Current Otorhinolaryngology Reports
https://doi.org/10.1007/s40136-024-00506-4

REVIEW

Procedure Valuation: How a Code Becomes an RVU and a Review of the Current Literature

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Accepted: 18 April 2024
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Abstract

Purpose of Review The goal of this review is to describe the complex process by which a procedure code is assigned value using relative value units (RVUs) and discuss current research that assesses the objectivity and equity of the process.

Recent Findings While research on this topic is somewhat limited, the authors of a majority of studies call for revaluation of common codes within their surgical specialty due to misvaluation when comparing current RVU scales with national procedure time data. In addition, several studies report that the current system does not adequately reflect patient-based factors that influence physician workload during a case. Finally, certain small subspecialties and pediatric subspecialties in surgical fields are particularly vulnerable to misvaluation.

Summary Procedure valuation is critically important for surgeons to understand to ensure advocacy for their field and their patients. Continued research using large, national datasets will provide evidence for needed improvements in objectivity in this process and increased surgeon participation in this committee-based decision is imperative for equitable change.

Keywords Relative value unit · Procedure code · Physician reimbursement · Medicare · Healthcare policy

Introduction

The cost of healthcare per capita in the United States is unparalleled by much of the world, and projected spending over the next several years is on track to undermine economic growth [1•]. As a result, controlling costs is likely to be a top priority for healthcare industries across the nation. Thus, it is critical that healthcare providers have a thorough understanding of fiscal processes that impact the daily operations of their practice and patient care within their field. One fundamental process is procedure valuation: how procedures are valued relative to others for fair reimbursement to the physician by Medicare and other payers. Procedure valuation is complex, and is spearheaded by a 32-member committee of the American Medical Association (AMA) known as the Relative Value Update Committee (RUC) [2].

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The protocols followed by the RUC are aimed at transparent and equitable evaluation of procedure codes. However, as financial advocacy becomes more prevalent among physicians in an evolving healthcare landscape, recent research has revealed trends in code valuation that suggest an imperfect process. Therefore, the aim of this review is to provide a comprehensive understanding of the procedure valuation process and to summarize current literature surrounding this topic for today's otolaryngologist.

A Brief History of Physician Reimbursement

The history of physician reimbursement begins with a discussion of Medicare reimbursement. In order to incentivize physicians to participate in Medicare, physicians were previously able to set rates for their services based on the average local rates for the service [3]. As physicians raised their rates within this somewhat laissez-faire structure, Medicare spending became untenable in the eyes of the federal government [3]. In an effort to reform this process, the relative value unit (RVU) was created in 1989 [3]. The intention of introducing the RVU was to standardize reimbursement for procedural services by assigning them to Current Procedural

Published online: 13 May 2024

Terminology (CPT) codes. Subsequently in 1991, the RUC was formed within the AMA to provide expert recommendations to the Centers for Medicare and Medicaid Services (CMS) on these relative values to be assigned to each code [4]. In 1992, the government formed the resourced based relative value scale (RBRVS) which created a standardized physician payment schedule [4]. Initially, the CPT codes were assigned an RVU valued based on a Harvard study. These are known as Harvard-valued codes [4].

Cracking the Code: Key Components of Code Value

Each CPT code is valued by allocation of a certain number of RVUs. There are three major subtypes of RVUs that add together for a total RVU for each code. These include the physician work RVU (wRVU), the practice expense (PE RVU), and the professional liability insurance or malpractice RVU (PLI or MP RVU) [5••]. Generally speaking, the wRVU takes into consideration the time it takes to perform the procedure, the relative intensity of performing the procedure, and the technical ability required to perform the procedure. The PE RVU considers the cost of maintaining a practice environment that allows for provision of the service. Lastly, the PLI RVU represents the associated liability expense associated with performing the procedure based on risk. However, the final reimbursement generated from a single CPT code takes into account more than just the total RVU. In order to adjust for differences in cost of living throughout the nation, CMS utilizes a standardized multiplier known as the Geographic Practice Cost Index (GPCI) for each component of the RVU. Finally, this value is multiplied by an established conversion factor (CF) for reimbursement in US dollars [6•]. This conversion factor changes annually based on updates from the US Congress, which take into account the following: economic health of the US, the number of Medicare beneficiaries, spending in prior years, and changes in regulation for covered services [7].

$$(wRVU * wRVU\ GPCI + PE\ RVU * PE\ RVU\ GPCI + PLI\ RVU * PLI\ RVU\ GPCI) * CF = Cost\ of\ Reimbursement$$

It is also worth noting that while this specific methodology for reimbursement applies only to Medicare, a majority of payers, including the state-based Medicaid, reimburse a percentage that is based on the Medicare reimbursement rate for a specific code [8].

