orthopedic, | unspecified | Direct and indirect Direct Direct and indirect | provider (proxy) provider | payer | not otherwise specified none; charges, transformed with cost-to-charge ratio unspecified; Hospital accounting data not otherwise specified unspecified; Hospital accounting data not otherwise specified not otherwise specified | Charges/Reimbursemen t-based proxy Direct costing Absorption costing - unspecified/generic Charges/Reimbursemen t-based | N/A | raniormed with cost-to-charge ratio no no no no no enarges, |
| nha, A hera, R houairi, F hunda, T säri, K <i>ideosa. D</i> onda, Sanjit R ti, Ariana sol, Kenneth A inegar, A. L kexon, L. W mbare, T. D u, T. C. R hundar, T. P hundar, T. P hundar, T. P hundar, T. P hundar, K. I illivan, K. I illivan, K. I sidov, H. J. M sidov, J. M illivan, J. M sidov, J. M illivan, J. M sidov, J. M illivan, K. I illivan, K illivan, K | 2020 2019 2018 2018 2019 2017 | National Trends in Healthcare-Associated Infections for Five Common Cardiovascular Conditions The coming hip and femur fracture bundle: A new inpatient risk stratification tool for care providers A Surgeon Scorecard Is Associated with Improved Value in Elective Primary Hip and Knee Arthroplasty Where Are the Opportunities for Reducing Health Care Spending Within Alternative Payment Models? Utilization of Interspinous Devices Throughout the United States Over a | US US | US; various states US; New York US; Texas | 17889852 hospitalizations 173 patients 470 patients 3427 patients from | arthroplasy, total hip arthroplasy Cardiology, cardiovascular Orthopeadies, Geriatric total hip arthroplasy Surgical, total hip arthroplasy, knee arthroplasy | Surgical Cardiology , Surgical Surgical | arthroplasty Orthopedic, arthroplasty Orthopedic, | unspecified partial care path partial care path | Direct and indirect Direct and indirect Direct and indirect | provider (proxy) provider provider | payer | not otherwise specified rone; c harges; transformed with cost-to-charge; ratio unspecified; Hospital accounting data not otherwise specified unspecified; Hospital accounting data not otherwise specified not otherwise specified | Charges/Reimbursemen t-based proxy Direct costing Absorption costing - unspecified/generic Charges/Reimbursemen t-based | N/A | ratio no |
| nhan, A hera, R houairi, F hunad, T sairi, K <i>ideasa</i> . D onda, Sanjir R. H inegar, A. L inegar, A. L inegar, A. L inegar, A. L inegar, A. L inegar, T. D u, T. C has, S. R linger, T. P backet. W. B. | 2020 2019 2018 2018 2019 2017 | National Trends in Healthcare-Associated Infections for Five Common Cardiovascular Conditions The coming hip and femur fracture bundle: A new inpatient risk stratification tool for care providers A Surgeon Scorecard Is Associated with Improved Value in Elective Primary Hip and Knee Arthroplasty Where Are the Opportunities for Reducing Health Care Spending Within Alternative Payment Models? Utilization of Interspinous Devices Throughout the United States Over a | US US | US; various states US; New York US; Texas US; Alabama | 17889852 horpitalizations 173 patients 470 patients 3427 patients from 12 cancer centers | arthroplasy, total hip arthroplasy Cardiology, cardiovascular Orthopeadies, Geriatric total hip arthroplasy Surgical, total hip arthroplasy, knee arthroplasy | Surgical Cardiology , Surgical Surgical | arthroplasty Orthopedic, arthroplasty Orthopedic, | unspecified | Direct and indirect Direct and indirect Direct and indirect | provider (proxy) provider provider payer provider | payer | not otherwise specified rone; c harges; transformed with cost-to-charge; ratio unspecified; Hospital accounting data not otherwise specified unspecified; Hospital accounting data not otherwise specified not otherwise specified | Charges/Reimbursemen t-based proxy Direct costing Absorption costing - unspecified/generic Charges/Reimbursemen t-based | N/A | raniormed with cost-to-charge ratio no no no no no enarges, |
| uha, A. A. brar, R. homair, F. hunad, T. sair, K. differon, D. inegar, A. L. ckson, I. W. umbare, T. D. u, T. C. u, T. C. huks, S. R. finger, T. P. huke, W. P. Scene, G. B. tilliams, C. P. enzrik, K. M. ckson, B. E. alilova, M. M. <u>Bestore</u> , J. R. Milliona, J. N. diff, J. M. Ambard, J. M. | 2020 2019 2018 2018 2019 2017 | National Trends in Healthcare-Associated Infections for Five Common Cardiovascular Conditions The coming hip and femur fracture bundle: A new inpatient risk stratification tool for care providers A Surgeon Scorecard Is Associated with Improved Value in Elective Primary Hip and Knee Arthroplasty Where Are the Opportunities for Reducing Health Care Spending Within Alternative Payment Models? Utilization of Interspinous Devices Throughout the United States Over a | US US US | US; various states US; New York US; Texas | 17889852 hospitalizations 173 patients 470 patients 3427 patients from | arthroplasy, total hip arthroplasy Cardiology, cardiovascular Orthopeadies, Geriatrice total hip arthroplasy Surgical, total hip arthroplasy, knce arthroplasy Oneology | Surgical Cardiology , Surgical Oneology | arthroplasty Orthopedic, arthroplasty Orthopedic, | unspecified | Direct and indirect Direct and indirect Direct and indirect | provider (proxy) provider provider payer provider | payer | not otherwise specified none; charges, transformed with cost-to-charge ratio unspecified; Hospital accounting data not otherwise specified unspecified; Hospital accounting data not otherwise specified not otherwise specified not otherwise specified | Charges/Reimbursemen t-based proxy Direct costing Absorption costing - unspecified/generic Charges/Reimbursemen t-based Charges/Reimbursemen | N/A implemented implemented N/A | raniformed with cost-to-charge ratio no no no no po reimbursements no charges, transformed with cost-to-charge |
| uba, A bera, R houairi, F hmad, T sairi, K difeson, D onda, Sanjit R yot, Ariana gol, Kenneth A vinegar, A. L ckson, I. W imbare, T. D up, T. C anks, S. R. P fininger, T. P umbare, T. D opper, G. B. E alilova, K. I. illivan, M. M sensoni, D. D aratta, J. L dedy, J. M onbardt, J. M aratta, J. M | 2020 2019 2018 2018 2019 2017 | National Trends in Healthcare-Associated Infections for Five Common Cardiovascular Conditions The coming hip and femur fracture bundle: A new inpatient risk stratification tool for care providers A Surgeon Scorecard Is Associated with Improved Value in Elective Primary Hip and Knee Arthroplasty Where Are the Opportunities for Reducing Health Care Spending Within Alternative Payment Models? Unilization of Interspinous Devices Throughout the United States Over a | US US US | US; various states US; New York US; Texas US; Alabama | 17889852 horpitalizations 173 patients 470 patients 3427 patients from 12 cancer centers | arthroplasy, total hip arthroplasy Cardiology, cardiovascular Orthopeadies, Geriatrice total hip arthroplasy Surgical, total hip arthroplasy, knce arthroplasy Oneology | Surgical Cardiology , Surgical Oneology | arthroplasty Orthopedic, arthroplasty Orthopedic, | unspecified | Direct and indirect Direct and indirect Direct and indirect | provider (proxy) provider provider payer provider | payer | not otherwise specified none; charges, transformed with cost-to-charge ratio unspecified; Hospital accounting data not otherwise specified unspecified; Hospital accounting data not otherwise specified not otherwise specified not otherwise specified | Charges/Reimbursemen t-based proxy Direct costing Absorption costing - unspecified/generic Charges/Reimbursemen t-based Charges/Reimbursemen | N/A implemented implemented N/A | raniformed with cost-to-charge ratio no no no no po reimbursements no charges, transformed with cost-to-charge |
| uha, A. hera, R. houairi, F. hmad, T. asiri, K. dition, D. onda, Sanjit R. onda, Sanjit R. out, Ariana gol, Kometh A. direngar, A. L. (asiri, K. M. direngar, A. L. (asiri, K. M. direngar, A. L. direngar, A. L. direngar, A. L. direngar, A. L. direngar, A. L. direngar, C. P. enzik, K. M. direnzik, J. M. dire | 2020 2019 2018 2019 2019 2019 2019 2019 | National Trends in Healthcare-Associated Infections for Five Common Cardiovascular Conditions The coming hip and femur fracture bundle: A new inpatient risk stratification tool for care providers A Surgeon Scorecard Is Associated with Improved Value in Elective Primary Hip and Knee Arthroplasty Where Are the Opportunities for Reducing Health Care Spending Within Alternative Payment Models? Utilization of Interspinous Devices Throughout the United States Over a Recent Decade: An Analysis of the Nationwide Inpatient Sample | US US US | US; various states US; New York US; Texas US; Alabama | 17889852 horpitalizations 173 patients 470 patients 3427 patients from 12 cancer centers | arthroplasy, total hip arthroplasy Cardiology, cardiovascular Orthopeadies, Geriatrice total hip arthroplasy Surgical, total hip arthroplasy, knce arthroplasy Oneology | Surgical Cardiology , Surgical Oneology | arthroplasty Orthopedic, arthroplasty Orthopedic, | unspecified | Direct and indirect Direct and indirect Direct and indirect | provider (proxy) provider provider payer provider | payer | not otherwise specified none; charges, transformed with cost-to-charge ratio unspecified; Hospital accounting data not otherwise specified unspecified; Hospital accounting data not otherwise specified none, reimbursements none, reimbursements | Charges/Reimbursemen t-based proxy Direct costing Absorption costing - unspecified/generic Charges/Reimbursemen t-based Charges/Reimbursemen | N/A implemented implemented N/A | raniformed with cost-to-charge ratio no no no reimbursements no charges, transformed with cost-to-charge ratio no |
| uba, A | 2020 2019 2018 2019 2019 2019 2019 2019 | National Trends in Healthcare-Associated Infections for Five Common Cardiovascular Conditions The coming hip and femur fracture bundle: A new inpatient risk stratification tool for care providers A Surgeon Scorecard Is Associated with Improved Value in Elective Primary Hip and Knee Arthroplasty Where Are the Opportunities for Reducing Health Care Spending Within Alternative Payment Models? Unilization of Interspinous Devices Throughout the United States Over a | US US US | US; various states US; New York US; Texas US; Alabama | 17889852 horpitalizations 173 patients 470 patients 3427 patients from 12 cancer centers | arthroplasy, total hip arthroplasy Cardiology, cardiovascular Orthopeadies, Geriatrice total hip arthroplasy Surgical, total hip arthroplasy, knce arthroplasy Oneology | Surgical Cardiology , Surgical Oneology | arthroplasty Orthopedic, arthroplasty Orthopedic, | unspecified | Direct and indirect Direct and indirect Direct and indirect | provider (proxy) provider provider payer provider | payer | not otherwise specified none; charges, transformed with cost to-charge ratio unspecified; Hospital accounting data not otherwise specified unspecified; Hospital accounting data not otherwise specified not otherwise specified none; reimbursements none; charges, transformed with cost-to-charge ratio | Charges/Reimbursemen t-based proxy Direct costing Absorption costing - unspecified/generic Charges/Reimbursemen t-based Charges/Reimbursemen t-based proxy | N/A implemented implemented N/A | raniformed with cost-to-charge ratio no no no no reimbursements no charges, transformed with cost-to-charge ratio no charges, |
| nha, A. A. hera, R. bouairi, F. hmad, T. sairi, K. Microsoft, J. Mark, A. airi, Y. Mark, A. Mark, M. Mark, M. | 2020 2019 2018 2019 2019 2019 2019 2019 | National Trends in Healthcare-Associated Infections for Five Common Cardiovascular Conditions The conting hip and fertur fracture bundle: A new inpatient risk stratification tool for care providers A Surgeon Scorecard Is Associated with Improved Value in Elective Primary Hip and Knee Arthroptasty Where Are the Opportunities for Reducing Health Care Spending Within Alternative Payment Models? Utilization of Interspinous Devices Throughout the United States Over a Recent Decade: An Analysis of the Nationwide Inpatient Sample Can a machine learning model accurately predict patient resource | US US US | US; various states US; New York US; Texas US; Alabama | 17889852 horpitalizations 173 patients 470 patients 3427 patients from 12 cancer centers | arthroplasy, total hip arthroplasy Cardiology, cardiovascular Orthopeadies, Geriatrice total hip arthroplasy Surgical, total hip arthroplasy, knce arthroplasy Oneology | Surgical Cardiology , Surgical Oneology | arthroplasty Orthopedic, arthroplasty Orthopedic, | unspecified | Direct and indirect Direct and indirect Direct and indirect Direct and indirect | provider (proxy) provider provider payer provider | payer | not otherwise specified none; charges, transformed with cost-to-charge ratio unspecified; Hospital accounting data not otherwise specified Hospital accounting data not otherwise specified none, reimbursements none; charges, transformed with cost-to-charge ratio none; charges, transformed with | Charges/Reimbursemen t-based proxy Direct costing Absorption costing - unspecified/generic Charges/Reimbursemen t-based Charges/Reimbursemen t-based proxy | N/A implemented implemented N/A | raniformed with cost-to-charge ratio no no no reimbursements no charges, transformed with cost-to-charge ratio no |

