

October 5, 2020

VIA E-MAIL FILING

Centers for Medicare & Medicaid Services
U.S. Department of Health and Human Services
Attention: CMS-1734-P
P.O. Box 8016
Baltimore, MD 21244-8016

RE: Medicare Program; CY 2021 Payment Policies under the Physician Fee Schedule and Other Changes to Part B Payment Policies; Medicare Shared Savings Program Requirements; Medicaid Promoting Interoperability Program Requirements for Eligible Professionals; Quality Payment Program; etc.

The American Association of Hip and Knee Surgeons (AAHKS) appreciates the opportunity to submit comments to the Centers for Medicare & Medicaid Services (CMS) on its Medicare physician fee schedule (PFS) proposed rule for fiscal year 2021 (hereinafter referred to as “FY 2021 PFS proposed rule” or “proposed rule”).

AAHKS is the foremost national specialty organization of more than 4,000 physicians with expertise in total joint arthroplasty (TJA) procedures. Many of our members conduct research in this area and are experts in using evidence based medicine to better define the risks and benefits of treatments for patients suffering from lower extremity joint conditions. In all of our comments, AAHKS is guided by its three principles:

- Payment reform is most effective when physician-led;
- The burden of excessive physician reporting on metrics detracts from care; and
- Patient access, especially for high-risk patients, and physician incentives must remain a focus.

Our comments focus on the FY 2021 PFS proposed rule are summarized as follows:

I. Executive Summary

- CMS Should Maintain the Current Work RVUs for CPT Codes 27130 and 27477 as the RUC-recommended Levels Do Not Represent Work Actually Performed
- Rather, the RUC-recommended Work RVUs are Below RUC Survey Results
- The RUC Survey Results Do Not Account for Preservice Optimization Work Which the RUC and CMS Acknowledge is Performed

- CMS Should Recognize Preservice Optimization Work by Including Pre-service Time in the Work RVUs for CPT 27130 & 27447
- Preservice Time Exists and is Increasing Through the Growth in Arthroplasty Bundled and Value-Based Care
- Extensive Peer-Reviewed Data Support the AAHKS & AAOS Recommendations for Preservice Optimization Work Time
- Medicare Law Clearly Gives CMS Authority to Reimburse Preservice Surgical Time
- CMS Has the Authority and Rationale to Decline the RUC Recommendations
- Existing CPT Codes are Imperfect to Capture Arthroplasty Preservice Optimization Work
- None of the Existing CPT Codes Can Appropriately Capture All Preservice Optimization Time
- CMS Should Create New G-Codes Specifically for Arthroplasty Preservice Optimization If It Accepts Current RUC Recommendations
- Accepting the RUC Recommended wRVU Reductions Has Multiple Adverse Consequences
- Medicare-imposed Reimbursement Reductions Based on Efficiencies in Physician Post-operative Time Will Undermine the Transition to Value-Based Care
- A Combined Pandemic and Economic Crisis is the Wrong Time to Reduce Reimbursement to Medicare Providers
- Implementing this Reduction Incentivizes Commercial Payers to Manipulate the Misvalued Code Nomination Process
- Any Reduction in Work RVUs Must Occur Concurrent with CMS Confirmation of Appropriate CPT Codes to Capture Preservice Optimization Work
- When Evaluating Public Nominations for Potentially Misvalued Codes, CMS Should Formally Consider Whether Other Factors are Changing the Practice Patterns Associated with the Codes in Question, Such as Overall Status of the Procedure Transitioning to Value-based Care, and What CMS-directed Policies are Driving the Changes
- CMS Should Provide All Technical Assistance Necessary to Aid Congress in Preventing the 10% Reduction in Reimbursement to Specialists Due to the Conversion Factor

II. Hip-Knee Arthroplasty (CPT codes 27130 and 27447) – Valuation of Specific Codes (Sec. II.H.4.(8))

a. CMS Should Maintain the Current Work RVUs as the RUC-recommended Levels Do Not Represent Outcome-Maximizing Work Actually Performed

i. RUC-recommended Work RVUs are Far Below RUC Survey Results. Therefore, the RUC's Own Survey Data Justifies Maintaining Current Levels Even Without Adding Preservice Time

For reasons discussed later in this comment letter, in the 2019 PFS Final Rule, CMS added CPT codes 27130 and 27447 for total hip arthroplasty (THA) and total knee arthroplasty (TKA) to the list of potentially misvalued codes. As a result, the codes were surveyed at the October 2019

meeting of the American Medical Association's Relative Value Scale Update Committee (RUC). CMS now proposes the RUC-recommended levels of 19.60 work relative value units (wRVUs) for each code.

Subsequent to the final survey instrument review and approval by the RUC Research Subcommittee, the American Association of Orthopaedic Surgery (AAOS) and AAHKS surveyed orthopaedic surgeons with the approved survey instrument and presented the results at the October 2019 RUC meeting. The survey data was generated by 206 orthopaedic surgeons, a robust response by RUC standards. The AAOS put forth a compelling, data-driven assessment that supported maintaining the current wRVU levels of 20.72, despite the fact that the median wRVU value from the survey was 24.00. The 25th percentiles were 22.50 for THA and 22.14 for TKA. The basis for our reaffirmation of 20.72 accounted for one less visit in the hospital post-operatively. A copy of the AAOS presentation to the RUC is attached below as **APPENDIX A**.

Table 1. Comparison of wRVU Survey Results and Recommendations for CPT Codes 27130 & 27447

Current wRVU	Median wRVU RUC Survey Results	25 th Percentile of wRVU RUC Survey Results	AAHKS & AAOS Recommended wRVU	RUC-recommended wRVU
20.72	24.00	22.50 (THA) 22.14 (TKA)	20.72	19.60

We note that our recommended value of 20.72 is already below the 20th percentile of the RUC survey results. The RUC-recommended level of 19.60 wRVUs is even further below the 20th percentile. This anomalous, punitive, low recommendation should be contrasted against the new wRVUs assigned to the revised evaluation and management (E/M) codes which become effective in 2021. For those E/M codes, the values are based on the median of the RUC's survey results.

Further, AAHKS does not concede that one less post-operative patient visit in the hospital suggests that there is less work occurring for joint arthroplasty patients. One less post-operative visit is generally occurring because overall patients are being discharged from inpatient status sooner following arthroplasty surgery. However, earlier discharge times are the result of more, not less, work by surgeons and clinical staff. As discussed further in this comment letter, it is additional surgeon and staff time spent on managing comorbidities, patient and family education, intra-facility coordination, and discharge planning that leads to a patient being ready for safe discharge in a shorter time-frame.

ii. RUC Survey Results Do Not Account for Pre-service Work Which the RUC Acknowledges is Performed

At the April 2019 meeting of the RUC, in preparation of surveying the codes, AAHKS and AAOS requested a modified survey instrument that would have the ability to capture the additional preoperative work outside the global period that is being done by physician practices

to optimize patient outcomes (fewer adverse events, shorter lengths of stay, fewer discharges to skilled nursing facilities, fewer readmissions, etc.) and increase the overall value of the care being delivered. The RUC declined this proposal, claiming there was a lack of compelling data and asserting that it would have to grant preservice time for everybody.

This rejection was reaffirmed by the RUC Research Subcommittee during their June 4, 2019, call, partly on the grounds that if the RUC allowed preoperative time to be surveyed and included for orthopaedic surgery then the RUC would have to “allow it for everyone.” While the RUC did permit an additional question in the survey to help capture clinical staff time on the practice expense side, the response was troubling as the RUC had indeed recently allowed this type of request for additional physician/qualified health professional preservice time for both kidney transplants as well as endovascular reconstruction of abdominal aortic aneurysm.¹

Secondly, during that call, the RUC expressed their opinion that there was a lack of compelling data on preservice time to justify such a request. Below, we discuss the extensive data on preservice time performed for THA and TKA. AAHKS and AAOS were gratified that, as stated in the RUC’s summary submitted to CMS in October 2019, the RUC agreed that the pre-service planning activities occur.

iii. CMS Should Recognize Preservice Optimization Work by Including Pre-service Time in the Work RVUs for These Joint Arthroplasty Codes

While we recommend that CMS recognize preservice optimization work within joint arthroplasty RVUs, we understand that CMS will establish a standard by which it can transparently and fairly evaluate any requests to add preservice time to various CPT codes. We propose below a series of requirements for CMS to evaluate to determine whether preservice time should be added. For each, we explain how joint arthroplasty satisfies these requirements.

Briefly, these requirements are as follows: (1) CMS can confirm that the preservice work is occurring; (2) extensive, independent data supports the values that would be assigned to preservice work; (3) preservice time in question is not otherwise precluded by Medicare program regulations or guidance; (4) the preservice time cannot be captured by currently available CPT codes; and (5) data supports the determination that the preservice work is at least as prevalent as other work included in current wRVUs.

A. Preservice Time Exists and is Growing Through the Growth in Arthroplasty Bundled and Value-Based Care

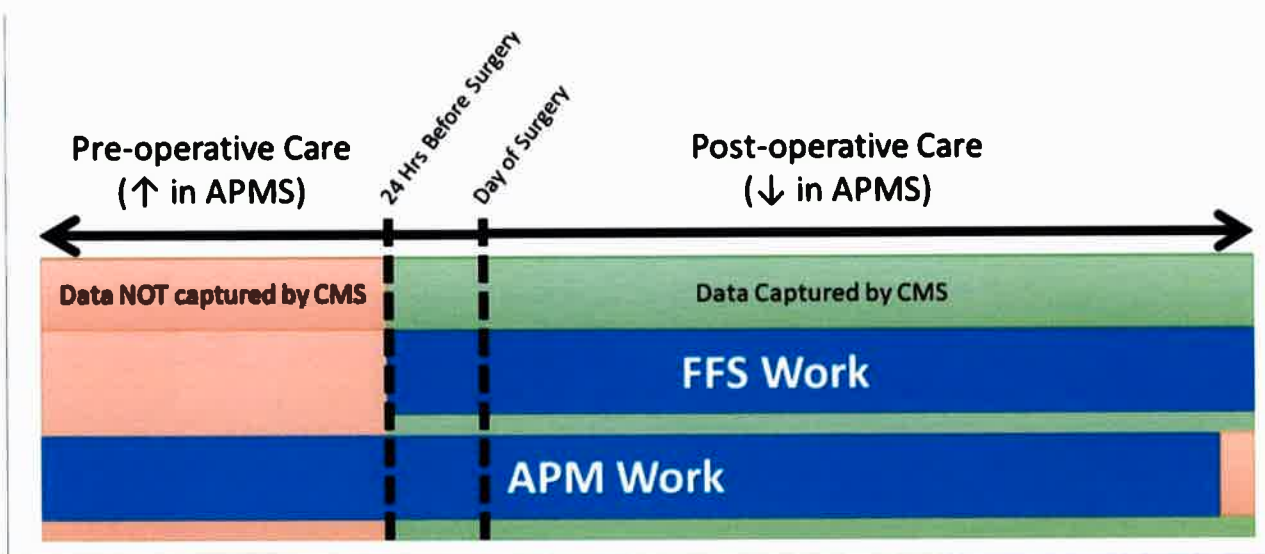
We believe CMS has rightly been persuaded that arthroplasty preservice time is frequently occurring, as reflected by CMS’s statement, “we are seeking comment from the medical community on how to consider and/or include pre-optimization time [...] going

¹ See recognition and reimbursement of preoperative work for Endovascular Aortic Repair (CPTs 34701, 34703, 34705, 34707) and Liver Transplant (CPTs 47140, 47141, 47142).

forward.”² This conclusion is supported and confirmed by the RUC’s own acknowledgement that arthroplasty preservice time exists: “The RUC discussed options on how to capture these preservice activities performed by the physician or QHP.”³ Consistent with other elements of the Medicare program, the RUC’s findings are informative but not determinative for CMS. In this case, the RUC statement offers confirmation of arthroplasty preservice optimization time.