When assigning wRVUs to a CPT code, there are several other factors considered in addition to the necessary time and physical and technical effort of performing the service. For example, psychological stress and any risk to the physician while performing the procedure is also deliberated. Procedures are also reviewed in terms of the amount of physician work that is required during the pre-service, intra-service, and post-service time. Examples of pre-service tasks might include chart review, procedure preparation or draping, and scrubbing [5••]. Post-service tasks might include charting, writing orders, and communication to other healthcare providers or family members. Importantly, to conserve relativity within the system, some tasks are allotted a standard value, such as scrubbing [5••]. Another intentional method currently in place for maintaining consistency when assigning a wRVU is to compare the given value with a set of comparisons to ensure that the code is not over- or undervalued. This is called a crosswalk code.

Assigning PE RVU to a CPT code is carried out by a subcommittee within RUC, as specialized input is required from experts in each field to determine what supplies and infrastructure is necessary to perform a given procedure. The PE RVU takes into account common fixed costs associated with many procedures including an exam table, a computer with EHR software, disposables such as surgical gloves, and specialized equipment or devices [5••]. The necessity of each item is again relative to comparable procedures and fine-tuned by expert opinion. The details of assigning a PLI or MP RVU to a CPT code is objective and methodical. First, the national average for malpractice premiums for the relevant specialty is calculated and normalized. Then, unadjusted PLI RVUs are calculated for the procedure based on the volume of providers that actually perform the service. Finally, these are adjusted for budget neutrality [9].

The RUC Process

Today, the RUC consists of 32 members that serve as representatives from physician societies and other professional organizations to allow for input by specialists who provide these services. Notably, a majority of the members are representatives from specialties that primarily use Evaluation and Management (E/M) codes, which are non-procedural or non-surgical codes [5••]. The committee meets three times per year, typically q, to value new codes as needed and discuss potential changes to existing codes. While the committee members serve important leadership roles, the RUC utilizes surveys for code valuation which are sent out randomly to members of national societies to gather the most accurate data on the service being provided. The RUC then votes on the survey results, and the consensus changes to any codes are then recommended to CMS, but CMS may choose to adopt or disregard these suggestions [6•].

The process for assigning RVUs to a new code is dependent on several requirements. First, the service described by the new CPT code must prove to be well-established through publication of at least five studies that outline its efficacy,

and be widely adopted by the medical community within that field [5••]. However, the lead time for processing a new code until providers are able to bill the code can be up to two years, which can lead to significant changes in the service provided while the service is still in early stages of development [5••]. The RUC also ensures that when a new code is introduced, there are enough qualified providers available to survey. Therefore, smaller subspecialty codes can be particularly vulnerable to denial of new proposals.

It is well understood by the RUC that time of service, intensity, and technical ability can vary within a code based on patient factors. Therefore, survey participants for new or existing codes are asked to consider the "typical patient" vignette, which provides a clinical portrayal of a patient who represents at least 50% of patients who receive this service. In addition, this "typical patient" is kept in mind during discussions within the committee itself [5••].

Existing CPT codes can be brought to the RUC by professional societies if members feel that the code is misvalued [6•, 10]. This process is particularly useful given that technology, physician training, and the setting in which the service is performed can change over time. In addition, shifts in practice guidelines can significantly alter the patient population that historically utilized this service. The RUC aims to review new codes after they are first valued to see if the assigned value remains relevant 3–4 years after its implementation. This leaves relatively little time for reviewing codes that are suspected to be misvalued, with one source noting that only 2% of all codes can be reviewed annually. As a result, many codes remain unexamined for prolonged periods of time [6•, 11].

If an existing code is brought to the RUC for revaluation, a survey of national society members takes place as previously described. Occasionally, it may be necessary to conduct a more targeted survey to a smaller subset of providers within a specialty society to get a more accurate picture of the wRVU associated with the code. However, this requires a special request and approval [5••]. Once surveys are complete, the RUC will review and compile the data for a final recommendation.

Current Literature and Shortcomings of the Process

Over the last five years, several concerns have been raised about the RUC process. The first is that although the process allows for physician voices to be heard, surveys utilized by the RUC are extensive. Responding to a survey can be an arduous task, and furthermore, self-reported data is typically imperfect. For example, reporting operative time is subject to inherent recall bias. In addition, there may be subconscious bias to overinflate factors associated with wRVU if seen as beneficial by the respondee. Similarly, smaller, more mundane procedures are vulnerable to undervaluation through these same biases by a busy practitioner who performs a variety of different procedures. Furthermore, there are external pressures that could unknowingly influence responses as well. At some institutions, the RVU system is used to measure surgeon productivity, with compensation and career advancement as subsequent rewards for high productivity [12]. The bottom line: these data are subjective in nature and despite significant efforts to support objectivity, the accuracy of code valuation is a weakness within the current system. Importantly, while fairness in physician reimbursement is a concern, reimbursement trends can inadvertently influence choices in treatment where physicians have options in choosing a procedural approach. Ultimately, these decisions have the potential to impact patient satisfaction and outcomes.