| Navarro, S. M. Haeberle, H. S. Billow, D. G. Krebs, V. E. | Bundled Care for Hip Fractures: A Machine-Learning Approach to an Untenable Patient-Specific Payment Model | | | | | | | | | | none; estimatic cost-to-charge | | | charges, transformed |
|---|---|------------|--------------------|---|---|------------------|-----------------------------|--|----------------------------|-------------------------|-----------------------------------|---|-------------|------------------------------|
| Ramkumar, P. N. | 2019 | US | US; New York | 98562 patients | orthopedics, hip fractu trauma | re, Surgical | Orthopedic fracture | partial care path | F Direct and indirect (| rovider | ratio, SPARCS data | Charges/Reimbursemen t-based proxy | N/A | cost-to-cha ratio |
| Cremins, M. | 2017 | | 0.5, New Tolk | 98502 patients | uauna | Surgical | nacture | partial care path | Direct and indirect (| proxy) payer | uata | roased proxy | NA . | Tatio |
| Vellanky, S. McCann. G. | | | | | | | | | | | | | | |
| Mancini, M. | Considering healthcare value and associated risk factors with postoperative urinary retention after elective laminectomy | | | | | | | | | | | | | |
| Sanzari, L. Yannopoulos, A. | | | | | surgical, elective | | | | | | | | | |
| Navarro, S. M. | 2020 | US | US; Conneticut | 433 patients | laminectomy | Surgical | Spine | partial care path | Direct p | rovider provider | direct costs | Direct costing | unspecified | |
| Navarro, S. M. Ramkumar, P. N. | | | | | | | | | | | | | | |
| Egger, A. C. | Evidence-Based Thresholds for the Volume-Value Relationship in | | | | | | | | | | none; estimatio | m, | | charges, |
| Goodwin, R. C. | Adolescent Idiopathic Scoliosis: Outcomes and Economies of Scale | | | | Orthopoedic, Pediatric | 8, | | | | | cost-to-charge | | | transformed |
| | 2018 | US | US; New York | 3224 patients | Adolescent Idiopathic Scoliosis | Pediatrics | Pediatric other | partial care path | F Direct and indirect (| rovider proxy) payer | ratio, SPARCS data | Charges/Reimbursemen t-based proxy | N/A | cost-to-cha ratio |
| Bateni, S. B. | | | | | | | | | | | | | | |
| Gingrich, A. A. Hoch, J. S. | | | | | | | | | | | | | | |
| Canter, R. J. | Defining Value for Pancreatic Surgery in Early-Stage Pancreatic Cancer | (| | | | | | | | | none; charges, transformed wi | th | | charges, transformed |
| Bold, R. J. | | | | | Oncology, pancreatic | | | | | rovider | | Charges/Reimbursemen | | cost-to-cha |
| Xiao, R. | 2019 | US | US; California | hospitals | cancer | Oncology | | unspecified | Direct and indirect (| proxy) payer | ratio | t-based proxy | N/A | ratio |
| Miller, J. A. | | | | | | | | | | | | | | |
| Zafirau, W. J. Gorodeski, E. Z. | Impact of Home Health Care on Health Care Resource Utilization | | | | | | | | | | none; charges, | | | charges, |
| Young, J. B. | Following Hospital Discharge: A Cohort Study | | | | | | | | - | rovider | transformed wi | th Charges/Reimbursemen | | transformed cost-to-cha |
| | 2018 | US | US; unspecified | 6363 patients | Multiple | multiple | | partial care path | F Direct and indirect (| | ratio | t-based proxy | N/A | cost-to-cha ratio |
| Ramshaw, B. Forman, B. R. | | | | | | | | | | | | | | |
| Moore, K. | Real-World Clinical Quality Improvement for Complex Abdominal Wa | ai | | | | | | | | | | | | |
| Heidel, E. Fabian, M. | Reconstruction | | | | Surgical, complex | | | | | | | | | |
| Mancini, G. | 2017 | US | US; Texas | 102 patients | abdominal wall reconstruction | Surgical | Abdominal | full care path (surgica episode) | Direct and indirect | rovider provider | unspecified | Absorption costing - unspecified/generic | implemented | |
| Heincelman, M. | 2017 | 03 | US, Texas | 102 patients | reconstruction | Surgical | Abdominai | episode) | Direct and indirect p | novider provider | unspectfied | unspectfied generic | implemented | |
| Schumann, S. O. | | | | | | | | | | | | | | |
| Riley, J. Zhang, J. | Identification of High Utilization Inpatients on Internal Medicine Servic | :es | | | | | | | | | | | | |
| Marsden, J. E. | | | | | | | | | | | | Absorption costing - | | |
| Mauldin, P. D. Roskov, D. C. | 2016 | US | US; unspecified | 7571 patients | Internal medicine | Internal Medicin | e | unspecified | Direct and indirect p | rovider provider | unspecified | unspecified/generic | implemented | |
| Sheetz, K. H. Kenney, B. | | | | | | | | | | | | | | |
| Dupree, J. M. | Targeting Value-Driven Quality Improvement for Laparoscopic | | | | | | | | | | | | | |
| Campbell, D. A. Englesbe, M. J. | Cholecystectomy in Michigan | | | | | | | | | | | | | |
| | 2019 | US | US; Michigan | 19213 patients | Surgical, Laparoscopic Cholecystectomy | Surgical | Gallbladder | partial care path | Direct and indirect p | aver paver | none, reimbursement | Charges/Reimbursemen s t-based | N/A | reimbursen |
| Zolin, S. J. | | | | | | | | | | | | | | |
| Tastaldi, L. Alkhatib H | Open retromuscular versus laparoscopic ventral hernia repair for mediur | | | | | | | | | | | | | |
| Lampert, E. J. | sized defects: where is the value? | 11+ 11- | | All medicare | | | | | | | | | | |
| Brown, K. Fafaj, A. | | | | shoulder surgeries | orthopedics, Surgical, | | | | | | none, | Charges/Reimbursemen | | |
| Potro C C Ahluwalia, R. | 2020 | US | US; various states | 2002-2018 | Shoulder surgery | Surgical | Abdominal | partial care path | Direct and indirect p | ayer payer | reimbursement | s t-based | N/A | reimbursen |
| Vainieri, E. | | | single | | | | | | | | | | | |
| Tam, J. Sait, S. | Surgical Diabetic Foot Debridement: Improving Training and Practice Utilizing the Traffic Light Principle | | direct | | | | | | | | | | | |
| Sinha, A. | Cunzing the frame Light Principle | | observ pre and | | Surgical, diabetic foot | | | partial care path (full | | | | Absorption costing - | | |
| Manu, C. A. Reichert I | 2019 | UK | UK; London compa | | infection, diabetes | Surgical | Diabetes | surgical episode) | Direct and indirect p | ayer payer | TDABC | TDABC | Paper only | |
| Ramly, E. P. Larentzakis, A. | | | | | | | | | | | | | | |
| Bohnen, J. D. | The financial impact of intraoperative adverse events in abdominal | | | | | | | | | | | | | |
| Mavros, M. Chang, Y. | surgery | | | | | | | | | | | | | |
| Lee, J. | 2015 | US | US; Massachusetts | 9111 patients | surgical, abdominal surgery | Surgical | Abdominal | unspecified | Direct and indirect p | rovider provider | unspecified | Absorption costing - unspecified/generic | implemented | |
| Voh. D. D. Orhurhu, V. | | 03 | 0.5, massachuseus | 2111 patients | Jurgery | Jurgical | Augominai | unspectitied | source and indirect p | novider provider | unspectfied | anspectnew generic | mplemented | |
| Ornumu, v. | | | | | | | | | | | | | | |
| Urits, I. | T 1 60 M 11 D 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | nle | | | | | | | | | | | | |
| Urits, I. Olusunmade, M. Owais, K. | Trends of Co-Morbid Depression in Hospitalized Patients with Failed Back Surgery Syndrome: An Analysis of the Nationwide Inpatient Sam | | | | Surgical, depression, | | | | | | | Charges/Reimbursemen | | |
| Urits, I. Olusunmade, M. Owais, K. Jones, M. | Trends of Co-Morbid Depression in Hospitalized Patients with Failed Back Surgery Syndrome: An Analysis of the Nationwide Inpatient Sam | | 110 | 115976 patients | psychiatry | Pain medicine | | partial care path | Direct and indirect p | ayer payer | none; charges | t-based | N/A | |
| Urits, I. Olusunmade, M. Owais, K. Jones, M. Galasso, A. Saliou Orburbu, M. | Trends of Co-Morbid Depression in Hospitalized Patients with Failed Back Surgery Syndrome: An Analysis of the Nationwide Inpatient Samp 2018 | US | US; unspecified | | | | | | | | | | | |
| Urits, I. Olusunmade, M. Owais, K. Jones, M. Galasso, A. | Back Surgery Syndrome: An Analysis of the Nationwide Inpatient Samp 2018 | | US, unspectied | | | | | | | | | | | charges per quartile, dis |
| Urits, I. Olusunmade, M. Owais, K. Jones, M. Galasso, A. Salieu Ochuchu M. Hollenbeck, B. | Back Surgery Syndrome: An Analysis of the Nationwide Inpatient Samp 2018 High-Volume Arthroplasty Centers Demonstrate Higher Composite | | OS, unspecified | | | | | | | | | | | |
| Urits, I. Olusunmade, M. Owais, K. Jones, M. Galasso, A. Salieu Ochurhu, M. Hollenbeck, B. Hoffman, M. A. | Back Surgery Syndrome: An Analysis of the Nationwide Inpatient Samp 2018 | | US, unspectified | 1651354 total hip | or orthopedics, surgical, | | | | | | | ci n.: | | how it shou |
| Urits, I. Olusunmade, M. Owais, K. Jones, M. Galasso, A. Salieu Ochurhu, M. Hollenbeck, B. Hoffman, M. A. | Back Surgery Syndrom: An Analysis of the Nationwide Inpatient Samp 2018 High-Volume Arthroplasty Centers Demonstrate Higher Composite Quality Scores and Enhanced Value: Perspective on Higher-Volume | | | total knee | total hip arthroplasty, | Surgical | Orthopedic, arthroplasty | unspecified | F Direct and indirect (| rovider proxy) paver | none; charges | Charges/Reimbursemen t-based | N/A | costs in discussion |
| Urits, I. Olusummade, M. Oowais, K. Jones, M. Galasso, A. Salian Orburden, M. Hollenbeck, B. Hoffman, M. A. Tromanhauser, S. G. | Back Surgery Syndrom: An Analysis of the Nationwide Inpatient Samp 2018 High-Volume Arthroplasty Centers Demonstrate Higher Composite Quality Scores and Enhanced Value: Perspective on Higher-Volume Hospitals Performing Arthroplasty from 2001 to 2011 | US | US; various states | 1651354 total hip total knee arthroplasties | or orthopedics, surgical, total hip arthroplasty, total knee arthroplasty | Surgical | | unspecified | | | none; charges | | N/A | costs in |
| Urits, I. Olusummade, M. Oowais, K. Jones, M. Galasso, A. Saita: Chudhu M. Hollenbeck, B. Hoffman, M. A. Tromanhauser, S. G. | Back Surgery Syndrom: An Analysis of the Nationwide Inpatient Samp 2018 High-Volume Arthroplasty Centers Demonstrate Higher Composite Quality Scores and Enhanced Value: Perspective on Higher-Volume Hospitals Performing Arthroplasty from 2001 to 2011 2020 | US | | total knee | total hip arthroplasty, total knee arthroplasty Acute care, appendicit | s, | | unspecified | | | none; charges | | N/A | costs in |
| Urits, I. Olusummade, M. Ovasis, K. Jones, M. Galasso, A. Salasso, A. Hollenbeck, B. Hoffman, M. A. Tromanhauser, S. G. Loftus, T. J. Rosenthal, M. D. Croft, C. A. Stephen Smith, R. | Back Surgery Syndrom: An Analysis of the Nationwide Inpatient Samp 2018 High-Volume Arthroplasty Centers Demonstrate Higher Composite Quality Scores and Enhanced Value: Perspective on Higher-Volume Hospitals Performing Arthroplasty from 2001 to 2011 | US | | total knee | total hip arthroplasty, total knee arthroplasty Acute care, appendicit surgical, laparotomy fo | s, | | unspecified | | | none; charges | | N/A | costs in discussion |
| Urits, I. Olusummade, M. Olusummade, M. Galasso, A. <u>Saliar, Orkuthu, M.</u> Hollenbeck, B. Hoffman, M. A. Tromanhauser, S. G. Loftus, T. J. Rosenthal, M. D. Croft, C. A. | Back Surgery Syndrom: An Analysis of the Nationwide Inpatient Samp 2018 High-Volume Arthroplasty Centers Demonstrate Higher Composite Quality Scores and Enhanced Value: Perspective on Higher-Volume Hospitals Performing Arthroplasty from 2001 to 2011 2020 | US | | total knee | total hip arthroplasty, total knee arthroplasty Acute care, appendicit | s, | | unspecified full care path (surgica episode) | Direct and indirect (| | none; charges | | N/A | costs in |