Orthopaedic surgeons, and THA and TKA specifically, have been at the forefront of the transition to value-based care and as high-volume, high-value procedures that present significant opportunities for improvements in quality and efficiency. Hip and knee surgeon participation in alternative payment models (APMs) is approaching 50%, the highest rate of any subspecialty. AAHKS has worked with CMS and its Center for Medicare and Medicaid Innovation (CMMI) to improve the quality of care for THA and TKA, particularly through our members’ adoption of the Medicare Bundled Payments for Care Improvement (BPCI) and Comprehensive Joint Replacement (CJR) models.⁴ Our members’ work through these models has improved outcomes, reduced patient time spent in the hospital, and subsequently saved the trust funds hundreds of millions of dollars.

Table 2. Increase in Arthroplasty Preservice Time Due to Value-Based Care



Much of the effectiveness of these programs, however, appears to have come from the shift from reactive, hospital-based postoperative work to proactive, office-based preoperative work. Our members and associated qualified health professionals (QHPs), and clinical staff have experienced significant increases in preservice work to optimize patients through screening, education, and coordination of care with other health care providers (patients’ primary care

² 85 Fed. Reg. 50155 (Aug. 17, 2020).

³ AMA RUC Oct 2019 Report to CMS.

⁴ In 2015, AAHKS convened with CMS and others the *Patient Reported Outcomes (PROs) Summit for Total Joint Arthroplasty* that led to coordination on PROs that could be used in public and private bundled payment models.

physicians, medical specialist consultants, physical therapists, post-acute care, and others), and from other activities required to ensure the best outcome for a patient's surgery. However, these activities on behalf of the patient and family are not included in the traditional RUC survey definition of "pre-service activities," as well as the time clinical staff spent providing certain pre-service activities for the patient and family.

Evidence has made clear that the additional time spent on these preoperative activities has resulted in improved clinical quality for patients and significant savings by reducing patients' post-operative lengths of stay, readmissions, and other complications. An April 2019 New England Journal of Medicine article estimated that 42% of TKA and THA procedures over a two-year period were done through CJR and resulted in a 3.1% reduction in Medicare spending for Total Knee Replacement and Total Hip Replacement.⁵

In support of adding this preservice time, it is important to note that it is the increased work by surgeons, managing the patient experience and optimization, that leads to arthroplasty savings realized in reduced spending by the facility and post-acute care. Over the last seven years, arthroplasty surgeons have led the efforts which have reduced the average cost of an episode of care from approximately \$35,000 to approximately \$20,000. The current Medicare reimbursement to arthroplasty surgeons of approximately \$1200 (20.72 wRVU) accounts for about six percent of this reduced episode cost. The proposed reduction in wRVUs (5% or \$60) is diminutive when compared to the hundreds of millions of dollars that arthroplasty surgeons have saved the trust through our commitments to value-based care. Penalizing surgeons for this successful collaboration is disheartening, especially given the current RUC survey data which yielded a median of 24.00 wRVUs.

B. Extensive Data Supports the AAHKS & AAOS Recommendations for Preservice Work Time

We proposed to the RUC that the current wRVU levels be increased by adding 30 minutes of physician time to the standard preservice time of 40 minutes. We also proposed to the RUC a total of 90 minutes of clinical staff preservice time, which is an addition of 30 minutes to the standard package of 60 minutes. These recommendations are supported by ample "extant" peer-reviewed data discussed below. The clinical staff time request was supported by data that the RUC allowed to be captured through an additional survey question.

Although the current RUC values includes 40 minutes of preservice time starting from the day before surgery, a published, peer-review survey of our membership finds that surgeons spent an average of an additional 43.2 minutes while physician assistants and nurse practitioners spent an additional 97.9 minutes per patient on preoperative care prior to that time.⁶ Ancillary medical

⁵ Michael L Barnett, et al., Two year Evaluation of Mandatory Bundled Payments for Joint Replacement, 380 NEW ENGLAND J. OF MED., 252-262, (Jan. 17, 2019), <https://www.nejm.org/doi/full/10.1056/NEJMsa1809010>.

⁶ Matthew J. Grosso et al., Surgeons' Preoperative Work Burden Has Increased Before Total Joint Arthroplasty: A Survey of AAHKS Members, 35 J. OF ARTHROPLASTY 2318-2322 (2020).

staff spent a mean of 110.2 minutes per patient. The most common tasks include preoperative phone calls for care coordination, templating and surgical planning, and preoperative patient education classes.⁷ The conclusion is that surgeons and advanced practice providers spend nearly two hours per arthroplasty patient on preoperative care not accounted for by current RUC methodology. This study, *Substantial Preoperative Work Is Unaccounted for in Total Hip and Knee Arthroplasty* from the Journal of Arthroplasty, is attached as **APPENDIX B.**

The following is a list of the most common preservice work activities that were surveyed for this study.

Table 3. Most Common Preservice Work by Physicians, QHPs, and Clinical Staff as Surveyed by AAHKS

Screening and risk assessment of comorbidities		
<ul style="list-style-type: none"> • Shared decision-making, goal setting • Patient education and optimization discussion • Medical interventions, referrals, consults • Follow-up visits, reassessments • Discharge planning • Enter data into prospective longitudinal outcome databases or registries • Pre-operative planning, templating, packet presentation • Select data with patient and family; schedule surgery in OR scheduling system 	<ul style="list-style-type: none"> • Obtain prior authorization • Schedule and/or confirm appointments for evaluations by appropriate consultants (PCP, cardiology, neurology, dentist, vascular surgery, endocrinology, etc.) • Schedule pre-operative assessment with anesthesia • Schedule pre-operative appointment with physical therapy • Schedule pre-operative appointment with case manager and/or social worker • Schedule pre-operative education class 	<ul style="list-style-type: none"> • Coordinate and schedule final clearance assessment • Staff 1-2 hour education class attended by multiple patients • Phone calls, e-mails, other communication with patient, family and other providers to coordinate post-operative visits and optimization • Pre-operative patient and family member form completion • Phone call to patient or family to review preparation instructions (NPO, medications, antibiotic shower)

Additionally, we have performed a review of published peer-reviewed surveys of preservice arthroplasty time. Compiled data, raw data, and excluded studies are presented in detail in **APPENDIX C.** We summarize the average times found below in **Table 4.**

⁷ *Id.*

Table 4. Preservice Time (from decision to operate until the day before operation) Prior to Primary TJA (Minutes)

Author	Title	Patients/ respondents	Physician or QHP			Office Staff		
			Mean	Standard dev.	Median	Mean	Standard dev.	Median
Grosso, MJ et al	Surgeons' Preoperative Work Burden Has Increased Before Total Joint Arthroplasty: A Survey of AAHKS Members	Approx. 256	153	179	110	176	176	125
Krueger, CA et al	Substantial Preoperative Work Is Unaccounted for in Total Hip and Knee Arthroplasty	438	134	87.04	n/a	110	72.04	n/a
Halawi, MJ et al	Quantifying Surgeon Work in Total Hip and Knee Arthroplasty: Where Do We Stand Today?	666	22	10	n/a	n/a	n/a	n/a
Husted, H et al	Time-driven activity-based cost of outpatient total hip and knee arthroplasty in different set-ups	1110	50	n/a	n/a	n/a	n/a/	n/a
Wasterlain, AS et al	Quantifying the Perioperative Work Associated With Total Hip and Knee Arthroplasty: The Burden Has Increased With Contemporary Care Pathways	1000	42	12	n/a	n/a	n/a	n/a
Totals			76.83	70.46	110	143	124.02	125

C. Inclusion of the Preservice Time in the Arthroplasty Codes is Not Otherwise Precluded by Medicare Program Regulations and Guidance

A thorough review of program regulations and guidance finds no current policies or procedures that preclude the arthroplasty CPT codes from including in the wRVUs time for non-face-to-face preservice optimization time. This time is distinguishable from E/M visits, which are face-to-face visits between physician and patient. Program guidance is clear that such visits that occur after the decision to schedule surgery, and before the day before admission, are already considered a part of the global surgical package.⁸

D. The Proposed Arthroplasty Preservice Time is Not Otherwise Captured in Existing CPT Codes

Another necessary requirement is that the proposed preservice time is unique and could not be double billed through the use of other existing CPT codes. A thorough review has found that no current CPT codes accurately describe the time, personnel, sequence, or work involved in arthroplasty preservice work. This analysis is discussed at length below in **Section II.b.i.**

⁸ See Medicare Claims Processing Manual Ch. 12 § 40.1.B.

iv. Medicare Law Clearly Gives CMS Authority to Reimburse Preservice Surgical Time

Recognizing and including preservice optimization time as a component of the TJA CPT codes is permitted under the broad authority Congress has given the Secretary to set a value for the work of physicians associated with a surgical procedure. Work RVUs must be based on the time and intensity required for furnishing a service and may include pre-operative and post-operative physicians' services related to a procedure. Under Medicare program law, the Secretary's determination of work RVUs for a service must be "based on the relative resources incorporating physician time and intensity required in furnishing the service."⁹

Notably, the Social Security Act also specifies "activities that occur *before* and after direct patient contact," and, with respect to surgical procedures, that "the valuation of the work component for the code would reflect a 'global' concept in which *pre-operative* and post-operative physicians' services related to the procedure would also be included."¹⁰ Further, when validating relative value units, the Act specifies that the Secretary's review process may include validation of work elements involved with furnishing a service, including time, mental effort and professional judgment, technical skill and physical effort, and stress due to risk, and "validation of the pre-, post-, and intra-service components of work."¹¹ As mentioned above, precedent already exists under which CMS includes physician preservice time in surgical CPT codes.¹²

Adding this preservice time to CPTs 27130 and 27447 is the simplest, most direct means to capture this work without disrupting the definitions of episodes under existing Medicare bundled payment programs. Otherwise, capturing this time through other codes has the effect of unbundling surgical services, which is the opposite of the trend of value-based care.

v. CMS Has the Authority and Rationale to Decline the RUC Recommendations

The Social Security Act and CMS rulemaking unambiguously confirm that AMA RUC recommendations are advisory and non-binding when CMS evaluates RVUs for potentially misvalued codes. As such, CMS may accept, modify, or reject the RUC's recommendations. The breadth of published literature provided by AAHKS to the RUC and CMS as well as the survey conducted by AAHKS and AAOS confirming the additional preservice optimization time more than justify CMS declining to adopt the RUC's recommendation of reduced wRVUs for CPT 27130 and 27447.

Section 1848(c) of the Act specifies that when the Secretary identifies potentially misvalued codes, the Secretary must make "appropriate adjustments to the relative values

⁹ SSA § 1848(c)(2)(C)(i)

¹⁰ *Id.* at (c)(1)(A); *see also* 75 Fed. Reg. 73169, 73215 (Nov. 29, 2020).

¹¹ *Id.* at (c)(2)(L).

¹² *See* recognition and reimbursement of preoperative work for Endovascular Aortic Repair (CPTs 34701, 34703, 34705, 34707) and Liver Transplant (CPTs 47140, 47141, 47142).

established”¹³ and requires the Secretary to develop a process to validate the RVUs of certain potentially misvalued codes under the PFS.¹⁴ The process for validating RVUs may include validation of work elements involved with furnishing a service, including time, mental effort and professional judgment, technical skill and physical effort, and stress due to risk, and may include validation of the pre-, post-, and intra-service components of work.¹⁵

In addition to using other methods, for both the adjustment and validation, the Secretary may use existing processes to receive recommendations on the review and appropriate adjustment of the potentially misvalued code.¹⁶ The existing processes to receive recommendations on the review are enumerated in the Act for both determining relative value units and in the scope of periodic review and adjustments of relative values. The Act states that when determining the RVU using extrapolation, the Secretary “shall *take into account* recommendations of the Physician Payment Review Commission and the results of consultations with organizations representing physicians who provide such services,”¹⁷ and when considering periodic adjustments, states the Secretary “shall *consult with* [...] organizations representing physicians.”¹⁸ In neither case does the Social Security Act mandate the Secretary follow the RUC recommendation or take into account such recommendations beyond mere consultation.

