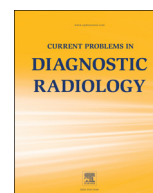




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## The Relative Value Unit: History, Current Use, and Controversies

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The relative value unit (RVU) is an important measuring tool for the work performed by physicians, and is currently used in the United States to calculate physician reimbursement. An understanding of radiology RVUs and current procedural terminology codes is important for radiologists, trainees, radiology managers, and administrators, as this knowledge would help them to understand better their current productivity and reimbursement, as well as controversies regarding reimbursement, and permit them to adapt to reimbursement changes that may occur in the future. This article reviews the components of the RVU and how radiology payment is calculated, highlights trends in RVUs and resultant payment for diagnostic and therapeutic imaging and examinations, and discusses current issues involving RVU and current procedural terminology codes.

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### Introduction

Understanding physician reimbursement is crucial to the sustained health of any medical practice. Physician reimbursement from The Centers for Medicare and Medicaid Services (CMS) is a 3-step process, which begins with the appropriate coding of the service provided by using a current procedural terminology (CPT<sup>®</sup>) code.<sup>1</sup> Second, the appropriate diagnosis is coded using an International Classification of Diseases (ICD) code.<sup>1</sup> Finally, a determination of payment is made based on the CMS resource-based relative value scale (RBRVS).<sup>1</sup> The CMS process is important to understand, as other payers typically use the CMS model as a guideline for reimbursement. In radiology, monitoring relative value units (RVUs) also allows practice managers to identify physician payment, productivity, budgeting needs, and cost benchmarking, and also has implications for future hiring needs.

Over the years, there has been an increased focus on incentive-related payment models. During all medical residencies, formal education regarding billing and coding is suggested to be included as a part of the core competency of professionalism by the Accreditation Council on Graduate Medical Education.<sup>2</sup> However, multiple studies have shown that trainees are unsatisfied with the quantity and quality of education they are receiving in these areas.<sup>2</sup> The purpose of this review is to educate radiologists and radiology practices on how they are compensated under the current RBRVS. The authors review the history and components of the RVU, demonstrate how RVUs are calculated, and provide examples of current RVUs for a variety of imaging examinations

and interventional radiology procedures. In addition, they define the role of groups that advocate for radiology reimbursement, and highlight current issues and controversies with this payment model.

### History of the RVU

RVUs are a measure of value used in the CMS reimbursement formula for physician services. RVUs are a part of the RBRVS, which was designed to value physician services and to serve as a guide for reimbursement. Before the creation of RVUs, CMS paid for physician services using a “usual, customary, and reasonable” rate, which led to a wide range of payments.<sup>1</sup> A large study was authorized by the Congress and conducted by researchers at Harvard University and the American Medical Association (AMA). The purpose of this study was to estimate the relative amounts of “work” physicians contribute to the services they render.<sup>3</sup> The definition of “physician’s work” took into account the physician’s time, mental effort, judgment, technical skill, physical effort, and psychological stress.<sup>3</sup> The study was published in 1988, and was the basis for the RVU system.

Signed by President George H.W. Bush in 1989, The Omnibus Budget Reconciliation Act implemented the RBRVS fee schedule effective from January 1992.<sup>1</sup> Currently, there are more than 7000 distinct physician services that have a (CPT<sup>®</sup>) code.<sup>4</sup> The AMA owns the copyright for the (CPT<sup>®</sup>) code system and receives approximately \$70 million annually by charging a license fee to those wishing to associate RVUs with (CPT<sup>®</sup>) codes.<sup>5</sup> CMS updates the codes annually by adjusting units for existing (CPT<sup>®</sup>) codes and defining units for new codes.<sup>1</sup>

Each (CPT<sup>®</sup>) code carries a corresponding RVU, which determines physician and total payment. For each (CPT<sup>®</sup>) code, the