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| Buell, J. F. Sigmon, D. | | | | | | | | | | | | | | | | | |
|--|--|-----------------------|--------------------|----------------|--------------------------------|---|-------------------|-----------------------------|--------------------------|---------------------|------------|----------|-------------------------|---------------------------------|-------------|--|-----------|
| Sigmon, D. Ducoin, C. | Initial Formation on with Distance Debuters Confield (P.). | | | | | | | | | | | | | | | | |
| hapiro, M. | Initial Experience with Biologic Polymer Scaffold (Poly-4- hydroxybuturate) in Complex Abdominal Wall Reconstruction | | | | | | | | | | | | | | | | |
| eja, N. | nydroxybuturate) in Complex Abdominal wall Reconstruction | | | | | Surgical, complex | | | | | | | | | | | |
| ynter, E. | | | | | | abdominal wall | | | full care path (surgical | | | | | Charges/Reimbursemen | | | |
| anicoo M K | 2017 | US | US; Louisiana | | 73 patients | reconstruction | Surgical | Abdominal | episode) | unspecified | payer | payer | none; charges | t-based | N/A | | no |
| in, N. | | | | | | | | | | | | | | | | | |
| uillips, F. M. | | | | | | | | | | | | | | | | | |
| himer, A. L. han, S. N. | Surgeon Reimbursement Relative to Hospital Payments for Spinal Fusior | 4 | | | | | | | | | | | | | | | |
| ana, cz. 18. | | | | | | | | | | | | | | | | | |
| | 2010 | 110 | | | 10075 | | | | | | | | none, | Charges/Reimbursemen | | | |
| | 2018 | US | US; various states | | 40965 patients | Surgical | Surgical | Spine | unspecified | unspecified | payer | payer | reimbursements | t-based | N/A | charges | no |
| itull, J. D. Bhat, S. B. | | | | | | | | | | | | | | | | | |
| ane, J. M. | | | | | | | | | | | | | | | | | |
| taikin, S. M. | Economic Burden of Inpatient Admission of Ankle Fractures | | | | 76 cases/patients, | | | | | | | | | | | | |
| undin, o. m. | | | | | and 48044 | | | | | | | | | | | | |
| | 2017 | US | 110 10 1 | | retrospective patient files | t orthopedics, Surgical, ankle fractures | a : 1 | Orthopedic fracture | unspecified | 10.1 | | | none, reimbursements | Charges/Reimbursemen t-based | N/A | reimbursement | |
| : p.p. | 2017 | 08 | US; unspecified | | nies | ankle tractures | Surgical | tracture | unspecified | unspecified | payer | payer | reimbursements | t-based | N/A | reimbursement | no |
| ewis, R. B. Iariri, O. | | | | | | | | | | | | | | | | | |
| lliott, M. E. | | | | | | | | | | | | | | | | | |
|), C. H. | Financial Analysis of Closed Femur Fractures in 3- to 6-Year-Olds Treated with Immediate Spica Casting Versus Intramedullary Fixation | | | | | | | | | | | | | | | | |
| amo, B. A. | Treated with Immediate Spica Casting Versus Intramedullary Fixation | | | | | | | | | | | | | | | | |
| | | | | | | orthopedic, surgical, | | | | | | | | Charges/Reimbursemen | | | |
| | 2020 | US | US; Texas | | 114 patients | pediatrics | Pediatrics | Pediatric surgical | rull care path | unspecified | payer | payer | none; charges | t-based | N/A | charges | no |
| Aurphy, W. S. | | | | | | | | | | | | | | | | | |
| heng, T. in, B. | | | | | | | | | | | | | | | | | |
| in, B. erry, D. | Higher Volume Surgeons Have Lower Medicare Payments, Readmission | <i>k</i> ₂ | | | | | | | | | | | | | | | |
| lurphy, S. B. | and Mortality after THA | | | | | | | | | | | | | | | | |
| | | | | | | orthopedics, total hip | | Orthopedic, | | | | | none, | Charges/Reimbursemen | | | |
| | 2019 | US | US; Massachusetts | 5 | 409,844 cases | athroplasty | Surgical | arthroplasty | partial care path | Direct and indirect | t payer | payer | reimbursements | t-based | N/A | reimbursements | no |
| eerdink, T. H. | | | | | | | | | | | | | | | | | |
| averlag, R. | | | | | | | | | | | | | | | | | |
| an Veen, R. N. ouwmeester, O. V. A. | Direct discharge from the ED for patients with simple stable injuries: a | | | | | | | | | | | | | | | | |
| | Dutch pilot study | | | | | | | | | | | | | | | | |
| oslings, J. C. | | | | | | Acute care, emergency | emergency care & | | | | | | | Absorption costing - | | | |
| | 2020 | The Netherlands | s The Netherlands | | 275 patients | care | acute care | | partial care path | direct and indirect | provider | provider | reference pricing | g unspecified/generic | unspecified | | no |
| artin, J. A. | | | | | | | | | | | | | | | | | |
| ayhew, C. R. | Using Time Driven Activity Recod Costing as a Kay Comment of the | | | multi center, | | | | | | | | | | | | | |
| lorris, A. J. | Using Time-Driven Activity-Based Costing as a Key Component of the Value Blatform: A Bilot Analysis of Colonoscomy, Actia Value | | | retrospective, | | | | | | | | | | | | | |
| ader, A. M. | Value Platform: A Pilot Analysis of Colonoscopy, Aortic Valve Replacement and Carpal Tunnel Release Procedures | | | process | | | | | | | | | | | | | |
| sai, M. H. | requirement and carpar runner rerease riocedures | | | mapping, pilot | | Surgical, cardiology, | | | partial care path (full | | | | | Absorption costing - | | | yes see s |
| rman, R. D. | 2018 | US | US; Vermont | projects (3) | 3 pilot studies | aortic valve replacemen | t Surgical | Cardiac/Thoracic | surgical episode) | Direct and indirect | t provider | provider | TDABC | TDABC | unspecified | | sheet |
| bdulla, A. G. | | | | | | | | | | | | | | | | | |
| uarte, P. H. | | | | | | | | | | | | | unspecified; | | | | |
| /iggins, R. | Endersing and an angle of the trade of the | | | | | | | | | | | | Hospital | | | | |
| eisberg, E. O. | Endocrine surgery as a model for value-based health care delivery | | | | | | | | | | | | accounting data | | | | |
| arari, A. | | | | | | | | | | | | | not otherwise | Absorption costing - | | | |
| eh, M. W. | 2012 | US | US; California | | 44631 patients | Surgical, neurological | Surgical | Endocrine | unspecified | Direct and indirect | t provider | provider | specified | unspecified/generic | implemented | | no |
| ing, A. M. | | | | | | | | | | | | | | | | | |
| anagoulian, S. | | | | | | | | | | | | | | | | | |
| ynch, M. | The Effect of a Medical Toxicology Inpatient Service in an Academic | | | | | | | | | | | | | | | | |
| lenke, N. | Tertiary Care Referral Center | | | | | | | | | | | | | | | | |
| lu, Y. | | | | | | | | | | | | | | Charges/Reimbursemen | | | |
| aul, M. | 2019 | US | US; Pennsylvania | | 1675 patient records | s Toxicology | toxicology | | partial care path | Direct and indirect | t paver | paver | none; charges | t-based | N/A | | no |
| an der Meulen, M. | | | | | .ors parent records | | annongy | | Parting cure paul | sinces and mulleer | . puyer | P=754 | none, charges | | | | |
| ajafabadi, A. H. Z. | | | | | | | | | | | | | | | | | |
| obatto, D. J. | Healthcare utilization and costs among prolactinoma patients: a cross- | | | | | | | | | | | | unspecified; | | | | |
| an den Hout, W. B. | Healthcare utilization and costs among prolactinoma patients: a cross- sectional study and analysis of determinants | | | | | | | | | | | | Hospital | | | | |
| ndela, C. D. | sectional study and analysis of determinants | | | | | | | | | | | | accounting data | | | | |
| andbergen, I. M. | 2020 | The Mart 1 | The Nucleon | | 272 | Endocrinology, Pituitary | | | 6-II | Disease 11 1 | | | not otherwise | Absorption costing - | Deres 1 | | |
| araira A M | 2020 | i ne Netherlands | s The Netherlands | | 373 patients | adenoma, prolactinoma | endocrinology | | full care path | Direct and indirect | 1 provider | provider | specified | unspecified/generic | Paper only | | no |
| iholm, K. | | | | | | | | | | | | | | | | | |
| appe, K. ukhareva, P. | B. 1. 1. 1997 (1997) (1997) (1997) (1997) | | | | | | | | | | | | unspecified; | | | | |
| opkins, C. | Reducing Diabetic Ketoacidosis Intensive Care Unit Admissions Through | 1 | | single center, | | | | | | | | | Hospital | | | | |
| atton, N. D. | an Electronic Health Record-Driven, Standardized Care Pathway | | | retrospective, | | | | | | | | | accounting data, | , | | | |
| ebhart, B. | | | | pre and post | 214 hospital | Acute care, emergency | | | | | | | value based | | | | |
| uman H | 2020 | US | US; Utah | intervention | admissions | care | acute care | | full care path | Direct | provider | provider | outcomes toolk | Direct costing | implemented | | no |
| anni, F. | | | | | | | | | | | | | | | | | |
| oglia, E. | | | | single center, | | | | | | | | | | | | | |
| ennestri, F. | Introducing enhanced recovery after surgery in a high-volume orthopedic | | | retrospective, | | | | | | | | | | | | | |
| errario, L. | hospital: a health technology assessment | | | mixed methods | 3 | orthopedics, total knee | | | | | | | | | | | |
| anfi, G. | | | | observational | | arthroplasty, total hip | | Orthopedic, | full care path (full | | | | | Absorption costing - | | | yes see s |
| | 2020 | Italy | Italy | study | 938 procedures | arthroplasty | Surgical | arthroplasty | surgical episode) | Direct and indirect | t provider | provider | ABC | ABC | implemented | | sheet |
| lick, B. | | | | | | | | | | | | | | | | | |
| opez, R. | | | | | | | | | | | | | | | | | |
| rrigain, S. | Shifting Cost-drivers of Health Care Expenditures in Inflammatory Bowe | 4 | | | | IBS, bowel, crohn's, | | | | | | | | | | | |
| chold, J. | Disease | | | | | IBS, bowel, cronn's, Inflamatory Bowel | | | | | | | | | | | |
| egueiro, M. | | | | | | Disease, ulcerative | | | | | | | none. | Charges/Reimbursemen | | | |
| izk, M. | 2020 | US | US; various states | | 641 patients | colitis | Internal Medicine | | full care path | Direct and indirect | t naver | naver | reimbursements | t-based | N/A | reimbursements | no |
| | | | | | panellis | | anerma wearche | | .un cure paur | succe and multer | . puyer | P=754 | contoursements | | | remoursements | |
| | | | | | | | | | | | | | | | | | |
| idilla, J. A. | | | | | | | | | | | | | | | | | |
| abor, J. A. | Total His Asthera Issue for Days 121 (177) (177) | | | | | | | | | | | | | | | | |
| adilla, J. A. abor, J. A. yan, S. P. ong W. I | Total Hip Arthroplasty for Femoral Neck Fracture: The Economic | | | | | | | | | | | | | | | | |
| abor, J. A. | Total Hip Arthroplasty for Femoral Neck Fracture: The Economic Implications of Orthopedic Subspecialty Training | | | | | | | | | | | | | | | reimbursement | |
| abor, J. A. yan, S. P. ong, W. J. | | US | US; various states | | 291 patients | orthopedics, total hip athroplasty | Surgical | Orthopedic, arthroplasty | partial care path | Direct and indirect | | paver | none, reimbursements | Charges/Reimbursemen t-based | N/A | reimbursement as ratio of bundle price | |