CMS expressly confirmed the role of the RUC’s recommendations in the 2011 PFS Final Rule, stating that CMS “determine[s] appropriate adjustments to the RVUs, *taking into account* the recommendations provided by the AMA RUC and MedPAC,”¹⁹ and that upon the RUC’s recommendation, CMS “then assesses the recommended revised work RVUs and/or direct PE inputs and, in accordance with section 1848(c) of the Act, [...] determine[s] *if the recommendations constitute appropriate adjustments* to the RVUs under the PFS.”²⁰ Moreover, in response to commenters that “urged CMS to rely solely on the AMA RUC to provide valuations for services under the PFS” and “expressed the belief that since CMS has reviewed the AMA RUC recommendations for codes and generally accepted these valuations in the past, these actions constitute a ‘CMS validation process,’” CMS expressly rejected commenters’ assertions that the RUC’s “actions constitute[d] a formal CMS validation process as envisioned by” the Act.²¹

CMS also stated that its “formal validation process *will further complement* the ongoing work of the AMA RUC to provide recommendations to us regarding the valuation of PFS services,” again emphasizing that the CMS valuation is not dependent on the RUC.²² CMS re-affirmed this

¹³ *Id.* at (c)(2)(K)(i)(II).

¹⁴ *Id.* at (c)(2)(L).

¹⁵ *Id.* at (c)(2)(L)(ii).

¹⁶ *Id.* at (c)(2)(K)(iii).

¹⁷ *Id.* at (c)(2)(A)(ii) (emphasis added).

¹⁸ *Id.* at (c)(2)(C)(iii) (emphasis added).

¹⁹ 75 Fed. Reg. 73169, 73214 (Nov. 29, 2010) (emphasis added).

²⁰ *Id.* at 73215.

²¹ *Id.* at 73217.

²² *Id.* at 73218.

methodology in a CY 2012 final rule,²³ a CY 2015 final rule,²⁴ and again in a CY 2020 final rule, stating:

We establish work RVUs for new, revised and potentially misvalued codes based on *our review* of information that *generally includes*, but is not limited to, recommendations received from the American Medical Association/Specialty Society Relative Value Scale Update Committee (RUC), the Health Care Professionals Advisory Committee (HCPAC), the Medicare Payment Advisory Commission (MedPAC), and other public commenters; medical literature and comparative databases; as well as a comparison of the work for other codes within the Medicare PFS, and consultation with other physicians and health care professionals within CMS and the federal government.²⁵

Further, when describing the role of RUC in the valuation process for work RVUs, CMS specifically stated “we conduct a review that included the current work RVU (if any), RUC-recommended work RVU, intensity, time to furnish the preservice, intraservice, and postservice activities, as well as other components of the service that contribute to the value,” and notably discussed CMS’s approach in instances when CMS chose not follow the RUC recommendation, stating “rather than ignoring the RUC-recommended value, we have used the recommended values as a starting reference and then applied one of these several methodologies.”²⁶

b. Existing CPT Codes are Imperfect to Capture Arthroplasty Pre-optimization Work

i. *None of the Existing CPT Codes Can Appropriately Capture All Preoptimization Time*

We appreciate the acknowledgement that AAHKS members are performing important preservice pre-optimization work that is presently uncaptured. CMS stated as follows:

We are also interested in stakeholders’ thoughts on what codes could be used to capture these pre-optimization activities that could be billed in conjunction with the services discussed previously. Overall, we are interested in continuing our ongoing dialog with stakeholders about how CMS might pay more accurately for improved clinical outcomes that may result from increased efficiency in furnishing care through activities, such as

²³ 76 Fed. Reg. 73025, 73052 (Nov. 28, 2011).

²⁴ 79 Fed. Reg. 67547, 67603 (Nov. 13, 2014).

²⁵ 84 Fed. Reg. 40482, 40484 (Sept. 27, 2019) (emphasis added).

²⁶ 84 Fed. Reg. 40482, 40565 (Aug. 14, 2019).

pre-optimization and are appreciative of information provided by the medical community.²⁷

On a related note, the RUC stated:

The RUC discussed options on how to capture these pre-service activities performed by the physician or QHP. The RUC indicated that separate planning codes may be developed or the current prolonged services, CPT codes 99358 Prolonged evaluation and management service before and/or after direct patient care; first hour or 99359 Prolonged evaluation and management service before and/or after direct patient care; each additional 30 minutes (List separately in addition to code for prolonged service) may be reported for these activities.²⁸

We appreciate the advice and request for input, and we provide our survey of potential candidate codes to capture surgeon and clinical staff preservice time for arthroplasty. See **APPENDIX C. Evaluation of CPT Codes for Applicability to TJA Pre-optimization Time (Which existing CPT codes may be billable now; which would require some adjustment)**. As shown in that table, many of these codes are close and related to preservice arthroplasty work, but no one code or combination of codes allows appropriate capture of the full work being performed.

“Prolonged service w/o contact codes” are close to describing physician work, but do not include clinical staff time. Further, these codes (99358 & 99359) are billed per day, and, in practice, arthroplasty preservice work is spread over multiple days and may not equal sufficient cumulative time on any one day. Transitional care management codes describe preservice optimization work, but this kind of discharge planning usually occurs before the operation, and not at the required time of immediately before discharge. G2064 (Principal Care Management) also seems close, but we would need confirmation from CMS that the osteoarthritis treatment, of which TJA is a part, would qualify as the principal chronic condition that supports billing this code by physician and clinical staff.

CMS should also clarify whether the kind of non-face-to-face work by physicians and staff discussed here is excluded from included in the surgical bundle. For example, Medicare program guidance says that “Medicare includes the following services in the global surgery payment when provided in addition to the surgery: Pre-operative *visits* after the decision is made to operate. For major procedures, this includes pre-operative visits the day before the day of surgery.”²⁹ We would need conformation from CMS that this manner of preservice preoperative work is or is not included in the global surgical payment. For instance, can we presume that non-face-to-face

²⁷ 85 Fed. Reg. 50155, 50074 (Aug. 17, 2020).

²⁸ AMA RUC Oct 2019 Report to CMS.

²⁹ MLN Matters, Global Surgery Booklet, 5 (Sept. 2018) (emphasis added).

work does not comprise a pre-operative visit under this policy? What about staffing education classes attended by multiple patients?

- ii. If CMS Does Not Add Preservice Time to the Existing Joint Arthroplasty Codes, CMS Should Instead Create New G-Codes Specifically for Arthroplasty Preservice Optimization*

If no existing code in its current reimbursement standard can adequately capture the preservice optimization time, AAHKS urges CMS to set alternative reimbursement language/standards through the creation of a new G-code for arthroplasty preservice optimization. This code could reimburse up to 30 minutes of physician time and up to 90 minutes performed by clinical staff cumulatively per patient for the activities described in Table 2. We believe that if preservice time will not be included in the underlying TJA CPT codes, CMS should implement this option now without losing one or two years going through the process with the RUC to create a new code.

c. Accepting the RUC Recommendations Has Multiple Adverse Consequences

Accepting the RUC recommendations amounts to a 5.4% cut in work RVUs for CPTs 27130 and 27447 and an overall reduction in physician payment rates for TJA of approximately 3.4%. Such a reduction, imposed in this manner, hurts the Medicare program in multiple ways.

- i. Reimbursement Reductions Based on Efficiencies in Physician Time Will Undermine the Transition to Value-Based Care*

CMS should preserve incentives for participation in Medicare innovation models by not reducing fee-for-service rates based on new value-based care driven efficiencies. Such a reduction broadcasts a strong, chilling message to all physicians participating in—or considering participating in—APMs: when providers in the vanguard of value-based care and bundled payments begin to achieve some efficiencies in the delivery of care, CMS will use those positive developments as a justification to cut fee-for-service reimbursement. Providers, patients, and policy makers should be clear on the process that led to this development, particularly given that a for-profit commercial insurance company initiated this valuation process with the intention of ultimately driving down reimbursement to contracted physicians who are paid a percentage of Medicare rates.

The potential to improve care for our patients and reduce overall Medicare expenditures through Advanced APMs and other value-based care arrangements should not be threatened by simultaneous reductions in work RVUs. Maintaining the current level would align with the agency's mission of encouraging new, more efficient and more equitable payment models that properly incentivize quality efforts. The combination of the Medicare program putting TJA procedures at the forefront of value-based and site-neutral care and simultaneously threatening a potential PFS reimbursement reduction for these procedures cannot help but create an impression among orthopaedic surgeons that their profession is under assault. In effect, the

Medicare program is encouraging orthopaedic surgeons to take on more risk under alternative payment models, but simultaneously threatening to reduce overall reimbursement, leaving our members with more at risk for lower reimbursement. Rate reduction is risky in light of extensive CMS-driven transition in regulation and reimbursement of joint replacement surgery now, including the transition to outpatient and Ambulatory Surgery Centers (ASCs); learning the 2-midnight rule; CJR extension and interaction with BPCI-A; upcoming MIPS MVP episodes; and partnering with CMS to develop new models and new measures.

ii. A Combined Pandemic and Economic Crisis is the Wrong Time to Reduce Reimbursements to Medicare Providers

In addition to the challenges of the multiple Medicare-imposed transformations of TJA reimbursement and regulation discussed above, the external factors of the COVID-19 pandemic make this a curious time for CMS to propose reducing Medicare reimbursements. Orthopaedic surgeons and their practices have been significantly impacted by the pandemic. Consistent with CMS guidelines on elective procedures, many AAHKS practices closed for several months earlier this year. That suspension has created a backlog in joint replacement surgeries to be scheduled, but also equates to lost volume for surgeons as they had already been operating at full capacity before the pandemic. Additionally, the ability for these surgical practices to work at full capacity is now diminished due to the extra precautions of reducing COVID-19 transmission risks in the surgical setting. Closed practices and delayed surgeries impact not only surgeons but also the staff they employ.

Moreover, of AAHKS members surveyed:

- 12% report that their hospitals are still unable to recommence elective inpatient surgery
- 60% report that their clinic volume is reduced
- 27% report that restrictions on elective procedures have remained in place with no change
- 49% report that they remain unable to rehire furloughed staff
- 52% report they are concerned that their work poses a risk to their families.

It is ironic that during a time when Congress has directed HHS to distribute \$175 billion in Provider Relief Funds in a matter of months as economic relief, CMS believes that Medicare provider reimbursement can and should be reduced without adverse impact. It is further ironic that during the COVID-19 public health emergency, CMS has issued three regulations exercising the maximum extent of its regulatory discretion to ensure payments flow to Medicare providers and plans, but CMS is choosing to use its discretion in this case to reduce reimbursements to Medicare providers.

Orthopaedic surgeons and others are already facing a 10.61% PFS reduction in 2021 due to the statutorily imposed conversion factor, which must maintain PFS budget neutrality in light of improved rates to primary care providers for E/M services. Proposing a wRVU reduction with

a simultaneous conversion factor reduction during a time in which CMS is otherwise exercising maximum regulatory flexibility and distributing billions in Provider Relief payments reinforces the impression that orthopaedic surgery is under assault by Medicare.

iii. Implementing this Reduction Incentivizes Commercial Payers to Manipulate the Misvalued Code Nomination Process

The code review process for CPT codes 27130 and 27447 was initiated by a for-profit commercial insurance company that manipulated CMS's public nomination process for potentially misvalued codes with the intention of ultimately driving down reimbursement to contracted physicians who are paid a percentage of Medicare rates. CMS's approval of the proposed reduction will create a growth industry among commercial payers to use the slimmest of data to nominate their high paying services codes as misvalued to similarly manipulate the misvalued code nomination process. If CMS fails to protect the code nomination process from this kind of abuse, the integrity of CMS's RVU valuation system will be undermined. Congress gave the Secretary a mandate to appropriately reimburse providers who serve Medicare beneficiaries, and this mission should not be conflated or confused with payers' commercial objectives to improve their negotiating leverage with physicians and increase profits.

d. CMS Must Distinguish Between Value-Based Care Incentives and Its Statutory Responsibility to Set a FFS Rate Based on the Time and Intensity of Physician Work

We wish to respond to CMS's last remark from the preamble on the arthroplasty codes. CMS says it is "interested in continuing our ongoing dialog with stakeholders about how CMS might *pay more accurately for improved clinical outcomes* that may result from increased efficiency in furnishing care through activities, such as pre-optimization and are appreciative of information provided by the medical community."³⁰ AAHKS is always appreciative of dialogue with CMS over incentivizing quality and efficiency through reimbursing for improved clinical outcomes. That is the root of value-based care. AAHKS appreciates that CMS staff has always been available to hear our suggestions, concerns, and feedback over the Medicare Quality Payment Program (QPP) as well as various innovation models sponsored by CMMI. In fact, in 2015, AAHKS convened with CMS and others in Baltimore the *Patient Reported Outcomes (PROs) Summit for Total Joint Arthroplasty* that led to coordination on PROs that could be used in public and private bundled payment models.