As attentiveness to this process grows, more and more researchers have taken interest in evaluating the objectivity of this process within their field. One study utilizing data from the National Surgical Quality Improvement Program (NSQIP) revealed that when compared to other surgical specialties, otolaryngology specifically had a greater proportion of procedures with lower than expected wRVU [13]. A similar analysis revealed that otolaryngology had the lowest median RVU per hour [14]. Another study using the NSQIP database evaluating the 100 most common CPT codes within plastic surgery revealed that while wRVU assigned increased with increasing time, there were a significant number of outliers that raise concern [12]. A plethora of other studies have demonstrated a consistent inaccuracy of physician time estimates in RUC surveys compared to more objective operative records from national databases or local institutions [1•, 15, 16]. Finally, one study looking at urological procedures found that RUC survey data and operative time derived from database logs differed by over 20% [17]. Large datasets and institutional studies would likely provide more objective time data for wRVUs as these become more accessible across surgical subspecialties. However, in order to maintain consistency and relativity, this would require active participation and advocacy within all fields to apply this methodology.

Another major concern that has been revealed in recent literature is that certain fields are particularly vulnerable to misvaluation. For example, an interesting analysis reported by Reitz et al. compared surgical reimbursement with physiologic operative stress and frailty scores for patients undergoing a variety of procedures in different specialties [18]. They found that the wRVU did in fact correlate loosely with physiologic operative stress faced by the patient, but not frailty index. This data suggests that the wRVU did not accurately represent patient-specific factors that significantly increase physician work and perhaps psychological stress

associated with performing the procedure. This could render surgical subspecialties that frequently operate on frail and medically complex patients, such as surgical oncology, more vulnerable to misvaluation compared to other fields.

Several studies have drawn attention to the fact that pediatric subspecialties tend to fall victim to this process as well. Massoumi and colleagues accessed publicly available CMS files and the Resource-based Relative Value Scale Data Manager to assess how frequently pediatric-specific procedure codes are altered by RUC. Shockingly, they found that pediatric-specific surgical codes had either never been updated or have not been updated in decades [19]. In addition, they found that procedures performed in both adults and children were updated more often, but the vignette of the "typical patient" in these cases is often an adult [19]. Another study focused on pediatric surgical codes found that certain codes, such as brachial plexus reconstruction, demonstrated relative undervaluation compared to other, less complex and shorter cases [20]. An important insight into the vulnerability of pediatric codes specifically lies in the fact that there is a low prevalence of pediatric codes within Medicare reimbursement, and without this representation, other payers do not have a reliable benchmark to follow. As a result, these codes are also rarely reviewed or accurately reassessed [6•].

Implications for the Otolaryngologist

Although access to large datasets has certainly increased over the last decade, usage of big data within the field of otolaryngology remains relatively new [21, 22]. While responsible use of big data is a priority, utilization of these datasets for more accurate procedure valuation using operative time data could rectify biases in clinical decision making with regard to reimbursement. As of today, there are very few studies available on this topic in our field compared to other surgical subspecialties, such as orthopedics and plastic surgery. Further research is needed to assess the current state of code valuation within otolaryngology and compare allocated wRVUs within our highly subspecialized area of surgery.

In addition to expanding research efforts, otolaryngologists must advocate for representation within national societies, AMA, and RUC in order to compete for the value of their services. This is especially important for subspecialty care that can be highly nuanced and easily undermined within the process of code valuation. As advancements in technology and surgical technique continue to evolve, we can expect code valuation to lag behind. Therefore, this topic will only become more relevant to surgeons across the nation.

Conclusions

Procedure valuation is complex, but it is paramount to advocate for improvements in this process as incentives involving physician reimbursement can inadvertently affect patient care and outcomes. Major avenues for physician leadership to engage with this process include education, advocacy for more objective review of codes through evidence-based research, and increasing subspecialist representation in national societies involved in code valuation.

Author Contributions B.Q. and H.Q. wrote the main manuscript text. All authors critically reviewed and provided edits for the manuscript and prepared the article for submission.

Data Availability No datasets were generated or analysed during the current study.

Declarations

Conflicts of Interest Dr. Jay R. Shah serves on the medical advisory board for Ambu. There are no other potential conflicts of interest among authors.

Human and Animal Rights and Informed Consent This article does not contain any studies with human or animal subjects performed by any of the authors.

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