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| Agarwal, N. | | | | | | | | | | | | | | | | | |
|---|---|-----------------|-------------------|--------------------------------------|----------------------------------|--|---------------|-----------------------------|--|----------------------|--------------------------|------------|------------------|--|-------------|---------|---|
| Setlur, N. P. Tan, H. J. | Measuring the cost of care in benign prostatic hyperplasia using time driven activity based costing (TDAPC) | | | single center, | | | | | | | | | | | | | |
| Niedzwiecki, D. | driven activity-based costing (TDABC) | | | retrospective, direct | | 5 Urology, benign prostati | | | partial care path (full | | | | | Absorption costing - | | | |
| McLaughlin, N. Burke M A | 2015 | US | US; California | observation | surgical options | | c Urology | | surgical episode) | Direct and indirect | provider provide | er | TDABC | Absorption costing - TDABC | unspecified | | |
| Pang, J. | | | | | | | | | | | | | | | | | |
| Crawford, K. Faraji, F. | An Analysis of 1-Year Charges for Head and Neck Cancer: Targets for | | | | | | | | | | | | | | | | |
| Ramsey, C. | Value-Based Interventions | | | | | | | | | | | | | | | | |
| Kemp, A. Califano, J. A. | | | | | | Oncology, head and necl | | | | | | | | Charges/Reimbursemen | | | |
| Lobatto D. I. | 2020 | US | US; various state | 25 | patients | cancer | Oncology | | partial care path | Direct and indirect | payer payer | | none; charges | t-based | N/A | charges | |
| Vlieland, Tpmv | | | | | | | | | | | | | | | | | |
| van den Hout, W. B. de Vries, F. | Feasibility, safety, and outcomes of a stratified fast-track care trajectory | in | | prospective, | | | | | | | | | | | | | |
| de Vries, A. F. | pituitary surgery | | | observational study, process | | Endersingly available | | | partial care path (full | | | | | Absorption costing - | | | |
| Schutte, P. J. Verstegen M. I. T. | 2020 | The Netherlands | s The Netherlands | | s 155 patients | Endocrinology, surgical, pituitary | endocrinology | | surgical episode) | Direct and indirect | provider provide | 21 | reference pricir | ng unspecified/generic | Paper only | | |
| Patel, M. I. | | | | | | | | | | | | | | | | | |
| Ramirez, D. Agajanian, R. | Association of a Lay Health Worker Intervention With Symptom Burder | 1, | | | | | | | | | | | | | | | |
| Agajanian, H. | Survival, Health Care Use, and Total Costs Among Medicare Enrollees With Cancer | | | | | | | | | | | | | | | | |
| Coker, T. | | | | | | | | | | | | | | Charges/Reimbursemen | | | |
| Jalilian, H. | 2020 | US | US; various state | 25 | 425 patients | Oncology | Oncology | | partial care path | Direct and indirect | payer payer | | none; charges | t-based | N/A | charges | |
| Doshmangir, L. | | | | | | | | | | | | | | | | | |
| Ajami, S. | Economic burden of gastric cancer in the first six months after diagnosis | | | | | | | | | | | | | | | | |
| Mir, H. Siraneh, Y. | and the second of gastre career in the first six months differ thagnosis | | | | | | | | | | | | | | | | |
| Hasanpoor, E. | 2019 | Iran | Iran | | 118 patients | Oncology, bowel, gastric cancer | Oncology | | unspecified | Direct and indirect | provider provide | ar - | unspecified | Absorption costing - unspecified/generic | Paper only | | |
| Lobatto, D. J. | | | | | | | | | | | , provid | | | | | | |
| van den Hout, W. B. Najafabadi, A. H. Z. | | | | | | | | | | | | | | | | | |
| Steffens, A. N. V. | Healthcare utilization and costs among patients with non-functioning pituitary adenomas | | | | | | | | | | | | | | | | |
| Andela, C. D. Pereira, A. M. | | | | | | Endocrinology, Pituitary | | | | | | | | Absorption costing - | | | |
| Baul W C | 2019 | The Netherlands | s The Netherlands | | 167 patients | adenoma | endocrinology | | partial care path | Direct and indirect | provider provide | er | reference pricir | ng unspecified/generic | N/A | | |
| Gray, C. F. Prieto, H. A. | | | | | | | | | | | | | | | | | |
| Deen, J. T. | Bundled Payment "Creep": Institutional Redesign for Primary | | | | | | | | | | | | | | | | |
| Parvataneni, H. K. | Arthroplasty Positively Affects Revision Arthroplasty | | | | | | | | | | | | | | | | |
| | 2019 | US | US; Florida | | 168 patients | orthopedics, total joint arthroplasty | Sumical | Orthopedic, arthroplasty | full care path (surgical episode) | Direct and indirect | payer, provider payer | provider | none; charges | Charges/Reimbursemen t-based Direct costing | N/A | | |
| Kurt, P. | | | 00, Florida | | 100 patients | anadopiasty | ougical | arunopiasiy | episode) | parect and indiffect | provider payer | provider | none, charges | roused Direct costing | | | |
| Saban, M. Cankaya, F. | | | | | | | | | | | | | | | | | |
| Cankaya, F. Annac, M. C. | Time-Driven Activity-Based Costing in the Ophthalmology Department State Hospital: A Case Study | 01 | | single contro | case study; 5 | | | | | | | | | | | | |
| | | | | | surgical procedures | | | | | | | | | Absorption costing - | | | |
| There: D | 2019 | Turkey | Turkey | case study | in one department | | opthalmology | | full care path | Direct and indirect | provider provide | 21 | TDABC | TDABC | Paper only | | |
| Thaci, B. McGirt, M. J. | | | | | | | | | | | | | | | | | |
| Ammerman, J. M. | Reduction of direct costs in high-risk lumbar discectomy patients during | | | | | | | | | | | | | | | | |
| Thome, C. Kim, K. D. | the 90-day post-operative period through annular closure | | | | | | | | | | | | | | | | |
| Ament, J. D. | 2019 | US | US; California | randomized controlled tria | al 272 nations | Surgical, high-risk lumbar discectomy | Surgical | Spine | partial care path | Direct and indirect | payer payer | | none; charges | Charges/Reimbursemen t-based | N/A | | |
| Karns, M. R. | | | co, camornia | Retrospective | | canous crocectomy | Jun Brodi | opue | parties cure pain | succe and mullect | payer payer | | none, charges | - 04944 | | | |
| Jones, D. L. | | | | cohort, single | | orthopedic, surgical, | | | | | | | | | | | |
| Todd, D. C. Maak, T. G. | Patient- and Procedure-Specific Variables Driving Total Direct Costs of Outpatient Anterior Cruciate Ligament Reconstruction | | | center, | | Anterior Cruciate | | | | | | | | | | | |
| Aoki, S. K. | | | | economic and decision | | Ligament Reconstruction, sports | | | partial care path (full | | | | VDO tool, tota | 1 | | | |
| Burks, R. T. Voo M | 2018 | US | US; Utah | analysis | 434 patients | medicine | Surgical | Orthopedic | surgical episode) | Direct | provider provide | 21 | direct costs | Direct costing | implemented | | |
| Robinson, J. R. Carter, N. H. | | | | | | | | | | | | | | | | | |
| Gibson, C. | Improving the value of care for appendectomy through an individual | | | | | | | | | | | | | | | | |
| Brinkman, A. S. Van Arendonk, K. | surgeon-specific approach | | | prospective | | | | | | | | | | | | | |
| Speck, K. E. | 2010 | 110 | 110 | observational | | | a : 1 | | partial care path (full | | ., | | | Absorption costing - | 211 | | |
| Danko M E Gupta, P. | 2018 | US | US; tennessee | study | 216 patients | Appendicitis, surgical | Surgical | Appendicitis | surgical episode) | Direct and indirect | provider provide | 21 | reterence pricir | ng unspecified/generic | N/A | | |
| Rettiganti, M. | | | | | | | | | | | | | | | | | |
| | Relationship of Hospital Costs With Mortality in Pediatric Critical Care: | | | single center, | | | | | | | | | | | | | |
| | A Multi-Institutional Analysis | | | pre and post | 917,663 patients, 4' | 7 | | Pediatric acute | | | | | | Charges/Reimbursemen | | | |
| | 2017 | US | US; various state | intervention (dashboard) | 917,663 patients, 4 hospitals | Acute care, pediatrics | pediatrics | care | partial care path | unspecified | payer payer | | unspecified | t-based | N/A | charges | |
| Ilg, A. M. | | | | | | | | | | | | | | | | | |
| Laviana, A. A. Kamrava, M. | Time-driven activity-based costing of low-dose-rate and high-dose-rate | | | single center, | | | | | | | | | | | | | |
| Veruttipong, D. | brachytherapy for low-risk prostate cancer | | | retrospective, process | | | | | | | | | | | | | |
| | | | | napping, dire | | Oncology, prostate | | | | | | | | Absorption costing - | | | |
| Steinberg, M. Park S. J. | 2016 | US | US; California | observation | 2 treatment options | cancer, brachytherapy | Oncology | | full care path | Direct and indirect | provider provide | 21 | TDABC | TDABC | Paper only | | |
| Park, S. J. | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| Park, S. J. Burko M A McLaughlin, N. Burke, M. A. Setlur, N. P. | Time-driven activity-based costing: a driver for provider engagement in | | | | | | | | | | | | | | | | |
| Park, S. J. Burke, M. A. McLaughlin, N. Burke, M. A. | Time-driven activity-based costing: a driver for provider engagement in costing activities and redesign initiatives | | | single center, | | | | | | | | | | | | | |
| Park, S. J. Burko M. A. McLaughlin, N. Burke, M. A. Setlur, N. P. Niedzwiecki, D. R. | | US | US; California | single center, process mapping | 2 pilots | Urology, neurosurgery | Surgical | Neurosurgery | partial care path (full surgical episode) | Direct and indi | provider provide | ν r | TDABC | Absorption costing - TDABC | implemented | | _ |

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| Keating, C. L. Dixon, J. B. Moodie, M. L. Peeters, A. Playfair, J. | Cost-Efficacy of Surgically Induced Weight Loss for the Management of Type 2 Diabetes A randomized controlled trial | ī | | randomized | 40 patients, 23 | | | | | | | | | | | | |
|--|--|-----------|--------------------|--|-----------------------------|--|--------------------------------|-----------------------------|-------------------------|---------------------|----------|----------|--|---|-------------|-----------------------------|------------------|
| O'Brien, P. E. | 2009 | Australia | Australia | | | Surgical, Diabetes | Internal Medicine | | unspecified | Direct | provider | provider | direct costs | Direct costing | Paper only | | no |
| Nelson, A. A. Pearce, D. J. Fleischer, A. B. Balkrishnan, R. Feldman, S. R. | Infliximab for inpatient psoriasis management - is there a role? | | | | | | | | | | | | | | | | |
| | 2005 | US | US; Ohio | | 208 inpatient admissions | Psoriasis, Dermatology | Dermatology | | partial care path | Direct and indirect | nguer | payer | none; charges | Charges/Reimbursemen t-based | N/A | charges | 10 |
| Yanik. John M. | 2003 | 03 | 03,0110 | | admissions | I soriasis, Dermatology | Dermatology | | partial care path | Direct and indirect | payer | payer | none, enarges | roased | INA | charges | 110 |
| Bedard, Nicholas A. Hanley, Jessica M. Otero, Jesse E. Callaghan, John J. Marsh, John L. | Rapid Recovery Total Joint Arthroplasty is Safe, Efficient, and Cost- Effective in the Veterans Administration Setting | | | | | orthopedics, total hip athroplasty, total knee | | Orthopedic, | | | | | unspecified; Hospital accounting data not otherwise | Absorption costing - | | | |
| Zhang, Steven | 2018 | US | US; Iowa | | 78 patients | arthroplasty | Surgical | arthroplasty | full care path | Direct and indirect | provider | provider | specified | unspecified/generic | unspecified | | no |
| Vora, Molly Harris, Alex H. S. Baker, Laurence Curtin, Catherine Kamal, Robin N. | Cost-Minimization Analysis of Open and Endoscopic Carpal Tunnel Release | | | | 16 million patient | | | Carpal Tunnel | full care path (surgica | 1 | | | none, | Charges/Reimbursemen | | | |
| A. Adenikinju, R. | 2016 | US | US; California | | records | Carpal Tunnel Release | Surgical | Release | episode) | Direct and indirect | payer | payer | reimbursements | t-based | N/A | reimbursement | its no |
| A. Ademkinju, R. Ranson, S. A. Rettig, K. A. Egol and S. R. Konda | Ability of a Risk Prediction Tool to Stratify Quality and Cost for Older Patients With Operative Distal Radius Fractures 2021 | US | US: New York | | | Orthorpedic, Geriatric, Operative Distal Radius | | Orthopedic | | | | | unspecified; Hospital accounting data not otherwise | Charges/Reimbursemen | | index admissio cost, per | on |
| A. Alibrahim, Y. | 2021 | 05 | US; New York | | | Fractures | Surgical | fracture | unspecified | Direct and indirect | payer | payer | specified | t-based | N/A | category | no |
| Abdulsalam, S. Al Mutawa, H. Behbehani, D. Alhuwail and S. Al Jenaei | Towards value-based healthcare: Establishing baseline pharmacy care costs for diabetes management 2021 | Kuwait | Kuwait | single center, observation, interviews | one pharmacy | Diabetes, pharmacy | Internal Medicine | | partial care path | Direct and indirect | provider | provider | TDABC | Absorption costing - TDABC | unspecified | | yes see sheet |
| D. J. Baughman, A. Waheed, M. N. Khan and J. M. Nicholson | Enhancing Valus-Based Care With a Walk-in Clinic: A Primary Care Provider Intervention to Decrease Low Acuity Emergency Department Ovenutilization | | | | | | emergency care & | | | | | | | Charges/Reimbursemen | | | |
| J. A. Berinstein, S. A. | 2021 | US | US; Pennsylvania | | | Emergency care | acute care | | unspecified | Direct and indirect | payer | payer | none; charges | t-based | N/A | average charge | es no |
| Cohen-Mekelburg, G. M. Greenberg, D. Wray, S. K. Berry, S. D. Saini, A. M. Fendrick, M. A. Adams, A. K. Waljee and P. D. P. Winging | A Care Coordination Intervention Improves Symptoms Bat Not Charges in High-Risk Patients With Inflammatory Bowel Disease 2021 | US | US; Michigan | | | IBS/IBD inflammatory bowel disease | Internal Medicine | | partial care path | Direct and indirect | payer | payer | none; charges | Charges/Reimbursemen t-based | N/A | charges | no |
| A. Beschloss, C. Dicindio, J. Lombardi, A. Varthi, A. Ozturk, R. Lehman, L. Lenke and C. Saifi | Marked Increase in Spinal Deformity Surgery Throughout the United States | | | | | Orthopedic, Spinal | | | | | | | | Charges/Reimbursemen | | | |
| H. Bueno, J. L. Bernal. | 2021 | US | US; various states | | | Deformity Surgery | Surgical | Spine | full care path | Direct and indirect | provider | provider | none; charges | t-based | N/A | unspecified | no |
| V. Jimenez-Jimenez, F. J. Martin-Sanchez, X. Rossello, G. Moreno, C. Goni, V. Gil, P. Llorens, N. Naranjo, J. | The Clinical outcomes, healthcare resource utilization, and related costs (COHERENT) model. Application in heart failure patients 2021 | | | Retrospective, | 30 day period of | heart failiure, | | | | | | | DRG costs | Absorption costing - | | | yes see sheet |
| R. A. Burnett lii, J. | 2021 | Spain | Spain | multi-center | heart failure patien | ts cardiovascular | Cardiology | | partial care path | Direct and indirect | provider | provider | DRG costs | unspecified/generic | implemented | | sneet |
| Yang, P. M. Courtney, E. B. Terhune, C. P. Hannon and C. J. Della Valle | Costs of unicompartmental compared with total knee arthroplasty : a matched cohort study over ten years 2021 | US | US; various states | | | Total knee arthroplasty, orthopedic | Surgical | Orthopedic, arthroplasty | full care path | Direct and indirect | provider | provider | none; reimbursements | Charges/Reimbursemen t-based | N/A | reimbursement | t no |
| M. Casey, D. Perera, J. Enticott, H. Vo, S. Cubra, A. Gravell, M. Waerea and G. Habib | High utilisers of emergency departments: the profile and journey of patients with mental health issues | | | | | | | | | | | | unspecified; Hospital accounting data | | | | |
| | 2021 | Australia | Australia | | | Emergency care | emergency care & acute care | | partial care path | Direct and indirect | provider | provider | not otherwise specified | Absorption costing - unspecified/generic | N/A | | yes see sheet |
| K. A. Chovanec, C. Arsene, A. Beck and B. Liedel | 2021 Why Not Home?: A Study of the Impact of an Effort to Reduce Postacut Expenditures | | nusuală | | | -mergency care | | | partia café pitit | oncer and indirect | provider | provinci | specined | | in A | | sneet |
| | 2022 | US | US; various states | | | Various post asut- | emergency care & | | partial care path | Direct and indi+ | Ballar | ballor | none: ak | Charges/Reimbursemen t-based | N/A | charges | 80 |
| R. V. Cohen, A. M. Nishikawa, R. A. Ribeiro, F. M. Oliveira, P. C. Andrade, S. M. Junqueira and B. Toldo | 2022 Surgical Management of Obesity in Brazil: Proposal for a Value-Based Healthcare Model and Preliminary Results | | US; various states | | | Various, post-acute | acute care | | partial care path | Direct and indirect | payer | payer | none; charges | | N/A | cnarges | no |
| sunqueira anu is. 1000 | 2021 | Brazil | Brazil | | | Obesity, surgical, bariatric surgery | Surgical | Bariatric | full care path | Direct and indirect | | | | Absorption costing - g unspecified/generic | N/A | | yes see sheet |
| | | | | | | | | | | | | | | | | | |