Nevertheless, it is important to distinguish between CMS's statutory programs that reimburse Medicare providers for quality (CMMI and QPP) and CMS's statutory obligation to reimburse Medicare FFS providers based on time and intensity of work.³¹ AAHKS supports Medicare paying for quality through CMMI and QPP, but those programs adjust for quality or set target episode prices based on the FFS rate. That is why the FFS rate is still so important to providers. The FFS rate is the starting point that will be positively or negatively adjusted through

³⁰ 85 Fed. Reg. 50155 (Aug. 17, 2020) (emphasis added).

³¹ See SSA § 1848(c)(1)(A).

MIPS. It is the starting point that leads to a target episode price for which providers are at risk under CMMI bundled payment programs. Further, it is the starting point for many contract negotiations with commercial payers. AAHKS members, and we suspect many other physicians, will be less interested undertaking risk based on quality or outcomes if the underlying base rate for the procedure is shrinking.

e. Addressing Preservice Time in the 2021 Final Rule as Proposed by AAHKS is a Logical Outgrowth of the Issues Presented by CMS in the Proposed Rule

We believe that it would be a logical outgrowth from the proposed rule for CMS to decline to accept the RUC-recommended wRVU reductions based on input from specialty societies. We also believe that CMS may maintain level arthroplasty wRVU values by including arthroplasty preservice optimization time. This, too, would be a logical outgrowth from the proposed rule since CMS specifically asked for “comment from the medical community on how to consider and/or include pre-optimization time (pre-service work and/or activities to improve surgical outcomes) going forward.”³² Similarly, it is this same invitation for comment that we believe justifies CMS acting in the 2021 Final Rule to add a new G-code to capture arthroplasty preservice optimization time if CMS cannot add preservice time to the existing CPT codes. Per the section immediately above, if CMS is not persuaded that our recommendations are a logical outgrowth from the proposed rule, then CMS should delay implementing the RUC-recommended reductions until arthroplasty preservice time is resolved.

f. Any Reduction in Work RVUs Must Occur Concurrent with CMS Confirmation of Appropriate CPT Codes to Capture Preoptimization Work

In conclusion, if CMS proceeds with its proposal to reduce wRVUs for TJA under the PFS, any reduction should be delayed until CMS formally confirms—after consultation with AAHKS and AAOS—what codes orthopaedic surgeons and their staff may appropriately use to capture pre-optimization time going forward. Now that CMS has conceded that pre-optimization time is being performed but not captured by current reimbursement, there is no reason that CMS should reduce overall reimbursement before the underlying problem is resolved.

III. Potentially Misvalued Services Under the PFS (Sec. II.C.2)

We again suggest new criteria regarding transition to value-based care that should be routinely included in CMS’s evaluation of public nomination of potentially misvalued codes and subsequent evaluation of recommendations from the RUC. Our suggestions are informed by CMS’s decision in 2018 to refer CPT codes 27447 and 27130 for review as potentially misvalued codes following a public nomination. Under the *established* process, CMS evaluates public nominations of potentially misvalued codes that include documentation of any of the following:

³² 85 Fed. Reg. 50155, 50074 (Aug. 17, 2020).

- Peer-reviewed medical literature or other reliable data that demonstrate changes in physician work due to one or more of the following: Technique, knowledge and technology, patient population, site-of-service, length of hospital stay, and work time
- An anomalous relationship between the code being proposed for review and other codes
- Evidence that technology has changed physician work
- Analysis of other data on time and effort measures, such as operating room logs or national and other representative databases
- Evidence that incorrect assumptions were made in the previous valuation of the service, such as a misleading vignette, survey, or flawed crosswalk assumptions in a previous evaluation
- Prices for certain high cost supplies or other direct PE inputs that are used to determine PE RVUs are inaccurate and do not reflect current information. Analyses of work time, work RVU, or direct PE inputs using other data sources
- National surveys of work time and intensity from professional and management societies and organizations, such as hospital associations³³

The nomination and referral in 2018 of CPTs 27447 and 27130³⁴ illustrates a central and relevant characteristic of nominated codes currently not included in CMS's list of factors for evaluation: namely, the degree to which performance of the procedure may be in transition due to it being thrust into value-based care.

Misvalued code evaluations may be of limited accuracy or appropriateness for procedures in the midst of rapid and wide-ranging transition. Data reviewed by CMS and the RUC capture only a cross-section moment in time and cannot predict the nature of how TJAs may be performed in five or even two years during this current transition. The following are some of the most high-profile policies that significantly alter the landscape in which TJA procedures are performed:

- TJA procedures were the first to be subjected to a mandatory bundled payment model, the CJR
- The CJR is about to undergo alteration through the proposed rule, *Comprehensive Care for Joint Replacement Model Three Year Extension and Modifications to Episode Definition and Pricing* (CMS-5529-P)
- TKA was made available for Medicare reimbursement in outpatient facilities beginning in 2018
- CMS seems poised to make THA available for Medicare reimbursement in outpatient facilities beginning in 2020
- CMS seems poised to make TKA available for Medicare reimbursement in ASCs beginning in 2020
- CMS proposes not accepting RUC-recommended valuation updates of global surgery periods

³³ See 84 Fed. Reg. 40516, 40482 (Aug. 14, 2019).

³⁴ See 83 Fed. Reg. 59502, 59452 (Nov. 13, 2018).

- CMS is proposing a new MIPS Value Pathways system for 2021

The national variation in site of care, admission status, services bundled, and gain-sharing incentives calls into question to what degree current limited procedural data can be representative of the procedures in all settings. It would be more appropriate to defer misvalued code evaluation for TJA procedures until practice of the procedure can stabilize after several more years of experience with outpatient Medicare delivery and stable bundled payment models.

Going forward, when reviewing public nominations for misvalued codes and when evaluating AMA RUC recommendations regarding those nominations, CMS should take into account other factors impacting providers in question, such as overall status of the procedure transitioning to value-based care and what other CMS-directed initiatives are changing practice patterns and demanding greater surgeon attention, focus, and time.

IV. Calculation of the CY 2021 PFS Conversion Factor (Sec. VIII.C.Table 88)

The Medicare statute requires that any increases or decreases in RVUs may not cause the amount of Medicare PFS expenditures for the year to differ by more than \$20 million from what expenditures would have been in the absence of these changes. When this threshold is exceeded, CMS makes other increases or cuts in the PFS to maintain “budget neutrality.” In general, this means that increases in RVUs, if not offset by other decreases in RVUs, will be offset by a reduction in all procedures rates through an adjustment to the PFS conversion factor.

In this case, largely due to increases in 2021 Medicare expenditures under improved rates for E/M services, CMS is reducing the PFS conversion factor by 10.61% to maintain “budget neutrality” in the PFS. This 10% reduction applies to CPTs 27130 and 27447 in addition to the cuts due to the reduction in work RVUs. As this cut is broadly applicable across surgical specialties, a coalition of such specialty societies is lobbying Congress to waive Medicare's budget neutrality requirements. We urge CMS to provide all technical assistance necessary to aid Congress in preventing this reduction and to concurrently exercise the maximum extent of CMS's regulatory discretion to coordinate with Congress in this effort.

AAHKS appreciates your consideration of our comments. If you have any questions, you can reach Mike Zarski at mzarski@aahks.org or Joshua Kerr at jkerr@aahks.org.

Sincerely,



C. Lowry Barnes, MD
President



Michael P. Bolognesi, MD
Immediate Past President



James I. Huddleston III, MD
Chair, Health Policy Council



Michael J. Zarski, JD
Executive Director

cc: **Demetrios Kouzoukas**, Principal Deputy Administrator
Brad Smith, Director, CMMI
Amy Bassano, Deputy Director, CMMI
Elizabeth Richter, Deputy Director, CM
Carol Blackford, Director, Hospital and Ambulatory Policy Group, CM
Gift Tee, Director, Division of Practitioner Services, HAPG, CM

APPENDIX A

**RUC Presentation by Dr. William R. Creevy, on behalf of AAOS
October 4, 2019**

TAB 11	27130	27447
Descriptor	Total hip arthroplasty	Total knee arthroplasty
Current wRVU	20.72	20.72
Recommended wRVU	20.72	20.72

BACKGROUND

A public nomination was submitted to CMS in February 2018 indicating seven CPT codes are potentially misvalued, including total hip arthroplasty and total knee arthroplasty.

This nomination was made by Anthem, Inc., the largest for-profit managed care health insurance company in the Blue Cross and Blue Shield Association. Anthem administers Medicare, Medicaid and commercial health insurance plans.

Prior to publication of the CY 2019 final rule, at the October 2018 RUC meeting, the RAW noted that “this is a process issue and without more information on how these services were identified and a rationale to review these services, the workgroup will wait until the final rule for more information to determine whether to review these services.”

In the final rule, CMS stated there is value in consistent and routine review of high-volume services, because a minor adjustment to a high volume code may have a significant financial impact.

RUC then selected the codes identified by Anthem for review at the April 2019 RUC meeting.

At the April 2019 RUC meeting, the AAOS/AAHKS recommended that the RUC reaffirm the current value of 20.72 and also reaffirm the current time and visits. A new survey was not completed.

The RUC voted against this recommendation and requested that AAOS and AAHKS conduct a standard RUC survey and present a recommendation at the October 2019 RUC meeting.

VALUE BASED PAYMENTS

It is important to understand these codes in the context of value based payment reforms.

Total hip arthroplasty and total knee arthroplasty are often part of an optional Medicare bundled payment program (Bundled Payment for Care Initiative [BPCI]) and more recently CMS has implemented a mandatory bundled payment program (Comprehensive Care for Joint Replacement [CJR]).

Similar bundled payment models are employed in many states by both Medicaid and private insurers.

Physicians and hospitals are also more commonly participating in risk based contracts as accountable care organizations with Medicare, Medicaid and private insurers.

In all of these programs, physicians and hospitals have financial incentives to achieve two important goals: reduce costs and improve quality.

For total joint replacement, a key strategy has been the pre-operative identification and optimization of medical co-morbidities, which has been shown to shorten hospital length of stay; reduce complications, including readmissions; and reduce costs.

In a 2019 New England Journal of Medicine (NEJM) study on the outcomes of 280,161 patients in the CJR program, the mean number of chronic medical conditions was seven (7).

Understanding the nature and severity of these conditions as risk factors is critically important.

Considerable work by the surgeon and QHPs is required to facilitate, coordinate, validate and document the assessment and optimization of patients prior to total joint replacement surgery.

**RUC Presentation by Dr. William R. Creevy, on behalf of AAOS
October 4, 2019**

In addition, patients are more frequently discharged home rather than to inpatient rehabilitation or skilled nursing facilities. This deliberate reduction in post-acute care service requires considerable work by the surgeon/QHP and clinical staff prior to and after surgery.

All of this work is not explicitly captured in the standard RUC survey, nor is it included in the current RUC pre-time packages, but the work is certainly being performed on a routine basis for the typical patient.

SURVEY PREPARATION AND PROCESS

A request was submitted for a revised survey instrument and discussed at the June 4, 2019 Research Subcommittee conference call.