 BMJ Open

| A. P. B. da Silva Etges, L. N. Cruz, R. Schlatter, J. Neyeloff, R. B. | Time-driven activity-based costing as a strategy to increase efficiency: A | n | | multi center, | | | | | | | | | | | | |
|---|--|---------------|-------------------------|----------------------------------|--|---|------------------------|------------------------------|--------------------------------------|----------------------------|-------------------------------------|---------|---|--|--|------------------------------------|
| Cardoso, L. Kopittke, A. A. Nunes, J. A. Neto, | analyses of interventional coronary procedures | | | retrospective, process | | | | | | | | | | | | |
| J. L. Nogueira, R. M. de | 2022 | Brazil | Brazil | mapping, 5 hospitals | 5 hospitals, 90 patients | Interventional Coronary Procedures | Cardiology | | full care path (surgical episode) | Direct and indirect p | rovider provide | r | TDABC | Absorption costing - TDABC | unspecified | d |
| M. Dziemianowicz, J. Burmeister and M. | | | | retrospective, | | | | | | | | | | | | |
| Dominello | Examining the Financial Impact of Altered Fractionation in Breast Cance | 217. | | process mapping, direct | t | Oncology, breast cance cancer, sentinel lymph | r, | | | | | | | | | |
| | An Analysis Using Time-Driven Activity-Based Costing | | | observation, treatment | 2 treatment options 50 patient visits | , node biobsy, Altered Fractionation in Breast | | | | | | | | Absorption costing - | | |
| C. Fang, A. Hagar, M. | 2021 | US | US; Michigan | comparison | total | Cancer | Oncology | | full care path | Direct and indirect p | rovider provide | r | TDABC | TDABC | Paper only | r |
| Gordon, C. T. Talmo, | | | | | | | | | | | | | | | | |
| D. A. Mattingly and E. L. Smith | Differences in Hospital Costs among Octogenarians and Nonagenarians Following Primary Total Joint Arthroplasty | | | single center, retrospective, | | Geriatrics, Orthopedic, | | | | | | | | | | |
| | | US | US: Boston | patient | | Primary Total Joint | | Orthopedic | full care path (surgical | | | | TDABC | Absorption costing - TDABC | | |
| C. Fang, N. Pagani, M. | 2021 | 08 | US; Boston | comparison | 889 surgeries | Arthroplasty | Surgical | fracture | episode) | Direct and indirect p | rovider provide | r | IDABC | IDABC | unspecified | a |
| Gordon, C. T. Talmo, D. A. Mattingly and E. | Episode-of-Care Costs for Revision Total Joint Arthroplasties by Decada | al | | | | | | | | | | | | | | |
| L. Smith | Age Groups | | | single center, retrospective, | | Geriatrics, Orthopedic, | | | | | | | | | | |
| | 2021 | US | US; Boston | patient comparison | 551 surgeries | Primary Total Joint Arthroplasty | Surgical | Orthopedic fracture | full care path (surgical episode) | Direct and indirect | rovider provide | r | TDABC | Absorption costing - TDABC | unspecified | d |
| C. J. Fang, J. M. Shaker, J. M. Drew, A. | | | | | | | | | | | | | | | | |
| Jawa, D. A. Mattingly and E. L. Smith | The Cost of Hip and Knee Revision Arthroplasty by Diagnosis-Related Groups: Comparing Time-Driven Activity-Based Costing and Traditiona | d | | single center, | | | | | | | | | | | Absorption | |
| and E. L. Smith | Accounting | | | retrospective, process | | Geriatrics, Orthopedic, Primary Total Joint | | Orthopedic | full care path (surgical | | | | | Absorption costing - | costing - unspecified/gener | |
| | 2021 | US | US; Boston | mapping | 793 surgeries | Arthroplasty | Surgical | arthroplasty | episode) | Direct and indirect p | rovider provide | r | TDABC | TDABC | ic Paper only | r |
| C. J. Fang, J. M. Shaker, P. A. Hart, C. | | | | | | | | | | | | | | | | |
| Cassidy, D. A. Mattingly, A. Jawa and | Variation in the Profit Margin for Different Types of Total Joint Arthroplasty | | | | | Geriatrics, Orthopedic, | | | | | | | | | | |
| E. L. Smith | | | | single center, | | Primary Total Joint | | Orthopedic | full care path (surgical | F | rovider, | | | Absorption costing - | Charges/Reimbur | |
| C. A. Feizpour, M. S. | 2021 | US | US; Boston | retrospective | 13545 procedures | Arthroplasty | Surgical | arthroplasty | episode) | Direct and indirect p | ayer provide | r payer | TDABC | TDABC | sement-based unspecified | d |
| Patel, M. A. Syed, A. Carrasco, J. Shah, S. | Enhanced recovery in liver transplantation: A value-based approach to | | | | | | | | | | | | | | | |
| Hanish, L. Sosa, S. Fogus, S. Bennett, C. | complex surgical care | | | Retrospective, single center, | | Surgical, enhanced | | | | | | | | | | |
| Shi, B. Hardman and P. | 2021 | US | US; Texas | pre and post intervention | 379 liver transplant recipients | recovery pathway, liver transplant | Surgical | Liver | full care path | Direct r | rovider provide | r | direct costs | Direct costing | unspecified | d unspecified |
| A. M. Fontebasso, S. Figueira, K. Thavorn, P. | | | | | | | | | | | | - | | | | |
| Glen, J. Lampron and | Financial implications of trauma patients at a Canadian level 1 trauma | | | | | | | | | | | | unspecified; Hospital | | | |
| M. Matar | center: a retrospective cohort study | | | | | | | Orthopedic, | | | | | accounting data not otherwise | Absorption costing - | | |
| N.G. 17. G | 2020 | Canada | Canada | | | Surgical, Trauma surge | ry Surgical | arthroplasty | full care path | Direct and indirect p | rovider provide | r | specified | unspecified/generic | N/A | |
| M. Gandjian, C. Williamson, Y. Sanaiha, | | | | | | | | | | | | | | | | |
| J. Hadaya, Z. Tran, S. T. Kim, S. Revels and | Continued Relevance of Minimum Volume Standards for Elective Esophagectomy: A National Perspective | | | | | | | | | | | | none; charges, transformed wit | | | charges, transformed with |
| P. Benharash | | | | | | elective esophagectomy | | | | F | rovider | | cost-to-charge | Charges/Reimbursem | | cost-to-charge |
| I. M. Ganske, K. | 2021 | US | US; various | | - | cardiovascular | Surgical | Cardiac/Thoracic | unspecified | Direct and indirect (| proxy) payer | | ratio | t-based proxy | N/A | ratio |
| Sanchez, E. Le, O. C. Langa, B. Sharif- | Time-Driven, Activity-Based Costing of Presurgical Infant Orthopedics: | | | multi center, | | pediatric, crainiofacial, | | | | | | | | | | |
| Askary, E. Ross, P. Santiago, J. G. Meara, | A Critical Component of Establishing Value of Latham Appliance and Nasoalveolar Molding | | | prospective, process | | presurgical infant orthopedics, plastic | | | | | | | | | | |
| | - | | 1/2 D . | | t 37 patients, two hospitals | surgery, reconstructive surgery, Latham device | Pediatrics | Pediatric Plastic surgery | full care path (surgical episode) | Direct and indirect p | rovider provide | r | TDABC | Absorption costing - TDABC | Paper only | , |
| B. L. Padwa and A. C. | 2021 | US | US; Boston | | | | | | | | | | | | | |
| H. C. Gillis, K. Dolan, | 2021 | US | US; Boston | observation | | | | | | | | | | | | |
| H. C. Gillis, K. Dolan, C. L. Sargel, R. Z. Thompson and J. E. | 2021 A Quality Improvement Approach to Influence Value-based Mucolytic | US | US; Boston | observation | | | | | | | | | | | | |
| H. C. Gillis, K. Dolan, C. L. Sargel, R. Z. | 2021 A Quality Improvement Approach to Influence Value-based Mucolytic Use in the PICU | US | US; Boston | observation | | pediatric, pediatric intensive care. PICU | | Pediatrie seute | | | | | direct costs | | | |
| Allosi H. C. Gillis, K. Dolan, C. L. Sargel, R. Z. Thompson and J. E. Lutmer | 2021 A Quality Improvement Approach to Influence Value-based Mucolytic Use in the PICU 2021 | US | US; Boston US; Ohio | observation | | pediatric, pediatric intensive care, PICU, Mucolutic aerosols | Pediatrics | Pediatric acute care | partial care path | Direct p | rovider provide | r | direct costs (medicine costs |) Direct costing | N/A | |
| Alloi H. C. Gilis, K. Dolan, C. L. Sargel, R. Z. Thompson and J. E. Lutmer J. Hadaya, Y. Sanaiha, R. Hernandez, Z. Tran, | Use in the PICU 2021 | US | | oose valou | | intensive care, PICU, | Pediatrics | | partial care path | Direct p | rovider provide | r | direct costs (medicine costs |) Direct costing | N/A | |
| Alloci H. C. Gillis, K. Dolan, C. L. Sargel, R. Z. Thompson and J. E. Lutmer J. Hadaya, Y. Sanaiha, | Use in the PICU 2021 Impact of hospital volume on resource use after elective cardiac surgery: | US | | | | intensive care, PICU, | Pediatrics | | partial care path | Direct | rovider provide | r | (medicine costs none; charges, | | N/A | charges, |
| Alloi H. C. Gillis, K. Dolan, C. L. Sargel, R. Z. Thompson and J. E. Lutmer J. Hadaya, Y. Sanaiha, R. Hernandez, Z. Tran, R. J. Shemin and P. | Use in the PICU 2021 Impact of hospital volume on resource use after elective cardiae surgery: A contemporary analysis | US | US; Ohio | OUSEL VARION | | intensive care, PICU, Mucolutic aerosols | | care | | F | rovider | r | (medicine costs none; charges, transformed wit cost-to-charge | h Charges/Reimbursem | en | transformed with cost-to-charge |
| Alloi H. C. Gillis, K. Dolan, C. L. Sargel, R. Z. Thompson and J. E. Lutmer J. Hadaya, Y. Sanaiha, R. Hernandez, Z. Tran, R. J. Shemin and P. | Use in the PICU 2021 Impact of hospital volume on resource use after elective cardiac surgery: | US | | | | intensive care, PICU, | | | | | rovider | r | (medicine costs none; charges, transformed wit | h | | transformed with |
| Alloci H. C. Gillis, K. Dolan, C. L. Sargel, R. Z. Thompson and J. E. Lutmer J. Hadaya, Y. Sanaiha, R. Hernandez, Z. Tran, R. J. Shernin and P. Benharash M. K. Islam, S. Ruths, K. Jansen, R. Faick, M. | Use in the PICU 2021 Impact of hospital volume on resource use after elective cardiac surgery: A contemporary analysis | US | US; Ohio | | | intensive care, PICU, Mucolutic aerosols | | care | | F | rovider | r | (medicine costs none; charges, transformed wit cost-to-charge | h Charges/Reimbursem | en | transformed with cost-to-charge |
| Alloci H. C. Gillis, K. Dolan, C. L. Sargel, R. Z. Thompson and J. E. Lutmer J. Hadaya, Y. Sanaiha, R. Hernandez, Z. Tran, R. J. Shemin and P. Benharash M. K. Islam, S. Ruths, | Use in the PICU 2021 Impact of hospital volume on resource use after elective cardiae surgery: A contemporary analysis | US | US; Ohio | | | intensive care, PICU, Mucolutic aerosols elective cardiac surgery | Surgical | care | | F | rovider | r | (medicine costs none; charges, transformed wit cost-to-charge | h Charges/Reimbursem | en | transformed with cost-to-charge |
| Alloci H. C. Gillis, K. Dolan, C. L. Sargel, R. Z. Thompson and J. E. Lutmer J. Hadaya, Y. Sanaiha, R. Hernandez, Z. Tran, R. J. Shemin and P. Benharash M. K. Islam, S. Ruths, K. Jansen, R. Falck, M. M. Oklen and J. E. | Use in the PICU 2021 Impact of hospital volume on resource use after elective cardiac surgery: A contemporary analysis 2021 Evaluating an integrated care pathway for frail elderly patients in Norway | US | US; Ohio | | | intensive care, PICU, Mucolutic aerosols | Surgical | care | | F Direct and indirect (| rovider proxy) payer rovider, | | (medicine costs none; charges, transformed wit cost-to-charge ratio | h Charges/Reimbursem t-based proxy Absorption costing - | en N/A | transformed with cost-to-charge |
| Attaci H. C. Gillis, K. Dolan, C. L. Sargi, R. Z. Thompson and J. E. Luttner J. Hadaya, Y. Samiha, R. Hernandez, Z. Tran, R. J. Shenim and P. Benlarash M. K. Isalam, S. Rutho, K. Jansen, R. Falck, M. R. Molicen and J. E. Askildicen D. W. Jang, H. J. Lee, | Use in the PICU 2021 Impact of hospital volume on resource use after elective cardiac surgery: A contemporary analysis 2021 Evaluating an integrated care pathway for frail elderly patients in Norway using multi-criteria decision analysis | US US y | US; Ohio US; various | | | intensive care, PICU, Mucolutic aerosols elective cardiac surgery geriatrics, frail elderly, | y Surgical | care | unspecified | Direct and indirect (| rovider proxy) payer rovider, | | (medicine costs none; charges, transformed wit cost-to-charge ratio | h Charges/Reimbursem t-based proxy | en N/A Charges/Reimbur sement-based | transformed with cost-to-charge |
| Attaci Attaci I. C. Gillis, K. Dolan, C. L. Sargi, R. Z. Thompson and J. E. Lattner J. Hadaya, Y. Samahe, R. Heranadez, Z. Tan, R. J. Shemin and P. Benbarash M. K. Islam, S. Ruth, K. Janen, R. Falch, M. R. Mollen and J. E. Askidsen | Use in the PICU 2021 Impact of hospital volume on resource use after elective cardiac surgery: A contemporary analysis 2021 Evaluating an integrated care pathway for frail elderly patients in Norway using multi-criteria decision analysis | US US y | US; Ohio US; various | | | intensive care, PICU, Mucolutic aerosols elective cardiac surgery geriatrics, frail elderly, | y Surgical | care | unspecified | Direct and indirect (| rovider proxy) payer rovider, | | (medicine costs none; charges, transformed wit cost-to-charge ratio | h Charges/Reimbursem t-based proxy Absorption costing - | en N/A Charges/Reimbur sement-based | transformed with cost-to-charge |
| Attaci Attaci II. C. Gillis, K. Dolan, C. L. Sargi, R. Z. Thompson and J. E. Lattner J. Hadaya, Y. Samahe, R. Heranadez, Z. Tan, R. J. Shemin and P. Benbarash M. K. Islam, S. Ruths, K. Jancen, R. Palak, M. R. Molileen and J. E. Askildeen D. W. Jang, H. J. Lee, P. G. Chen, S. M. | Use in the PICU 2021 Impact of hospital volume on resource use after elective cardiae surgery: A contemporary analysis 2021 Evaluating an integrated care pathway for frail elderly patients in Norway using multi-criteria decision analysis 2021 | US US y | US; Ohio US; various | | | intensive care, PICU, Mucolutic aerosols elective cardiac surgery geriatrics, frail elderly, | Surgical Geriatrics | care | unspecified | Direct and indirect (| rovider proxy) payer rovider, | | (medicine costs none; charges, transformed wit cost-to-charge ratio | h Charges/Reimbursem t-based proxy Absorption costing - | en N/A Charges Reinhor sement-based patient 0x0 N/A | transformed with cost-to-charge |

| H. Ko, D. S. Brodke, M. E. Vanneman, A. J. Schoenfeld and B. I. Martin | | Is Discretionary Care Associated with Safety Among Medicare Beneficiaries Undergoing Spine Surgery? | | | | | | | | | | | | | | | | |
|--|------|--|--------|----------------|---|--|--|-------------------|-----------------------------|-----------------------------------|---------------------------|------------|----------|--|---|-------------|-------------|-----------------|
| | 2021 | Benericianes Ondergoing spine Surgery: | US | US; various | | | spine surgery, surgical | Surgical | Spine | partial care path | Direct and indirec | t payer | payer | none; reimbursements | Charges/Reimbursemen t-based | N/A | reimburseme | ents no |
| S. R. Konda, J. R. Johnson, N. Dedhia, E. A. Kelly and K. A. Egol | | Can We Stratify Quality and Cost for Older Patients With Proximal and Midshaft Humerus Fractures? | | | | | | | | | | | | direct variable costs as an | | | | |
| | 2021 | | US | US; various | | | Humerus Fractures, geriatrics, orthopedic | Surgical | Orthopedic fracture | unspecified | Direct | provider | provider | estimation of total costs | Direct costing | N/A | | no |
| A. T. Malik, S. N. Khan, R. T. Voskuil, J. H. Alexander, J. P. Drain and T. J. Scharschmidt | | What Is the Value of Undergoing Surgery for Spinal Metastases at Dedicated Cancer Centers? | US | US; various | | | Orthopedic, Surgical, | Oncology | | partial care path | Direct and indirec | | Parat | none; reimbursements | Charges/Reimbursemen t-based | N/A | reimhurseme | unto no |
| T. R. McClintock, D. F. | 2021 | | 03 | US, various | 10 A | | spine surgery | Oncology | | partial care pain | Direct and indirec | i payer | payer | reinbursemenis | t-based | N/A | reinourseme | ins no |
| Friedlander, A. Y. Feng, M. A. Shah, D. J. Pallin, S. L. Chang, A. M. Bader, T. W. Feeley, R. S. Kaplan and G. E. | | Determining Variable Costs in the Acute Urolithiasis Cycle of Care Through Time-Driven Activity-Based Costing | | | multi center, retrospective, process mapping, journey | unspecified number of patients, acute | | emergency care & | | | | | | | Absorption costing - | | | yes se |
| R. Negrini, R. D. da | 2021 | | US | US; Boston | mapping | stone episodes | Acute Urolithiasis | acute care | | full care path | Direct and indirec | t provider | provider | TDABC | TDABC | unspecified | | sheet |
| K. Negrini, K. D. da Silva Ferreira and D. Z. Guimaraes | | Value-based care in obstetrics: comparison between vaginal birth and caesarean section | | | single center, retrospective, process | | Obstetrics, birth, vaginal | | | | | | | direct and | Absorption costing - | | | yes se |
| T. V. Newman, K. D. | 2021 | | Brazil | Brazil | mapping | 9345 deliveries | birth, caesarean birth | obstetrics | | full care path | Direct and indirec | t provider | provider | indirect costs | unspecified/generic | Paper only | | sheet |
| V. Newman, K. D. Munshi, L. M. Neilson, C. B. Good, E. C. S. Swart, Y. Huang, R. Henderson and N. Parekh | 2021 | Health care utilization and costs associated with switching from DPP-4i to GLP-1RA or SGLT2i: an observational cohort study | US | US; various | | | Diabetes | Internal Medicine | | partial care path | Direct and indirec | t paver | paver | none: charges | Charges/Reimbursemen t-based | N/A | charges | по |
| N. Panda, L. | 2021 | | | | | | | ema medicilie | | partial care paul | | . payer | P-0,-4 | none, enarges | - compati | | compes | |
| Shagabayeva, C. E. Comrie, N. Phan, P. Moonsamy, C. F. Jeffrey Yang, F. G. Fernandez and C. R. | | Drivers of Cost Associated With Minimally Invasive Esophagectomy | US | | | | esophagectomy, surgical | | | | | | | | | N/A | | |
| S. K. Pasquali, D. | 2022 | | US | US; Boston | | | thoracic surgery | Surgical | Cardiac/Thoracic | full care path | Direct | provider | provider | direct costs | Direct costing | N/A | | no |
| Thibault, M. Hall, K. Chiswell, J. C. Romano, J. W. Gaynor, D. M. Shahian, M. L. Jacobs, M. G. Gaies, S. M. | 2021 | Evolving Cost-Quality Relationship in Pediatric Heart Surgery | US | US; Boston | Retrospective, multi-center | | pediatrics, surgical, pediatric heart surgery | Pediatrics | Pediatric surgical | full care nath | direct and indirect | nrovider | provider | CHD-method standardized costs | Absorption costing - unspecified/generic | Paper only | | no |
| R. K. Sethi, R. P. Pumpian, C. E. Drolet and P. K. Louie | | Utilizing Lean Methodology and Time-Driven Activity-Based Costing Together: An Observational Pilot Study of Hip Replacement Surgery Utilizing a New Method to Study Value-Based Health Care | US | US; Washington | single center, retrospective, surgeon comparison | 346 nations | surgical, orthopedic, hip replacement surgery, anterior hip arthroplasty | Sumical | Orthopedic, arthroplasty | full care path (surgical episode) | Direct and indirec | t provider | provider | TDARC | Absorption costing - | Paper only | | yes se |
| N. G. Thaker, D. Boyce- Fappiano, M. S. Ning, D. Pasalic, A. Guzman, G. Smith, E. B. | | Activity-Based Costing of Intensity-Modulated Proton versus Photon Therapy for Oropharyngeal Cancer | 03 | 03, washington | single center, process mapping, | 540 parents | anerio niparinopiasiy | Sugea | arunopiasiy | episodej | Direct and manee | r provider | provider | ibase | IDABC | raperonry | | sileet |
| Holliday, J. Incalcaterra, A. S. | 2021 | | US | US; Texas | matched | 50 patients (matche | d oncology, radiation | Oncology | | | Direct and indirec | | | TDABC | Absorption costing - TDABC | incent in t | | yes se |
| Gardon S. F. S. Tomicki, G. Dieguez, H. Latimer, P. Cockrum and G. Kim | | Real-World Cost of Care for Commercially Insured versus Medicare Patients with Metastatic Pancreatic Cancer Who Received Guideline- Recommended Therapies | | os, rexas | sample | pan\$) | oncology oncology, metastatic | Gacology | | partial care path | issues and indirec | a provider | provider | IDADC | Charges/Reimbursemen | implemented | | sheet |
| | 2021 | | US | US; various | | | pancreatic cancer | Oncology | | full care path | Direct and indirec | t payer | payer | none; charges | t-based | N/A | charges | no |
| W. Wang, E. Li, K. Campbell, A. McBride and S. D'Amato | | Economic Analysis on Adoption of Biosimilar Granulocyte Colony- Stimulating Factors in Patients With Nonmyeloid Cancer at Risk of Febrile Neutropenia Within the Oncology Care Model Framework | | | | | oncology, Nonmyeloid | | | | | | | | | | | |
| | 2021 | | US | US; New Jersey | | | Cancer | Oncology | | partial care path | Direct | provider | provider | direct costs | Direct costing | N/A | | no |
| K. L. Wise, H. R. Parikh, B. Okelana, A. J. Only, M. Reams, A. Harrison, J. Braman, E. Craig and B. P. Cunningham | 2022 | Measurement of value in rotator cuff repair: patient-level value analysis for the 1-year episode of care | US | US: Minnesota | single center, retrospective, process manning | 396 natients | orthopedic, surgical, rotator cuff renair | Survical | Orthopedic rotate | r full care path | Direct and indirec | t provider | provider | TDARC | Absorption costing - | unspecified | | yes se sheet |
| C. Iloabuchi, N. Dwibedi, T. LeMasters, | | | | ., | 9.11 | | | | | | | | | | | | | |
| C. Shen, A. Ladani and U. Sambamoorthi | | Low-value care and excess out-of-pocket expenditure among older adults with incident cancer – A machine learning approach | 10 | | | | oncology, incident | | | | D ² - 1 | | | total out of pocket expenditures | Charges/Reimbursemen | | | |
| | 2021 | | US | US; various | | | cancer | Oncology | | full care path | Direct | patient | patient | (SEER data) | t-based patient OoO | N/A | | no |