Several peer reviewed articles and extensive information on the time required for pre- and post-operative work by physicians, QHPs and clinical staff were provided to support this recommendation.

The Research Subcommittee agreed to add questions about clinical staff pre-service time, but declined to add questions about physician/QHP work for both pre-operative planning and optimization and post-operative work.

Subsequent to the June 2019 Research Subcommittee, AAOS and AAHKS finalized the approved survey instrument and conducted a random survey of AAOS and AAHKS members.

A total of 2,650 survey requests were sent out and 206 non-conflicted responses were received.

SURVEY RESULTS AND RECOMMENDATIONS

Work RVU:

The survey median was 24.00 for both THA and TKA.

The 25th percentile values were 22.50 for THA and 22.14 for TKA.

The current wRVU of 20.72 is recommended for both THA and TKA; this is below the survey median and also below the survey 25th percentile.

Pre-service time:

Pre-time package 4 is selected: difficult patient / difficult procedure.

Evaluation time: We recommend adding 30 minutes to the standard package time of 40 minutes (total of 70 minutes) to account for significant additional pre-operative time to optimize a patient prior to total joint replacement surgery.

The additional 30 minutes is based on the personal experience and consensus opinion of surgeons on our expert panel.

Several of the reviewers questioned who is actually doing this work.

Is it the PCP or anesthesia? Is it done in hospital based “pre-op clinics”?

The relationship between hospitals and physicians is evolving.

Our data shows that > 50% of AAHKS surgeons are in private practice and 20% hospital employed; the remaining are in an academic setting or the military.

Many other providers are clearly involved in this process and the protocols with naturally vary throughout the US.

It is our opinion that the surgeon and/or a QHP employed by the practice spend about 30 minutes in aggregate on planning, preparation, risk factor assessment, coordination and optimization.

RUC Presentation by Dr. William R. Creevy, on behalf of AAOS
October 4, 2019

Positioning: We recommend adding 12 minutes to the standard package time of 3 minutes (total of 15 minutes)

- THA: lateral decubitus or supine on a traction top table
- TKA: supine, tourniquet and limb positioning device

This is consistent with both the survey median and historical RUC precedent for many similar orthopaedic codes.

Scrub, dress and wait: We recommend subtracting 5 minutes from the standard package of 20 minutes (total time of 15 minutes) to be consistent with the survey median.

Intra-Service Time

THA: recommend 100 minutes (survey median); consistent with 2013 survey median (100).

TKA: recommend 97 minutes (survey median); slight decrease from 2013 survey median (100).

This is an important consideration for these codes specifically and the RUC process in general, as one of the concerns expressed by Anthem and other observers is the use of physician time estimates to establish the duration of operative procedures.

There has been considerable discussion and multiple publications regarding the accuracy of survey based time estimates by surgeons compared to empirical data.

For THA/TKA, there are at least 3 publications that suggest the actual time is lower than the RUC/CMS time, including the 2016 Urban Institute report.

On the other hand, there are 3 recent peer reviewed publications from 4 large health systems, involving over 20,000 cases, done by almost 100 surgeons at 21 hospitals that consistently show median times of 100 minutes or greater for both THA and TKA.

These 6 studies are noted in the summary of references we submitted.

Immediate Post-Service Time

Immediate post-time package 9b is selected: general anesthesia or complex regional block / complex procedure.

We have subtracted 13 minutes to be consistent with the survey median (20 minutes).

Hospital Visits

We recommend three (3) hospital visits, which is consistent with the survey median.

This is a decrease of one hospital visit compared to the 2013 data and is reflective of the considerable pre-service time expended on optimizing the patient prior to admission for surgery.

The first hospital visit occurs later on the same day as surgery; 83% of respondents reported that they completed this E/M encounter.

The second hospital visit occurs on post-operative day #1.

The specific tasks for both visits are detailed in the section for the description of the post-service work and support a level 99232 for both encounters.

The patient is typically discharged on post-operative day #2 which is indicated by the discharge day code 99238.

Patients may be seen more than once on these days (e.g. morning and afternoon) to coordinate care and facilitate discharge.

Office Visits

We recommend 99213 x 3 which is consistent with the survey median.

RUC Presentation by Dr. William R. Creevy, on behalf of AAOS
October 4, 2019

Key Reference Service Comparison

The top KRS was 23472, total shoulder arthroplasty; this was selected by 50% of respondents for THA and 44% for TKA.

	27130 Total Hip	27447 Total Knee	23472 Total Shoulder
wRVU	20.72	20.72	22.13
Total time	407	404	448
Intra-time	100	97	140
IWPUT	0.113	0.116	0.089
Overall intensity and complexity	54% THA > TSA 10% THA >> TSA	50% TKA > TSA 9% TKA >> TSA	

RUC Presentation by Dr. William R. Creevy, on behalf of AAOS
October 4, 2019

SUMMARY

The transition to value-based alternative payment models has facilitated care delivery redesign for total joint arthroplasty, resulting in a shorter hospital length of stay, diminished utilization of post-acute care facilities, lower rates of complications, including hospital readmissions and reduced costs.

A key change in this evolution is an increasing emphasis on pre-operative optimization of patients prior to surgery and decreased utilization of post-discharge facilities, with a corresponding shift in resource utilization to the pre-service period.

AAOS and AAHKS recommend the current wRVU of 20.72 for both THA and TKA.

This is below the survey 25th percentile and well supported by the results from a representative and robust survey with 206 respondents.

	27130 Total Hip	27447 Total Knee
wRVU	20.72	20.72
Total time	407	404
Intra-time	100	97
IWPUT	0.113	0.116
Hospital visits	3	3
Office visits	3	3

VALUATION IF 30 MINUTES ADDITIONAL PRE-SERVICE TIME IS DENIED

With the 30 minutes of additional pre-service time removed, the total time for THA is 377 minutes and for TKA 374 minutes.

We looked for comparison codes with similar inputs for total time, intra-time and IWPUT and identified 35 codes:

- wRVU: 14.99 to 21.81 19.60
- total time: 309 to 424 377/374
- IWPUT: 0.064 to 0.132 0.113/0.116

We recommend 19.60 for both THA and TKA using a crosswalk to 63075 (anterior cervical discectomy).

This value places the code in the top 1/3rd for wRVU, with 8 codes having greater wRVU.

We also note 35650 Ax-Ax Bypass, with wRVU 20.16, total time 382 and intra-time of 110 as a supporting code.

	63075 Ant Cerv Disc	27130 Total Hip	27447 Total Knee	35650 Ax-Ax Bypass
wRVU	19.60	19.60	19.60	20.16
Total time	380	377	374	382
Intra-time	90	100	97	110
IWPUT	0.132	0.108	0.112	0.107
Pre eval	60	40	40	75
Positioning	20	15	15	
SDW	15	15	15	
Post SD	30	20	20	25
Hospital visits	2	3	3	2
Office visits	3	3	3	2

PRACTICE EXPENSE

We would also like the full RUC to discuss PE, specifically our request for an additional 30 minutes of pre-service clinical staff time.

This was not approved at the PE review.

As noted, the research subcommittee approved a modified survey to assess the pre-operative clinical staff time by health care professionals who are paid by/employed by the physician practice and cannot separately bill for their services (e.g. RN, LPN, MA).

Administrative activities were explicitly excluded, even if performed by clinical staff:

1. Obtain referral documents
2. Schedule appointments, remind of appointment
3. Obtain medical records, develop chart
4. Pre-certification and pre-service registration, eligibility verification and authorization
5. Transcription and manage medical records
6. Schedule post-operative visits
7. Billing and collection activities

We asked survey respondents to estimate the total time that clinical staff spend per patient on planning, preparation, optimization, and care coordination activities prior to the procedure, but separate and after the decision for surgery visit:

1. Coordinate pre-operative consultations, including test results
2. Coordinate pre-operative assessment with anesthesia
3. Coordinate with PT/OT, social work, or case manager
4. Provide pre-operative education
5. Coordinate / validate final clearance
6. Phone calls, e-mails or other communication with patient, family or other providers
7. Phone calls, e-mails or other communications with the patient or family to review instructions (e.g. NPO, medications, antibiotic shower)

RUC Presentation by Dr. William R. Creevy, on behalf of AAOS
October 4, 2019

Note that the current PE process for 90-day global codes includes pre-service clinical staff time for the 30 days prior to surgery.

The survey median was 90 minutes (current standard 90-day global allows 60 minutes).

- Minimum: 0
- 25th percentile: 60
- 75th percentile: 120
- Maximum: 360

Therefore, we recommended 90 minutes of pre-service clinical staff time; 30 minutes > standard.

This was arbitrarily assigned to CA002 as follows:

- Coordinate pre-surgery services (including test results): 20 → 30 min (+10)
- Provide pre-service education/consent: 20 → 40 min (+20)

At the PE review on Thursday, the committee voted to approve compelling evidence based upon at least two factors:

(1) Documentation in the peer-reviewed medical literature or other reliable data that there have been changes in the clinical staff time, supplies and equipment due to one or more of the following:

- technique
- knowledge/technology
- patient population
- site-of-service
- length of hospital stay
- physician time

(2) Evidence that there has been a change in equipment or practice expense cost

RUC Presentation by Dr. William R. Creevy, on behalf of AAOS
October 4, 2019

However, the committee voted against an increase in 30 minutes and also voted against an increase in 15 minutes.

We would like the opportunity to further clarify the rationale for this request and ask the RUC to reconsider and vote on the PE inputs.

Let me emphasize several key points:

1. Bundled payments are quite prevalent for total joint arthroplasty; almost 50% of Medicare beneficiaries are in a mandatory or voluntary program
2. Other Medicare alternative payment models (e.g. MSSP etc.) are increasingly common
3. Medicaid and commercial payors are implementing similar payment reforms
4. All of these place physicians, hospitals and health systems at financial risk for both cost and quality
5. Orthopaedic surgeons have responded accordingly and the desired results have been obtained: patient care has changed for the better, cost have been lowered and quality outcomes have improved
6. There are really two important changes in the clinical care process:
 - a. Focus on risk factor identification with corresponding protocols for pre-operative optimization/coordination
 - b. Reduction in discharge to acute care facilities
7. These changes have been driven, led, championed, managed and overseen by orthopaedic surgeons
8. The care delivery changes and favorable results are clearly documented in extensive peer review literature
9. A robust survey with detailed and explicit information to assess clinical staff time was approved by the research committee

**RUC Presentation by Dr. William R. Creevy, on behalf of AAOS
October 4, 2019**

10. 206 survey respondents resulted completed the survey and responded to this question; the estimated median time for clinical staff paid by and employed by their practice 90 minutes – 30 minutes greater than the standard package

We recommend a total of 90 minutes of clinical staff time; the additional 30 minutes is allocated to PE spreadsheet, row 16, CA code 002 “coordinate pre-surgery services” (total 50 minutes for this row).

APPENDIX B



ELSEVIER

Contents lists available at ScienceDirect

The Journal of Arthroplasty

journal homepage: www.arthroplastyjournal.org



Health Policy & Economics

Substantial Preoperative Work Is Unaccounted for in Total Hip and Knee Arthroplasty



Chad A. Krueger, MD^{*}, Matthew S. Austin, MD, Eric A Levicoff, MD, Arjun Saxena, MD, David G. Nazarian, MD, P. Maxwell Courtney, MD

Department of Orthopaedics, Rothman Orthopaedic Institute at Thomas Jefferson University, Philadelphia, PA

ARTICLE INFO

Article history:

Received 3 March 2020

Received in revised form

13 April 2020

Accepted 20 April 2020

Available online 25 April 2020

Keywords:

total hip arthroplasty

total knee arthroplasty

relative value scale update committee

preoperative work

health policy

ABSTRACT

Background: The Centers for Medicare and Medicaid Services has recently designated the codes for total hip and knee arthroplasty as misvalued and has asked the Relative Value Scale Update Committee (RUC) to review the work required to perform these procedures. Although other studies have reported time spent on perioperative and postoperative care, time spent on coordinating and performing preoperative care is not included in current RUC methodology and has yet to be addressed in literature.