| N. Seyidova, A. D. Chen, D. del Valle, D. Chi, R. P. Cauley, B. T. | | | | | | | | | | | | | none; charges, | | | -1- | |
|--|---|-----------|------------------|----------------------------------|--------------------------------------|---|--------------------|-----------------------------|----------------------|---------------------|-----------------------|----------|------------------------------------|---|-------------|---------------------------|-----------|
| Lee and S. J. Lin | Nationwide cost variation for lower extremity flap reconstruction | | | | | lower extremity flap | | | | | | | none; charges, transformed with | h | | charges, transformed w | ith |
| | 2021 | 110 | | | | reconstruction, surgical | | D1 | | | provider | | cost-to-charge | Charges/Reimbursemen | N/A | cost-to-charge | |
| A. Jacir, D. Mendoza, | 2021 | US | US; various | | | plastic surgery | Surgical | Plastic surgery | full care path | Direct and indirec | t (proxy) | payer | ratio | t-based proxy | N/A | ratio | no |
| E. Dean and H. Gitlow | | | | | | | | | | | | | | | | | |
| | The cost of care during times of COVID: Case study of TDABC and minimum utilization cost analysis in a medicare advantage population | | | single center, process | | | | | | | | | | | | | |
| | | | | mapping, case | case study, | | | | | | | | | Absorption costing - | | | |
| D. Fürstenau, H. | 2021 | US | US; Florida | study | telehealth visits | Covid | Infectious disease | | full care path | Direct and indirec | t provider | provider | TDABC | TDABC | unspecified | | no |
| Haneke, C. Spies, T. | | | | | | | | | | | | | | | | | |
| Walz, K. Schewina, M. Höft, R. Mörgeli and F. | Tackling the frailty burden with an integrative value-based approach: results from a mixed-methods study | | | | | | | | | | | | | | | | |
| Balzer | results from a mixed-methods study | | | | | surgical, perioperative | | | | | | | bottom-up clinical costing | | | | |
| | 2021 | Germany | Germany | | | process | Surgical | other | partial care path | unspecified | provider | provider | approach | Unspecified | N/A | | no |
| J. F. Buell, A. N. Flaris, S. Raju, A. Hauch, M. | | | | | | | | | | | | | | | | | |
| Darden and G. G. Parker | Long-Term Outcomes in Complex Abdominal Wall Reconstruction Repaired with Absorbable Biologic Polymer Scaffold (Poly-4- | | | | | Surgical, abdominal wa | Ш | | | | | | | | | | |
| Parker | Hydroxybutyrate) | | | | | reconstruction, rehemiation, complex | | | | | | | | (1) D : 1 | | | |
| | 2021 | US | US; North Caroli | ina | | abdominal wall hernia | Surgical | Abdominal | partial care path | Direct | payer | payer | none; charges | Charges/Reimbursemen t-based | N/A | | no |
| V. J. Siu, T. Varkey, U. N. Khan, J. B. Ding and | | | | | | | | | | | | | | | | | |
| N. Khan, J. B. Ding and S. Gandhi | Lend Me a Hand: A Value-Based Care Case Study on Pan Plexopathy of | | | | | | | | | | | | | | | | |
| | Unknown Origin | | | | | pan plexopathy, | | | | | | | | | | | |
| | 2021 | US | US: Texas | | | neurology, brachial plexus injury | Neurology | | unspecified | Direct | patient | patient | out of pocket | Charges/Reimbursemen t-based patient OoO | N/A | | no |
| J. B. Kukreja, M. A. | | | | | | prevus injury | | | mperinea | Direct | puttern | panen | costs to patient | patient 000 | | | |
| Seif, M. W. Mery, J. R. Incalcaterra, A. M. | Hilizing time drives estivity based section to determine any 11-1 | | | | | | | | | | | | | | | | |
| Kamat, C. P. Dinney, J. | Utilizing time-driven activity-based costing to determine open radical cystectomy and ileal conduit surgical episode cost drivers | | | single center, retrospective, | | open radical cystectomy | | | | | | | | | | | |
| B. Shah, T. W. Feeley and N. Navai | | | 110 10 | process | 100 | urology, oncology, | | | c n d | | | | 75450 | Absorption costing - | | | yes see s |
| King, B. C. | 2021 | US | US; Texas | mapping | 100 patients | bladder cancer | Oncology | | full care path | Direct and indirec | t provider | provider | TDABC | TDABC | Paper only | | sheet |
| Richardson, T. | | | | | | | | | | | | | | | | | |
| Patel, R. M. Lee, H. C. | Prioritization framework for improving the value of care for very low birth weight and very preterm infants | | | | 2,000 | | | | | | | | - | | | | |
| Bamat, N. A. Hall, M. | weight and very present middles | | | Retrospective cohort, multi | 26098 preterm or low birth weight | Preterm infants, neonata | ıl, | | | | | | charges standardized | Charges/Reimbursemen | | | |
| Slaughter I I | 2021 | US | US; Texas | center | infants | perinatology, pediatrics | | Pediatric Neona | al partial care path | Direct and indirec | t payer | payer | across hospitals | t-based | N/A | charges | no |
| L. Fernando-Canavan, A. Gust, A. Hsueh, A. | | | | simple and | | | | | | | | | | | | | |
| Tran-Duy, M. Kirk, P. Brooks and J. Knight | Measuring the economic impact of hospital-acquired complications on an | | | single center, retrospective, | | | | | | | | | | | | | |
| DIOOKS and J. Knight | acute health service | | | mixed method observational | | emergency care, hospita | l emergency care & | | | | | | bottom-up clinical costing | Absorption costing - | | | yes see s |
| | 2021 | Australia | Australia | study | 93 056 cases | acquired complications | acute care | | partial care path | Direct and indirec | t provider | provider | approach | unspecified/generic | unspecified | | sheet |
| H. Skibicki, M. Yayac, C. A. Krueger and P. M. | | | | | | | | | | | | | | | | | |
| Courtney | Target Price Adjustment for Hip Fractures Is Not Sufficient in the | | | | | | | | | | | | | | | | |
| | Bundled Payments for Care Improvement Initiative | | | | | | | 0.1 F | | | | | | (1 p. 1 | | | |
| | 2021 | US | US; Pennsylvania | a | | arthroplasty, hip fractures, orthopedics | Surgical | Orthopedic, arthroplasty | full care path | Direct and indirec | t payer | payer | none; charges | Charges/Reimbursemen t-based | N/A | charges (EOC costs) | no |
| D. Clewley, Y. Iftikhar, M. E. Horn and D. I. | | | | | | | | | | | | | | | | | |
| M. E. Horn and D. I. Rhon | Do the Number of Visits and the Cost of Musculoskeletal Care Improve | | | | | | | | | | | | | | | | |
| | Outcomes? More May Not Be Better | | | | | | | | | | | | | | | | |
| | 2020 | US | US; Texas | Retrospective, clinical trial | 98 patients | Subacromial pain syndrome | Pain medicine | | partial care path | Direct and indirec | t navor | payer | none; reimbursements | Charges/Reimbursemen | N/A | reimbursemen | te no |
| B. Walker, L. Wilfong, | | 03 | 0.5, 1 exas | conneat trial | 70 paueins | syndrome | r am medicine | | partial care path | issuest and indirec | , payer | payer | reinioursements | e odseu | 074 | reambursemen | 6 IIV |
| J. Frytak and N. Robert | Prostice patterns among oncellaging mathematication in the same ' | | | | | | | | | | | | | | | | |
| | Practice patterns among oncologists participating in the oncology care model after three years | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | Charges/Reimbursemen | | | |
| C. A. Krueger, M. | 2021 | US | US; Louisiana | | | oncology, cancer | Oncology | | full care path | Direct and indirec | t payer | payer | none; charges | t-based | N/A | charges | no |
| Yayac, C. Vannello, J. | | | | | | | | | | | | | | | | | |
| Wilsman, M. S. Austin and P. M. Courtney | Are We at the Bottom? BPCI Programs Now Disincentivize Providers Who Maintain Quality Despite Caring for Increasingly Complex Patients | | | | | | | | | | | | | | | | |
| | mamani quany scopic caring for increasingly complex Patients | | | | | orthopedic, total hip arthroplasty, total knee | | Orthopedic, | | | | | none; | Charges/Reimbursemen | | | |
| | 2021 | US | US; Pennsylvania | a | | arthroplasty | Surgical | arthroplasty | partial care path | Direct and indirec | t payer | payer | | t-based | N/A | reimbursemen | t no |
| B. S. Horton, J. D. Marland, H. S. West | | | | | | | | | | | | | | | | | |
| and J. D. Wylie | Transition to Telehealth Physical Therapy After Hip Arthroscopy for Femoroacetabular Impingement: A Pilot Study With Retrospective | | | | | | | | | | | | | | | | |
| | Matched-Cohort Analysis | | | | | orthopedics, hip | | | | | | | | Channes Brind | | | |
| | 2021 | US | US; Utah | Pilot | | athroscopy, physical therapy | Orthopedic | | partial care path | Direct and indirec | t payer | payer | none; charges | Charges/Reimbursemen t-based | N/A | charges | no |
| N. H. Nguyen, J. Luo, L. Ohno-Machado, W. | | | | | | | | | | | | | | | | | |
| J. Sandborn and S. | Burden and Outcomes of Fragmentation of Care in Hospitalized Patients | | | | | | | | | | | | | | | | |
| Singh | With Inflammatory Bowel Diseases: A Nationally Representative Cohort | | | | | Gastroenterology, | | | | | | | | | | | |
| | 2021 | US | US; California | | | Inflammatory Bowel Diseases | Internal Medicine | | full care path | Direct and indirec | provider t (provy) | paver | none; charges HCUP data | Charges/Reimbursemen t-based | N/A | charges | ne |
| | | | | | | L/15C05C5 | | | iun care path | | | | | | | undiges | 110 |

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| J. Shemin and P. Benharash | Trends in utilization, mortality, and resource use after implantation of le ventricular assist devices in the United States | ett | | | | | | | | | | | none; reimbursement | × | | charges transformed with |
|---|--|-----------------|-------------------|----------------------------------|--------------------|---------------------------------------|----------------|-----------------|---|---------------|-----------------|-------------|------------------------|-------------------------------|-------------|-----------------------------|
| | 2021 | US | 110 | | | cardiovascular, left | en Romain I | Contin The St | 6.11 | Dia . | provider | | cost-charge- | Charges/Reimbursemen | 37.4 | cost-to-charge |
| Khanijow, A. N. | 2021 | US | US; various | | | ventricular assist device | es Surgical | Cardiac/Thoraci | : Tuil care path | Direct and in | direct (proxy) | payer | ratio, NIS data | t-based proxy | N/A | ratio no |
| Vood, L. N. Kie, R. | The impact of an onbaneed reservery of TDD and the second | | | | | | | | | | | | | | | |
| heiss, L. M. | The impact of an enhanced recovery program (ERP) on the costs of colorectal surgery | | | | | | | | | | | | | | | |
| ollis, R. H. ardiman, K. M. | | | | single center, | | surgical, colorectal | | | partial care path (ful | | | | | Absorption costing - | _ | yes s |
| acobs, K. | 2021 | US | US; Alabama | retrospective | 616 surgical cases | surgery | Surgical | Colon/Rectal | surgical episode) | Direct and in | direct provider | provider | unspecified | unspecified/generic | Paper only | sheet |
| Dewilde, T. | | | | | | | | | | | | | | | | |
| Vandoren, C. Cardoen, B. | Variability in Hospital Costs of Adult Spinal Deformity Care | | | | | | | | | | | | | | | |
| Vansteenkiste, N. | | | | single center, | | Surgical, spine, Adult | | | | | | | ABC (excludin | g Absorption costing - | | ves s |
| Scheys, L. 2004hooft F Mattar, D. | 2020 | The Netherlands | s The Netherlands | | 139 patients | Spinal Deformity | Surgical | Spine | full care path | Direct | provider | provider | overheads) | ABC | Paper only | sheet |
| Mattar, D. Di Filippo, A. | | | | | | | | | | | | | | | | |
| ivento, A. | Economic implications of ACOSOG Z0011 trial application into clinica | d | | single center, retrospective, | | | | | | | | | | | | |
| Radice, D. Burcuta, M. | practice at the European Institute of Oncology | | | clinical trial, | | oncology, breast cancer | r, | | and a second second | | | | | Abarantian an 1 | | |
| Bagnardi, V. | 2021 | Italy | Italy | compare pre and post | 3912 patients | cancer, sentinel lymph node biobsy | Onesland | | partial care path (ful surgical episode) | Discut and in | direct provider | provider | TDABC | Absorption costing - TDABC | implemented | yes s sheet |
| Veir, T. B. | | | | | | | | | | | | - | | | | |
| Usmani, M. F. Camacho, J. | Effect of Surgical Setting on Cost and Hospital Reported Outcomes for | | | | | | | | | | | | | | | |
| Sokolow, M. Bruckner, J. | Single-Level Anterior Cervical Discectomy and Fusion | | | | | Spine, surgical, Anterio | or | | | | | | | | | |
| mini F | 2021 | US | US: Memdend | multi center, | 201 patients | Cervical Discectomy ar | nd Surgio-1 | Spine | full com+b | Director | diract provides | mouidar | | Absorption costing - | Dance b- | |
| uromi I I | 2021 | US | US; Maryland | retrospective | 501 patients | rusion | Surgical | Spine | Tuil care path | Direct and in | unect provider | provider | unspecified | unspecified/generic | Paper only | no |
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Inclusions RQ2 (49) extracted data to be shared with Erasmus Data Repository (FigShare)