Methods: We prospectively tracked a consecutive series of 438 primary total hip arthroplasty and total knee arthroplasty patients by one of the 5 surgeons over a 3-month period. Each clinical staff member tracked the amount of time to perform each preoperative care task from the last clinic visit until day of surgery. Data were analyzed separately between providers and ancillary medical staff.

Results: Although the current RUC review includes 40 minutes of preservice time on the day of surgery, surgeons spent an average of an additional 43.2 minutes while physician assistants and nurse practitioners spent an additional 97.9 minutes per patient on preoperative care prior to that time. Ancillary medical staff spent a mean of 110.2 minutes per patient. The most common tasks include preoperative phone calls, templating and surgical planning, and preoperative patient education classes.

Conclusion: Surgeons and advanced practice providers spend nearly 2 hours per arthroplasty patient on preoperative care not accounted for in current RUC methodology. As readmissions, hospital stay, and complication rates continue to decline, Centers for Medicare and Medicaid Services should consider the substantial work required during the preoperative phase to allow for these improved outcomes.

© 2020 Elsevier Inc. All rights reserved.

In 2018, Centers for Medicare and Medicaid Services was provided an anonymous tip that the Common Procedural Terminology (CPT) codes pertaining to hip and knee arthroplasty were potentially over-valued based on a pilot study assessing the surgical times associated with those procedures [1]. Although the party behind this tip was eventually discovered to be the largest healthcare insurer within the United States and this claim has since been refuted by multiple large-scale studies [2–4], this revaluing continues to be considered. The CPT coding system, while imperfect [5], provides the framework from which most physicians are

reimbursed for services rendered during the care of patients [6]. Each CPT code is assigned a Relative Value Unit (RVU) value by the American Medical Association's Relative Value Scale Update Committee (RUC) based on formula accounting for the expense, amount of physician work, and professional liability associated with each procedure. The variable “physician work” is more specifically defined by the time and effort required by the physician to perform the procedure before, during, and after the service takes place. The physician workload is a large component of the value assigned by the RUC to each CPT and is, therefore, of tantamount importance to accurately consider during any potential revaluing of procedures [7].

Alternative Payment Models, which have led to decreased costs, reduced complications, and improved patient satisfaction, rely on the coordinated effort of many members of the surgical team in order to ensure that each patient is properly optimized and cared for during their episode of care [8,9]. Much of the effectiveness of these programs, however, appears to have come from the shift of reactive, hospital-based postoperative work to proactive,

One or more of the authors of this paper have disclosed potential or pertinent conflicts of interest, which may include receipt of payment, either direct or indirect, institutional support, or association with an entity in the biomedical field which may be perceived to have potential conflict of interest with this work. For full disclosure statements refer to <https://doi.org/10.1016/j.arth.2020.04.066>.

^{*} Reprint requests: Chad A. Krueger, MD, Department of Orthopaedics, Rothman Orthopaedic Institute, 925 Chestnut St, Philadelphia, PA 19107.

<https://doi.org/10.1016/j.arth.2020.04.066>

0883-5403/© 2020 Elsevier Inc. All rights reserved.

office-based preoperative work for total knee arthroplasty (TKA) and total hip arthroplasty (THA) patients [10–17]. This is an important finding as any preoperative work outside of the 24 hours prior to the surgical procedure is not currently considered within RVU calculations. Therefore, the current RUC methodology is not designed to account for the increased amount of work that hip and knee surgeons are performing preoperatively in order to optimize their patients, improve outcomes, and decrease postoperative costs [8,18,19].

Although some previous studies have aimed to quantify this preoperative work in the same fashion as the RUC (using surveys of specialty society members) [17], such studies may be critiqued because of their indirect methodology. In an attempt to provide even more accurate assessment of the amount of preoperative work completed by surgeons and their team for THA and TKA patients, we have sought to directly quantify the preoperative work burden of surgical personnel in the treatment of TKA and THA patients.

Materials and Methods

Five fellowship-trained hip and knee arthroplasty surgeons were followed for this study. These surgeons are part of a large, private practice group that includes 38 total joint surgeons who work at 16 hospitals. The practice is aligned with multiple

healthcare organizations including academic and university programs and participated in alternative payment models during the study period. Preoperative optimization has been routinely performed at our institution since 2015 and is a joint effort by our surgeons, ancillary staff, and our nurse navigators with great success on patient care [18]. We prospectively collected the amount of time that the surgeon, nurse practitioner (NP), physician assistant (PA), registered nurse (RN), medical assistant (MA), and surgery scheduler (SS) spent on specific tasks during the preoperative time period for primary, elective TKA and THA procedures (CPT codes 27447 and 27130, respectively) from December 9, 2019 through February 21, 2020. We defined the preoperative time period as the time between when a patient decided to undergo an elective, primary THA or TKA and the time of admission for the patient to undergo their planned procedure. This is an important definition as this time period is currently outside of the “episode of care” as defined by bundle payment programs and, as such, the RUC does not currently consider the work completed during this time when determining the value of CPT codes. This is despite the fact that previously work has shown that much of this preoperative work is completed outside of standard office visits that may be accounted for via evaluation and management coding [14]. The specific tasks for which we recorded time periods by the different members of the surgical team can be found in Figure 1.

Surgeon:	Date:	
	Personnel	Time
Screening and risk assessment of co-morbidities		
Shared decision-making, goal setting		
Patient education and optimization discussion		
Medical interventions, referrals, and consults		
Follow-up visits, reassessment		
Discharge planning		
Enter data into prospective longitudinal outcome databases or registries (e.g., NSQIP, AJRR)		
Pre-operative planning, templating, packet preparation		
Select date with patient and family; schedule surgery in OR scheduling system		
Obtain prior authorization		
Schedule and/or confirm appointments for evaluation by appropriate consultants (e.g., PCP, cardiology, neurology, dentist, vascular surgery, endocrinology, etc.)		
Schedule pre-operative assessment with anesthesia		
Schedule pre-operative appointment with physical therapy		
Schedule pre-operative appointment with case manager and/or social worker		
Schedule pre-operative education class(es)		
Coordinate and schedule final clearance assessment		
Staff 1-2 hour education class attended by multiple patients		
Phone calls, e-mails, or other communications with patient, family and other providers to coordinate pre-operative visits and optimization		
Pre-operative patient and family member form completion		
Phone call to patient or family to review preparation and instructions (e.g., NPO, medications, antibiotic shower)		

Fig. 1. An example of the data collection sheet used by surgical teams to record the amount of time spent on each preoperative task for each patient.

These tasks were determined before the data collection began and were based on a previously published survey study looking at these preoperative tasks [17]. The time for each task was recorded in minutes for each patient that was scheduled for a primary THA or TKA. The recorded times for each member of the surgical team were then averaged and combined into 3 categories: the surgeon, their PA or NP, and ancillary staff (MA, SS, and RN) to be in line with the current valuation formulas used by the Centers for Medicare and Medicaid Services and the RUC in determining the valuation of each CPT code.

Results

During the study period, a total of 438 hip and knee arthroplasties were performed by the 5 surgeons. The average total amount of time spent by the surgeon alone for each patient undergoing a TKA or THA was 43 minutes. Patient education, shared decision making and goal setting, and preoperative planning accounted for about 44% of the surgeon's time preoperatively (Table 1). The PAs or NPs working with each surgeon would spend an average of 98 minutes preoperatively working to coordinate care, optimize the patient, and answer their questions. Similar to the surgeons, the 2 tasks requiring the most time for PAs and NPs preoperatively were patient education and phone calls/e-mails and other communication with the patient and/or their family. Coordination of care was also a time-consuming task for the PAs and NPs preoperatively as over 25% of their time was spent screening for, establishing care for, and receiving recommendations on medical comorbidities. The nurses, MAs, and SSs appeared to have more variation in terms of where their time was spent preoperatively with only 1 task (phone calls/e-mails and other communication with the patient/their family) consuming at least 10% of their time. Table 2 shows the specific amount of time spent on each task for the NPs, PAs, SSs, MAs, and nurses. The standard deviation for the time spent by the surgeon and their surgical teams on many of these preoperative tasks is quite large indicating that some patients required much more preoperative work and time than others.

Discussion

The fields of THA and TKA have enjoyed tremendous advancement as participation in Alternative Payment Models has resulted in the establishment of perioperative programs to optimize patient care [20–22]. Recent studies have shown that TKA and THA patients enjoy shorter lengths of stays, readmission rates, and complication frequencies than in the past [23,24]. However, these optimization programs also appear to have increased the administrative burden and preoperative workload for the surgeons [14,17,25–27]. It is important that policymakers and payers understand these changes when considering the valuation of TKA and THA procedures. Without this consideration, it may be difficult for hip and knee surgeons to continue with their participation in such programs.

Ensuring that patients are able to safely undergo TKA and THA procedures while being discharged in an efficient manner requires a tremendous amount of preoperative optimization [14,18,28]. Previous studies have found that almost 75% of TKA and THA patients have at least one modifiable risk factor [29] and it is up to the surgical team during the preoperative period to educate the patient of these risk factors and coordinate their care so that it can be improved prior to the surgery taking place. Our institution has previously demonstrated the great value that preoperative optimization can have within our hip and knee arthroplasty population but such work [18] has not been previously quantified. As our findings demonstrate, surgeons and their teams spend a significant amount of time on the necessary preoperative tasks aimed at educating, optimizing, and coordinating the care of their patients through the surgical event. Surgeons routinely spend over 40 minutes themselves completing tasks such as patient education, shared-decision making, and screening patients for comorbidities that could potentially jeopardize their outcome. PAs and NPs spend over 90 minutes doing similar tasks and their efforts appear to be focused on the coordination of care and ensuring that the patient, their family, and all medical teams have all of the information necessary for the planned surgery. The physician, PA, and NP cumulative average timed work effort of 141 minutes well exceeds the

Table 1
The Number of Minutes That the Surgeon Spent on Preoperative Tasks for Each Patient.

Preoperative Task	Surgeon	
	Mean Time	Standard Deviation
Coordinate and schedule final clearance assessment	0.00	0.00
Discharge planning	3.03	3.88
Enter data into prospective longitudinal outcome databases or registries (eg, NSQIP, AJRR)	0.00	0.00
Follow-up visits, reassessment	4.00	5.66
Medical interventions, referrals, and consults	2.94	0.78
Obtain prior authorization	0.72	1.01
Patient education and optimization discussion	7.50	2.01
Phone call to patient or family to review preparation and instructions (eg, NPO, medications, antibiotic shower)	4.00	5.66
Phone calls, e-mails, or other communications with patient, family and other providers to coordinate pre-operative visits and optimization	3.70	4.65
Pre-operative patient and family member form completion	0.00	0.00
Pre-operative planning, templating, packet preparation	4.94	3.91
Schedule and/or confirm appointments for evaluation by appropriate consultants (eg, PCP, cardiology, neurology, dentist, vascular surgery, endocrinology, etc.)	0.00	0.00
Schedule pre-operative appointment with case manager and/or social worker	0.00	0.00
Schedule pre-operative appointment with physical therapy	0.00	0.00
Schedule pre-operative assessment with anesthesia	0.00	0.00
Schedule pre-operative education class(es)	0.03	0.04
Screening and risk assessment of co-morbidities	5.43	4.73
Select date with patient and family; schedule surgery in OR scheduling system	0.18	0.26
Shared decision-making, goal setting	6.76	1.66
Staff 1-2 h education class attended by multiple patients	0.00	0.00
Total	43.23	34.24

Table 2
The Number of Minutes That Each Member of the Surgical Team Spent on Preoperative Tasks for Each Patient.

Preoperative Task	NP/PA		MA/RN/SS	
	Mean Time	SD	Mean Time	SD
Coordinate and schedule final clearance assessment	0.18	0.09	7.58	2.04
Discharge planning	4.17	4.19	2.19	2.80
Enter data into prospective longitudinal outcome databases or registries (eg, NSQIP, AJRR)	0.00	0.00	11.32	12.26
Follow-up visits, reassessment	3.86	2.72	0.74	0.57
Medical interventions, referrals, and consults	10.01	3.67	5.51	2.35
Obtain prior authorization	0.18	0.11	6.47	7.78
Patient education and optimization discussion	16.31	11.01	8.72	0.68
Phone call to patient or family to review preparation and instructions (eg, NPO, medications, antibiotic shower)	7.35	5.30	4.84	3.87
Phone calls, e-mails, or other communications with patient, family and other providers to coordinate pre-operative visits and optimization	15.93	8.94	12.00	6.57
Pre-operative patient and family member form completion	2.52	3.57	5.55	3.93
Pre-operative planning, templating, packet preparation	10.72	6.00	5.04	3.48
Schedule and/or confirm appointments for evaluation by appropriate consultants (eg, PCP, cardiology, neurology, dentist, vascular surgery, endocrinology, etc.)	3.68	2.40	8.46	4.91
Schedule pre-operative appointment with case manager and/or social worker	0.00	0.00	2.41	3.11
Schedule pre-operative appointment with physical therapy	0.00	0.00	2.29	2.94
Schedule pre-operative assessment with anesthesia	0.00	0.00	2.76	2.30
Schedule pre-operative education class(es)	0.00	0.00	2.22	2.74
Screening and risk assessment of co-morbidities	10.20	6.22	2.88	0.98
Select date with patient and family; schedule surgery in OR scheduling system	0.18	0.30	10.48	5.43
Shared decision-making, goal setting	3.16	1.20	2.59	0.00
Staff 1–2 h education class attended by multiple patients	9.46	2.37	6.18	3.30
Total	97.91	58.10	110.23	72.03

NP, nurse practitioner; PA, physician assistant; MA, medical assistant; RN, registered nurse; SS, surgical scheduler; SD, standard deviation.

40 minutes that the RUC currently allots for all preoperative work when valuing the THA and TKA CPT codes. This is not surprising considering the medical and social complexities of many TKA and THA patients. Furthermore, this does not even include the work effort of the nurses, MAs, and SSs.

The results of this study are similar to those by Grosso et al [17] in their recently completed survey of hip and knee arthroplasty surgeons who are members of the American Association of Hip and Knee Surgeons. Their study found that the surgeon, PA, and NP were involved in over 110 minutes of preoperative work that is not currently included within the CPT code valuation nor accounted for through evaluation and management codes. Our findings contribute further evidence that surgical teams, to the benefit of our patients and the healthcare system, are spending heretofore unaccounted time with patients in the preoperative period to ensure that they are educated, optimized, and ready for their procedure. It is this preoperative work that may be a significant contributing factor in decreased lengths of stay, readmissions, and complications. Grosso et al also found that surgeons felt that their preoperative workload has increased 20% or more since 2013. Other studies, such as that by Halawi et al [27] and Wasterlain et al [14] have found similar findings in terms of increased preoperative work being performed by surgical teams that is not currently accounted for within RVU valuation. It is important to note that the studies by Halawi et al and Wasterlain et al were completed in a retrospective manner whereas the current study was completed prospectively. The prospective nature of this study lends further validity to the assessment of preoperative work.

By optimizing and educating patients preoperatively, patients are less likely to require expensive rehabilitation facilities postoperatively and are likely to have improved outcomes from their procedure [19]. It seems that much of the work that used to be performed postoperatively in a reactive manner is now being performed preoperatively in a proactive fashion. This shifts the workload away from the hospital staff postoperatively and on to the surgical teams directly during the preoperative period. This “proactive” work by the surgical team is not considered in the current

valuation of TKA and THA procedures whereas the postoperative work is [15,27]. This undervalued shift in work may be part of the reason that some institutions are no longer finding bundle payment programs to be financially viable [30,31]. This is concerning as bundle payment models have resulted in many favorable aspects of patient care.

This study is not without limitations. First, it is difficult to quantify the exact amount of time spent with each patient on each task. It is not uncommon for patient conversations to drift in many different directions during an interaction and it is possible that certain preoperative tasks may be slightly misrepresented secondary to this fact. However, the total amount of preoperative work performed by the surgical teams would remain constant with the methodology employed by this study regardless of the specific tasks. Second, we did not evaluate how much time was spent by the surgical team on the postoperative care of patients. Although other studies have evaluated this aspect of patient care and doing so was outside the scope of this current study, it would provide us with a better picture of the total surgical team workload for TKA and THA patients. Third, it is possible that patients who underwent their operation during the study period had been previously optimized and rescheduled. If this occurred, we would have not included the previously time spent on patient optimization for their previously planned surgery. Finally, we grouped both TKA and THA patients together for our analysis. This was done because both procedures are currently assigned the same RVU value and because both patient groups need to be optimized in a similar manner prior to surgery taking place.

Surgeons and policymakers alike share the same goals of improving patient outcomes and decreasing the costs associated with TKA and THA procedures. However, it is important for policymakers to be aware that much of the preoperative work required to accomplish these goals is currently unaccounted for in valuation of TKA and THA CPT codes. This study adds to the growing body of evidence suggesting that much of the success of a TKA or THA has to do with the work completed before the operation even takes place. It is imperative that such work be valued appropriately

because the work necessary to ensure an optimal outcome for a TKA or THA patient may be shifted in time or changed in structure but it is never completely eliminated.

References

- [1] Zuckerman S MK, Berenson RA, Mitchell S, Upadhyay D, Lewis R. Collecting empirical physician time data: piloting an approach for validating work relative value units. 2016. https://www.urban.org/sites/default/files/publication/87771/2001123-collecting-empirical-physician-time-data-piloting-approach-for-validating-work-relative-value-units_0.pdf [accessed 03.04.20].
- [2] Chughtai M, Kamath AF, G. Cleveland Clinic arthroplasty. No evidence to support lowering surgeon reimbursement for total joint arthroplasty based on operative time: an institutional review of 12,567 cases. *J Arthroplasty* 2019;34:2523–7.
- [3] Shah RP, Lauthen D, Geller JA, Cooper HJ. Average operative times for 1,313 primary total hip arthroplasty and 1,300 primary total knee arthroplasty over 39 months are roughly equal to Medicare attributed operative times. *J Arthroplasty* 2019;34:1553–6.
- [4] Acuna AJ, Samuel LT, Kernuta JM, Sultan AA, Swiergosz Am, Kamath AF, et al. What factors influence operative time in total knee arthroplasty? A 10-year analysis in a national sample. *J Arthroplasty* 2020;35:621–7.
- [5] Samuel LT, Grits D, Acuna AJ, Piuzei NS, Higuera-Rueda CA, Kamath AF, et al. Work relative value units do not adequately support the burden of infection management in revision knee arthroplasty. *J Bone Joint Surg Am* 2020;102:230–6.
- [6] Jacobs JP, Nichols FC, Levett JM, Johnston GG, Freeman RK, Lahey SJ, et al. How is physician work valued? *Ann Thorac Surg* 2017;103:373–80.
- [7] Medicare Physician Fee Schedule. Centers for Medicare and Medicaid Services. 2017. <https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/PhysicianFeeSched> [accessed 03.04.20].
- [8] Ahn A, Ferrer C, Park C, Snyder DJ, Maron SZ, Mikhail C, et al. Defining and optimizing value in total joint arthroplasty from the patient, payer, and provider perspectives. *J Arthroplasty* 2019;34:2290–6.
- [9] Feng JE, Padilla JA, Gabor JA, Cizmiz Z, Novikov D, Anoushiravani AA, et al. Alternative payment models in total joint arthroplasty: an orthopaedic surgeon's perspective on performance and logistics. *JBJS Rev* 2019;7:e5.
- [10] Dundon JM, Bosco J, Slover J, Yu S, Sayeed Y, Iorio R, et al. Improvement in total joint replacement quality metrics: year one versus year three of the Bundled Payments for Care Improvement initiative. *J Bone Joint Surg Am* 2016;98:1949–53.
- [11] Piccinin MA SZ, Kozlowski R, Bobba V, Knesek D, Frush T. Bundle payment for musculoskeletal care: current evidence (part 1). *Orthop Clin North Am* 2018;49:135–46.
- [12] Murphy WS, Cheng T, Lin B, Terry D, Murphy SB, et al. 2018 John Charnley Award: analysis of US hip replacement bundled payments: physician-initiated episodes outperform hospital-initiated episodes. *Clin Orthop Relat Res* 2019;477:271–80.
- [13] Ryan SP, Howell CB, Wellman SS, Attarian DE, Bolognesi MP, Jiranek WA, et al. Preoperative optimization checklists within the Comprehensive Care for Joint Replacement bundle have not decreased hospital returns for total knee arthroplasty. *J Arthroplasty* 2019;34:S108–13.
- [14] Wasterlain AS, Courtney PM, Yayac MF, Nazarian DG, Austin MS, et al. Quantifying the perioperative work associated with total hip and knee arthroplasty: the burden has increased with contemporary care pathways. *J Arthroplasty* 2019;34:2528–31.
- [15] Shah RP, Karas V, Berger RA. Rapid discharge and outpatient total joint arthroplasty introduce a burden of care to the surgeon. *J Arthroplasty* 2019;34:1307–11.
- [16] Kheir M, Rondon AJ, Bonaddio V, Tan TL, Wang C, Purtill JJ, et al. Perioperative telephone encounters should be included in the Relative Value Scale Update Committee review of time spent on total hip and knee arthroplasty. *J Arthroplasty* 2019;34:1563–9.
- [17] Grosso MJ, Courtney PM, Kerr JM, Della Valle CJ, Huddleston JL. Surgeons' preoperative work burden has increased before total joint arthroplasty: a survey of AAHKS members. *J Arthroplasty* 2020.
- [18] Phillips JLH, Rondon AJ, Vanello C, Fillingham YA, Austin MS, Courtney PM. A nurse navigator program is effective in reducing episode-of-care costs following primary hip and knee arthroplasty. *J Arthroplasty* 2019;34:1557–62.
- [19] Pelt CE, Gililand JM, Erickson JA, Trimble DE, Anderson MB, Peters CL. Improving value in total joint arthroplasty: a comprehensive patient education and management program decreases discharge to post-acute care facilities and post-operative complications. *J Arthroplasty* 2018;33:14–8.
- [20] Rondon AJ, Phillips JLH, Fillingham YA, Gorica Z, Austin MS, Courtney PM. Bundled payments are effective in reducing costs following bilateral total joint arthroplasty. *J Arthroplasty* 2019;34:1317–1321.e2.
- [21] Padilla JA, et al. Comparison of payment margins between the Bundled Payments for Care Improvement initiative and the Comprehensive Care for Joint Replacement model shows a marked reduction for a successful program. *J Bone Joint Surg Am* 2019;101:1948–54.
- [22] Sarpong NO, Boddapati V, Herndon CL, Shah RP, Cooper JH, Geller JA, et al. Trends in length of stay and 30-day complications after total knee arthroplasty: an analysis from 2006 to 2016. *J Arthroplasty* 2019;34:1575–80.
- [23] Varacallo MA, et al. Ten-year trends and independent risk factors for unplanned readmission following elective total joint arthroplasty at a large urban academic hospital. *J Arthroplasty* 2017;32:1739–46.
- [24] Ross TD, Dvorani E, Saskin R, Khoshbin A, Atrey A, Ward SE. Temporal trends and predictors of thirty-day readmissions and emergency department visits following total knee arthroplasty in Ontario between 2003 and 2016. *J Arthroplasty* 2020;35:364–70.
- [25] Phillips JLH, Rondon AJ, Vanello C, Fillingham YA, Austin MS, Courtney PM. How much does a readmission cost the bundle following primary hip and knee arthroplasty? *J Arthroplasty* 2019;34:819–23.
- [26] Ryan SP, Goltz DE, Howell CB, Jiranek WA, Attarian DE, Bolognesi MP, et al. Predicting costs exceeding bundled payment targets for total joint arthroplasty. *J Arthroplasty* 2019;34:412–7.
- [27] Halawi MJ, Mirza M, Osman N, Cote MP, Kerr JM, Huddleston JL, et al. Quantifying surgeon work in total hip and knee arthroplasty: where do we stand today? *J Arthroplasty* 2019;35:1170–3.
- [28] Karas V, Kildow BJ, Baumgartner BT, Green CL, Attarian DE, Bolognesi MP, et al. Preoperative patient profile in total hip and knee arthroplasty: predictive of increased Medicare payments in a bundled payment model. *J Arthroplasty* 2018;33:2728–2733.e3.
- [29] Bernstein DN, Liu T, Winegar AL, Jackson LW, Darnutzer JL, Wulf KM, et al. Evaluation of a preoperative optimization protocol for primary hip and knee arthroplasty patients. *J Arthroplasty* 2018;33:3642–8.
- [30] Curtin BM, Odum SM, C. OrthoCarolina Quality Improvement. Unintended Bundled Payments for Care Improvement consequences after removal of total knee arthroplasty from inpatient-only list. *J Arthroplasty* 2019;34:S121–4.
- [31] Mcasey CJ, Johnson EM, Hopper RH Jr, Engh CA Jr. Bundled Payments for Care Improvement: health system experience with lower extremity joint replacement at higher and lower volume hospitals. *J Arthroplasty* 2019;34:2284–9.