| | Study characteristics | | | | | Costing | method char | acteristics | | Value- | Based consequences of costing information (facil | itators) | | |
|------|--|--|----------------|-----------------------------|--------------|------------|---------------------------|---------------------|---------------------------|---|---|-----------------------------------|--|---------------------|
| ear | Reference | Medical Specialty | Costing method | Costing period | Centre | Study type | PM: Process Mapping | EI: Expert Input | DO: Direct Observation | CG: Cost grouping, either per item or per activity, or both | Benchmarking across/Compare costs across | Identification of Cost Drivers | Measured cost difference | Care pa adjustme |
| 2023 | 2 (Alibrahim et al., 2022) | Internal medicine | TDABC | partial | single | retro | yes | yes | | items, activities | | yes | | suggest |
| 2023 | 2 (Wise et al., 2022) | Surgical, orthopaedic, rotator cuff re | TDABC | full (FSE) | single | retro | yes | | yes | items, activities | surgeons, two alternative treatments within one care path | yes | yes, ± \$727 about the mean per patient | sugges |
| 2021 | (Etges et al., 2021) | Cardiology (incl. several surgeries) | TDABC | full (FSE) | multi | retro | yes | yes | yes | items, activities | hospitals, interventional coronary procedures | yes | yes, estimate 51.0% of procedure cost | ye |
| 202 | (Dziemianowicz et al., 2021) | Oncology | TDABC | full | single | retro | yes | yes | yes | items, activities | treatment care paths (accelerated whole breast irradiation vs. usual care) | yes | \$2,302 (25.0%) difference across | sugg |
| 202 | (Fang, Hagar, Gordon, et al., 2021) | Surgical, orthopaedic fracture | TDABC | full (FSE) | single | retro | yes | | | items, activities | patients | yes | treatments | sug |
| 202 | (Fang, Shaker, Drew, et al., 2021) | Surgical, orthopaedic, arthroplasty | TDABC | full (FSE) | single | retro | yes | | yes | items, activities | costing methods (TA and TDABC) | yes | | sug |
| 202 | (Fang, Shaker, Hart, et al., 2021) | Surgical, orthopaedic, arthroplasty | TDABC | full (FSE) | single | retro | yes | | yes | items, activities | five treatments (total joint arthroplasties), cost vs. reimbursement | yes | | |
| 202 | (Ganske et al., 2021) | Paediatric, surgical, plastic surgery | TDABC | full (FSE) | multi | Pro | yes | | yes | items, activities | treatment care paths | yes | up to \$8900 if surgery was required, but long- | suş |
| 2021 | (McClintock et al., 2021) | Emergency & acute care | TDABC | full (multiple) | multi | retro | yes | yes | yes | items, activities | eight care paths for acute ureteral stones (patient | Ves | term outcomes yet yes, \$6614 difference | su |
| 202 | (Sethi, Pumpian, Drolet, & Louie, 2021) | Survical orthonaedic arthronlasty | TDABC | full (FSE) | single | retro | yes | | yes | items, activities | journeys) surgeons | ves | across care paths | su |
| | (Thaker et al., 2021) | Oncology | TDABC | partial | single | pro | | 1.00F | | items, activities | treatments (matched sample, intensity-modulated proton vs. photon therapy) and individual care | yes | yes, cost difference of up to 3.33 times, | |
| | | | | | single | più | yes | yes | yes | | proton vs. photon merapy and mervicular care paths | yes | depending on patient | su |
| 2021 | (Kukreja et al., 2021) | Oncology (incl. surgery) | TDABC | full | single | retro | yes | | yes | items, activities | | yes | | suş |
| 2021 | (Mattar et al., 2021) | Oncology | TDABC | partial (FSE) | single | retro | yes | | | items | pre and post implementation of Z0011 guidelines in oncology | yes | yes, mean cost savings of €309 per patient | |
| 2021 | (Bueno et al., 2021) | Cardiology | AC (other) | partial | multi | retro | | | | items | patient journeys | yes | | su |
| 202 | (Casey et al., 2021) | Emergency & acute care | AC (other) | partial | single | retro | yes | | | items | surgeons | yes | | |
| 202 | (Cohen et al., 2021) | Surgical, bariatric | AC (other) | full (FSE) | single | retro | | | | items | treatment | yes | | |
| 202 | (Negrini, da Silva Ferreira, & Guimarae | Gynaecology & obstetrics | AC (other) | full | single | retro | yes | | | items, activities | procedures | yes | yes, \$967 per patient | su |
| 202 | (Fernando-Canavan et al., 2021) | Emergency & acute care | AC (other) | partial | single | retro | | | | items, activities | | yes | | |
| 202 | (Khanijow et al., 2021) | Surgical, colorectal | AC (other) | partial (FSE) | single | retro | | | | items | intervention | yes | yes, reduced variable cost, similar total cost | |
| 2020 | (Wise et al., 2020) | Surgical, orthopaedics, fracture | ABC | partial (FSE) | single | retro | | | | items | patients, patient groups, demographics | yes | | |
| 2020 |) (Vanni, Foglia, Pennestri, Ferrario, & Ba | Surgical, orthopaedic, arthroplasty | ABC | full (FSE) | single | both | | yes | yes | items, activities | treatment care paths (enhanced recovery after surgery) | yes | estimate €2,054,000 annually | |
| 2020 |) (Jacobs et al., 2020) | Surgical, spine | ABC | l, l year (incl. surgeri | single | retro | yes | | | items, activities | patients, patient groups | yes | | st |
| 2020 | (Bodar et al., 2020) | Paediatric, surgical | TDABC | full (FSE) | single | both | yes | | yes | items, activities | costing methods (TA and TDABC) | yes | 20.0% and without care path alteration | , , |
| 2020 | (Ning et al., 2020) | Oncology | TDABC | full (FSE) | single | retro | yes | yes | yes | items, activities | treatment care paths (MRI-guided vs. usual care) | yes | yes, estimate for each 10.0% decrease in case | s. |
| 2020 | (Ahluwalia et al., 2020) | Surgical, orthopaedics fracture | TDABC | full (FSE) | single | pro | yes | yes | yes | items, activities | treatment care paths (home care vs. usual care), costs vs. reimbursements | yes | duration from baseline £2,018 per patient | st |
| 2020 |) (Caloway et al., 2020) | Paediatric, neonatal | TDABC | partial | single | retro | yes | yes | yes | items, activities | before and after intervention (family-centred care | yes | yes, 36.0% or \$92,000 per tracheostomy care | |
| | (Burnhope et al., 2020) | Surgical, cardiac/thoracic | AC (other) | partial | multi | retro | yes | | | items | coordination program) patients, implant devices | yes | cvcle | s |
| |) (Lenfant, Sawczyn, Kim, Aminsharifi, & | | AC (other) | partial | single | retro | , | | | items | | ves | yes, multiple | |
| | (Hernandez, Kaplan, Witkowski, Faison, | | TDABC | | multi, pilot | retro | yes | yes | yes | items, activities | before and after intervention (IPUs) | ves | yes, quarterly costs | s |
| | (Basto, Chahal, & Riedel, 2019) | | TDABC | partial (PSE) | | | | yes | | | treatment care paths (parallel vs. induction design | | declined yes, estimate OR time | |
| | (McCreary et al., 2019) | Oncology Surgical. orthonaedics fracture | TDABC | partial (FSE) | single | pro | yes yes | | yes | items, activities items | in OR) | yes yes | reduction of 55 min, or \$,2818 missed revenue | - s |
| | (Abluwalia et al., 2019) | Surgical, foot debridement | TDABC | partial (FSE) | single | retro | jes | | yes | items | before and after intervention (traffic-light | ves | | |
| | (Annuwana et al., 2019) (Kurt, Saban, Cankaya, & Annac, 2019) | | | | - | | | | | | principle) | | | |
| | | | TDABC | ull (entire department | single | retro | yes | yes | yes | items, activities | | yes | | s |
| |) (Danilyants, MacKoul, van der Does, Hav | | AC (other) | partial (FSE) | single | retro | | | | items | | yes | | s |
| |) (Danilyants, MacKoul, Baxi, van der Doe | | AC (other) | partial (FSE) | single | retro | | | | items | | yes | | |
| | (Chatfield et al., 2019) | Multiple | Direct costing | partial | single | retro | | | | items | | yes | | |
| | (Featherall et al., 2019) | Surgical, orthopaedic arthroplasty | Direct costing | full (FSE) | multi | retro | | | | items | intervention multiple treatment care paths (colonoscopy, aortic | | yes, £255 per patient yes, 70.9% (\$27,103) | |
| 2018 | 3 (Martin et al., 2018) | Surgical, carpal tunnel release | TDABC | partial (FSE) | multi | retro | yes | | yes | items, activities | valve replacement, Carpal Tunnel Release) | yes | yes, 10.9% (327,103) and 31.6% (\$178) yes, decreased by \$496 | |
| 2018 | (Robinson et al., 2018) | Surgical, appendicitis | AC (other) | partial (FSE) | single | pro | | yes | yes | items | pre and post intervention (dashboard) | yes | per operation | |
| 2018 | 6 (Karns et al., 2018) | Surgical, orthopaedic | Direct costing | partial (FSE) | single | retro | | yes | | items | intervention | yes | | |
| 2013 | (Isaacson et al., 2017) | Urology | TDABC | partial | single | Pro | yes | | yes | items, activities | | yes | yes, estimate two hours per cycle 11.0% cost reduction, | s |
| 2011 | 7 (Yu et al., 2017) | Paediatrics, appendicitis | TDABC | full (FSE) | single | pro | yes | yes | yes | items, activities | treatment care paths (pre and post intervention) | yes | and 51.0% hospitalization time | ye |
| 201 | 7 (Parra et al., 2017) | Urology | AC (other) | partial | multi | retro | | yes | | items | | | | |
| 2016 | 6 (French et al., 2016) | Oncology, surgical | TDABC | tial (FSEs, 11 surgeri | single | retro | yes | | | items, activities | potential staffing ratios | yes | estimate 13.0-28.0% per surgery type | xdeller |
| 2016 | i (Ilg et al., 2016) | Oncology | TDABC | full | single | retro | yes | yes | yes | items, activities | treatments (high-dose vs. low-dose brachytherapy) | yes | \$2,668 difference across treatments | |
| 2015 | (Kaplan et al., 2015) | Urology | TDABC | partial (FSE) | single | retro | yes | yes | | items, activities | five treatment care paths | yes | yes, 400.0% increase from least to most expensive nathways | s |
| | | | | | | | | | | | | | | |
| | (McLaughlin, Upadhyaya, et al., 2014) | Surgical, neurosurgery | ABC | partial (FSE) | single | retro | yes | | | items, activities | patients | yes | yes, 25.0% | ye |
| 2014 | (McLaughlin, Upadhyaya, et al., 2014) (McLaughlin, Martin, et al., 2014) | Surgical, neurosurgery Surgical, neurosurgery | ABC | partial (FSE) partial (FSE) | single | retro | yes yes | | | items, activities items, activities | patients | yes yes | yes, 25.0% | yes su |

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PRISMA 2020 for Abstracts Checklist

| Section and Topic | ltem # | Checklist item | Reported (Yes/No) |
|---|-----------|---|----------------------|
| TITLE | • | | |
| 7 Title | 1 | Identify the report as a systematic review. | yes |
| BACKGROUND | • | | |
| ⁹ Objectives | 2 | Provide an explicit statement of the main objective(s) or question(s) the review addresses. | yes |
| METHODS | | | |
| 12 Eligibility criteria | 3 | Specify the inclusion and exclusion criteria for the review. | yes |
| I ³ Information sources | 4 | Specify the information sources (e.g. databases, registers) used to identify studies and the date when each was last searched. | yes |
| Risk of bias | 5 | Specify the methods used to assess risk of bias in the included studies. | no |
| Synthesis of results | 6 | Specify the methods used to present and synthesise results. | yes |
| | | | |
| 20 Included studies | 7 | Give the total number of included studies and participants and summarise relevant characteristics of studies. | yes |
| 22 Synthesis of results 23 | 8 | Present results for main outcomes, preferably indicating the number of included studies and participants for each. If meta-analysis was done, report the summary estimate and confidence/credible interval. If comparing groups, indicate the direction of the effect (i.e. which group is favoured). | yes |
| 25 DISCUSSION | - | | |
| ²⁶ Limitations of evidence | 9 | Provide a brief summary of the limitations of the evidence included in the review (e.g. study risk of bias, inconsistency and imprecision). | yes |
| ²⁸ ₂₉ Interpretation | 10 | Provide a general interpretation of the results and important implications. | yes |
| | | | |
| I Funding | 11 | Specify the primary source of funding for the review. | yes |
| Registration | 12 | Provide the register name and registration number. | N/A |
| 34 35 36 37 <i>From:</i> Page MJ, McKenzi 38 reviews. BMJ 2021;372:n7 39 40 41 42 43 | | ossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reportin 0.1136/bmj.n71 For more information, visit: <u>http://www.prisma-statement.org/</u> | g systematic |
| 14 15 | | For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml | |

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PRISMA 2020 Checklist

| Section and Topic | ltem # | Checklist item | Location where item is reported |
|-------------------------------|-----------|--|---------------------------------------|
| TITLE | | | |
| Title | 1 | Identify the report as a systematic review. | pg 0 |
| ABSTRACT | | | |
| Abstract | 2 | See the PRISMA 2020 for Abstracts checklist. | |
| INTRODUCTION | | | |
| Rationale | 3 | Describe the rationale for the review in the context of existing knowledge. | pg1-3 |
| Objectives | 4 | Provide an explicit statement of the objective(s) or question(s) the review addresses. | pg 3 |
| METHODS | | | |
| Eligibility criteria | 5 | Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses. | pg 4 and supplemer |
| Information sources | 6 | Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted. | Pg 4 and supplement |
| ³ Search strategy | 7 | Present the full search strategies for all databases, registers and websites, including any filters and limits used. | Supplement |
| Selection process | 8 | Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process. | pg 6 |
| Data collection process | 9 | Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process. | рд б |
| Data items | 10a | List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect. | pg 4, supplement |
| 2 7 2 | 10b | List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information. | pg 4, supplement |
| Study risk of bias assessment | 11 | Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process. | pg 4, supplement |
| Effect measures | 12 | Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results. | pg 4 |
| 2 Synthesis 8 methods | 13a | Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)). | pg 8 |
| 1 | 13b | Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions. | N/A |
| ò | 13c | Describe any methods used to tabulate or visually display results of individual studies and syntheses. | pg 8 |
| | 13d | Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used. | pg 4 |
| ₽ D | 13e | Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression). | N/A |
| | 13f | Describe any sensitivity analyses conducted to assess robustness of the synthesized results. | N/A |
| Reporting bias assessment | 14 | Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases). | N/A, discussed pg 23 |
| Certainty assessment | 15 | Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome. For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml | N/A |

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PRISMA 2020 Checklist

| Section and Topic | ltem # | Checklist item | Location where item is reported |
|--|-----------|--|---------------------------------------|
| RESULTS | | | |
| Study selection | 16a | Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram. | pg 5,6, 7 |
| | 16b | Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded. | pg 5 (flowchart |
| Study characteristics | 17 | Cite each included study and present its characteristics. | pg 7-14, and supplement |
| Risk of bias in studies | 18 | Present assessments of risk of bias for each included study. | N/A |
| Results of individual studies | 19 | For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots. | N/A |
| Results of | 20a | For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies. | N/A |
| syntheses | 20b | Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect. | N/A |
| • | 20c | Present results of all investigations of possible causes of heterogeneity among study results. | pg 7-9 |
| | 20d | Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results. | N/A |
| Reporting biases | 21 | Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed. | N/A |
| Certainty of evidence | 22 | Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed. | N/A |
| DISCUSSION | | | |
| Discussion | 23a | Provide a general interpretation of the results in the context of other evidence. | pg 18-21 |
| 8 | 23b | Discuss any limitations of the evidence included in the review. | pg 21 |
| ₽ D | 23c | Discuss any limitations of the review processes used. | pg 21, 4 |
| | 23d | Discuss implications of the results for practice, policy, and future research. | pg 18-21 |
| OTHER INFORMA | ΓΙΟΝ | | |
| Registration and | 24a | Provide registration information for the review, including register name and registration number, or state that the review was not registered. | pg 4 |
| protocol | 24b | Indicate where the review protocol can be accessed, or state that a protocol was not prepared. | supplement |
| | 24c | Describe and explain any amendments to information provided at registration or in the protocol. | N/A |
| Support | 25 | Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review. | Funding statement |
| Competing interests | 26 | Declare any competing interests of review authors. | Author statement |
| Availability of data, code and other materials | 27 | Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review. | Data availability statement |

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44 From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372:n71. doi: 45 10.1136/bmj.n71 For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml For more information, visit: <u>http://www.prisma-statement.org/</u>

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