APPENDIX C

Pre-service Time (from decision to operate until the day before the operation) prior to primary total joint arthroplasty

Study first author	Title	PMID	Hyperlink	Summary	Number of patients/respondents	Preoperative variables included in analysis	Physician or Qualified Healthcare Provider			Office Staff		
							Mean	Standard Deviation	Median	Mean	Standard Deviation	Median
Gromo, MJ et al	Surgeons' Preoperative Work Burden Has Increased Before Total Joint Arthroplasty: A Survey of AAHKS Members	32057605	https://www.arthroplastyjournal.org/article/S0883-5403(20)30116-9/fulltext	Survey of AAHKS membership; defined prep work as time before surgery until day before that was not already included in current CPT codes	approx. 256		153	179	110	176	176	125
Kroeger, CA et al	Substantial Preoperative Work is Unaccounted for in Total Hip and Knee Arthroplasty	32423758	https://www.arthroplastyjournal.org/article/S0883-5403(20)30454-3/fulltext	Prospective evaluation of 438 primary TKAs and THAs over 3 months and calculated time by provider and ancillary staff	438		134	87.04	Unknown	110	72.04	Unknown
Halevi MJ et al	Quantifying Surgeon Work in Total Hip and Knee Arthroplasty: Where Do We Stand Today?	31883825	https://www.arthroplastyjournal.org/article/S0883-5403(19)11131-6/fulltext	Retrospective review of physician work including preoperative period following decision to proceed with TJA and leading to the day before surgery	666		22	10	Unknown	Unknown	Unknown	Unknown
Husted H et al	Time-driven activity-based cost of outpatient total hip and knee arthroplasty in different set-ups	30078348	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6292772/	Perioperative work for outpatient TJA in two settings, hospital and ASC calculated as time-driven activity-based costing	6 1110 approx. 256 survey respondents		50	Unknown	Unknown	Unknown	Unknown	Unknown
Westrichin, AS et al	Quantifying the Perioperative Work Associated With Total Hip and Knee Arthroplasty: The Burden Has Increased With Contemporary Care Pathways	31301913	https://www.arthroplastyjournal.org/article/S0883-5403(19)10630-3/fulltext	Prospective evaluation of seven surgeons over four-work period on pre-service and immediate post-service activities time	1000	Templating/preparation Cleaning patient, the right before Covering the patient in holding Marking the patient, with documentation Total	12.2 11 11.8 7.8 48.3	5.8 3.1 1.7 3.4 12	Unknown	Unknown	Unknown	Unknown
Totals					2110 Patients approx. 256 survey respondents		Mean 76.83	Standard Deviation 70.46	Median 110	Mean 143	Standard Deviation 124.02	Median 125

Preservice Time (from decision to operate until the day before the operation) prior to				Physician or Qualified Healthcare Provider				Office Staff							
Study first Title	PMID	Hyperlink	Summary	Number of Preoperative Mean	Standard I	Median	25th percen	75th percen	Mean	Standard I	Median	25th percen	75th percentile		
Grosso, MJ Surgeons' F	32057605	https://w	Survey of A approx. 256	Screening a	20	22	15		Select date	21	16	15			
				Shared deci	18	17	15		Obtain prio	28	20	30			
				Patient edu	34	37	20		Schedule a	21	18	15			
				Medical int	22	37	15		Schedule p	9	12	5			
				Follow-up v	29	33	20		Schedule p	7	10	5			
				Discharge f	19	16	15		Schedule p	5	8	5			
				Enter data i	11	17	10		Schedule p	8	8	5			
				Total	153	179	110		Coordinate	13	13	10			
									Staff 1-2 h	32	41	10			
									Phone calls	19	18	15			
Halawi MJ Quantifying	31883825	https://w	Retrospecti	666 patient visit											
Westerlain, Quantifying	31301913	https://w	Prospective evaluation	Templating	12.2	5.8									
				Calling pati	11	2.1									
				Counseling	11.6	1.7									
				Marking th	7.4	2.4									
				Total	42.2										
Kheir, M et Perioperative	31133427	https://w	Retrospecti	16577 preoperative calls, 2.31 for TKAs and 2.44 for THAs at 0.25 RVU per call estimate											
Krueger, C, Substantial	32423758	https://w	Prospective evaluation	Coordinate	0.18	0.09				7.58	2.04				
				Discharge f	7.2	8.07				2.19	2.8				
				Enter data i	0	0				11.3	12.26				
				Follow-up v	7.86	8.38				0.74	0.57				
				Medical int	13	4.45				5.51	2.35				
				Obtain prio	0.9	1.12				6.47	7.78				
				Patient edu	23.8	13.02				8.72	0.68				
				Phone call v	4	5.66				4.84	3.87				
				Phone calls	19.6	13.59				12	6.57				
				Pre-operative	2.52	3.57				5.55	3.93				
				Pre-operative	15.7	9.91				5.04	3.48				
				Schedule a	3.68	2.4				8.46	4.91				
				Schedule p	0	0				2.41	3.11				
				Schedule p	0	0				2.29	2.94				
				Schedule p	0	0				2.76	2.3				
				Schedule p	0.03	0.04				2.22	2.74				
				Screening a	15.6	10.95				2.88	0.98				
				Select date	0.36	0.56				10.5	5.43				
				Shared deci	9.92	2.86				2.59	0				
				Staff 1-2 h	9.46	2.37				6.18	3.3				
Total	134	87.04				110	72.04								
Shah, RP et Rapid Discl	31031153	https://w	Perioperative touches i	Week before	60										
				Day before	7										
ASC															
Husted H et Time-drive	30078348	https://w	Perioperative work for	Preop visit	20										
				Preop visit	30										
										55					

APPENDIX D

APPENDIX D

HPCPS/ CPT Code	Short Description	Long Description	Reactions/Feedback
99358	Prolonged Service w/o contact	Prolonged evaluation and management service before and/or after direct patient care; first hour	Allows physician to capture 30-74 minutes of cumulative non-face-to-face time on a day other than a visit. However, arthroplasty preservice time is usually spread over several days and may not equal 30 cumulative minutes on one day. Also, does not capture clinical staff time. Also, not clear how close or far from face-to-face visit, code may be billed
99359	Prolonged Service w/o contact add	each additional 30 minutes (List separately in addition to code for prolonged service)	
99415 99416	Prolonged clinical staff services with physician supervision	Prolonged <u>clinical staff service</u> (the service beyond the highest total E/M service time) during an evaluation and management service in the office or outpatient setting, direct patient contact with physician supervision; first hour	Not applicable to arthroplasty preservice time as it is for prolonged clinical staff face-to-face time during which a physician is present to supervise.
99495 99496	Transitional care management	Transitional care management services with the following required elements: <ul style="list-style-type: none"> communication with patient and/or caregiver within 2 business days of discharge; medical decision making of at least moderate complexity during the service period; face-to-face visit within 14 days of discharge 	Services described are similar to AAHKS member work but are not applicable because the code is tied to being provided immediately before discharge and tied to a face- to-face visit post-discharge. Much arthroplasty preservice work performs transition care management before operation.
99367 99368	Medical team conference without direct contact with patient and/or family	Medical team conference with interdisciplinary team of health care professionals, patient and/or family not present, 30 minutes or more; participation by physicians	Medical team conferences do not include clinical staff and require the face-to-face participation by a minimum of 3 qualified health professionals from different specialties or disciplines (each of whom provide direct care to the patient). This is not widely applicable to arthroplasty preservice time
99441 99442 99443	Phone E/M Phys/QHP 5-10 MIN Phone E/M Phys/QHP 11-20 MIN Phone E/M Phys/QHP 21-30 MIN	Telephone evaluation and management service by a physician or other qualified health care professional who may report evaluation and management services provided to an established patient, parent, or guardian not originating from a related E/M service provided within the previous 7 days nor leading to an E/M service or procedure within the next 24 hours or soonest available appointment	Not applicable to arthroplasty preservice time as this is for a discrete health matter when the patient initiates the call
99490	Chronic care management	Chronic care management services, at least 20 minutes of clinical staff time directed by a physician or other QHP, per calendar month, with following required elements . . . 2 or more chronic conditions expected to last at least 12 months; conditions place patient at significant risk of death, exacerbation or functional decline; comprehensive care plan established, revised or monitored	Covers only 20 minutes per month. Would apply only to limited number of arthroplasty patients who have multiple chronic conditions managed by the orthopaedic surgeon
99215	Office/ outpatient visit, established patient	Office or other outpatient visit for the evaluation and management of an established patient, which requires at least 2 of 3 key components:	Not applicable to arthroplasty preservice time as these services must be performed on the day of a face-to-face visit.

APPENDIX D

HCP/CS/ CPT Code	Short Description	Long Description	Reactions/Feedback
99XXX (beginning 2021)	TBD Prolonged Service With or Without Direct Patient Contact on the Date of an Office or Other Outpatient Service	Prolonged office or other outpatient E/M service(s) (beyond the total time of the primary procedure which has been selected using total time), requiring total time with or without direct patient contact beyond the usual service, on the date of the primary service, each 15 minutes	Not applicable to arthroplasty preservice time as these services must be performed on the day of a face-to-face visit. Intended for walk-in disaster/trauma care.
G2064	Principal Care Management (physician)	Comprehensive care management services for a single high-risk disease, e.g., principal care management, <u>at least 30 minutes of physician or other qualified health care professional time</u> per calendar month with the following elements: <ul style="list-style-type: none"> one complex chronic condition lasting at least 3 months, which is the focus of the care plan; the condition is of sufficient severity to place patient at risk of hospitalization or have been the cause of a recent hospitalization; the condition requires development or revision of disease specific care plan; the condition requires frequent adjustments in the medication regimen, and/or; the management of the condition is unusually complex due to comorbidities 	Seems very similar to preoptimization work performed by orthopaedic surgeons for many arthroplasty patients but limited to those with complex chronic condition, which is common but not universal.
G2065	Principal Care Management (clinical staff)	Comprehensive care management for a single high-risk disease services, e.g. principal care management, at least 30 minutes of <u>clinical staff time directed by a physician or other qualified health care professional</u> , per calendar month with the following elements: <ul style="list-style-type: none"> one complex chronic condition lasting at least 3 months, which is the focus of the care plan; the condition is of sufficient severity to place patient at risk of hospitalization or have been the cause of a recent hospitalization; the condition requires development or revision of disease specific care plan; the condition requires frequent adjustments in the medication regimen, and/or; the management of the condition is unusually complex due to comorbidities 	Seems very similar to preoptimization work performed by orthopaedic surgeons for many arthroplasty patients but limited to those with complex chronic condition, which is common but not universal.
GXXX1 GXXX2	Preoperative personalized optimization plan for surgery (includes all classes and phone calls)		