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payment formula contains 3 RVUs: 1 for physician work, 1 for practice expense (PE), and 1 for professional liability insurance (PLI) expenses.<sup>6</sup> On average, the proportion of costs for CMS is 52%, 44%, and 4% for physician work, PE, and PLI, respectively.<sup>7</sup> For a particular geographic location, each of the 3 RVU components is adjusted by a geographic practice cost index (GPCI) that accounts for variations in wages, cost of living, overhead costs, and malpractice premiums in specific locations.<sup>1</sup> Some codes have additional components, which CMS defines as “Professional Fees” (Modifier 26) or “Technical/Equipment Components.” These 2 components combine to equal the total RVU for that particular code. Overall payment is calculated using the formulas listed later.<sup>6,8</sup> Work RVU denotes the RVUs for the physician’s time, skill, training, and intensity of work going into the production of a service. PE denotes the RVUs of the physician’s PEs allocated to the service, including rent, equipment, supplies, and nonphysician staff costs. PLI denotes the RVUs for the PLI premium or “risk” allocated to the service. Each of these 3 relative cost factors is adjusted for its own GPCI in the equation. Thus, there is 1 GPCI for the physician’s work, 1 for PE, and 1 for PLI. A conversion factor (CF) is multiplied by the total RVUs to determine a total payment amount. The CF currently stands at \$35.9335 (June 1–December 31, 2015) and is updated annually.<sup>9</sup> Factors affecting the CF update include the Medicare Economic Index, an expenditure target “performance adjustment,” and miscellaneous adjustments, including those for “budget neutrality.”<sup>9</sup> Payment is the total dollar amount paid for a service. Examples of RVUs for a variety of diagnostic and interventional radiology examinations and procedures are listed in the Table.<sup>10</sup>

$$\text{Total RVU} = (\text{Work RVU} \times \text{GPCI}) + (\text{PE RVU} \times \text{GPCI}) + (\text{PLI RVU} \times \text{GPCI})$$

$$\text{Payment} = \text{Total RVU} \times \text{CF}$$

The AMA’s Specialty Society Relative Value Scale Update Committee, also known as the “RUC,” sets and revises the RVUs and makes its recommendations to CMS. The RUC is formed by 31 physicians from a variety of medical specialties and societies, including radiology.<sup>11</sup> CMS accepts the RUC’s recommendations on RVU changes more than 90% of the time.<sup>4</sup> CMS requires changes in RVUs to be budget neutral, which means that when the RUC recommends increasing the RVU for a service, the RVUs of other services must be decreased.<sup>4</sup>

## Issues and Controversies

There are a multitude of controversial issues regarding radiology reimbursement. Most of these center around RVUs and current procedural terminology (CPT®) coding. Radiologists must be aware of these controversies, as recent changes have led to substantial decreases in reimbursement for diagnostic imaging examinations.

### Multiple Procedure Payment Reduction

Multiple procedure payment reduction (MPPR) is a critical controversial component of reimbursement in radiology. MPPR was first instituted by CMS in 2006. This payment structure applies to “advanced imaging examinations,” which the federal government defines as ultrasound (US), computed tomography (CT)/CT angiography (CTA), and magnetic resonance imaging/magnetic resonance angiography.<sup>12</sup> When multiple imaging examinations are performed on the same patient, by the same physician or group, during a single health care encounter (patient session), Medicare fully reimburses for the most expensive examination; however, reduced reimbursements are applied to subsequent imaging examinations.<sup>13</sup>

To understand MPPR, one must first be familiar with the billable components of a diagnostic imaging examination. Radiology services are composed of a technical and a professional component (PC). The technical component (TC) refers to the equipment costs, medical supplies, and radiologic technologist (s) performing the examination.<sup>14</sup> The PC refers to the radiologist’s interpretation of an imaging examination, including a written report.<sup>14</sup>

When MPPR was first implemented in 2006, a 25% reduction was applied to the TC of contiguous body part “advanced imaging examinations” performed by the same physician, on the same patient, on the same day.<sup>12,13</sup> In 2010, the Affordable Care Act increased this TC reduction to 50%.<sup>12,13</sup> CMS subsequently modified the MPPR to include noncontiguous body parts in 2011, across different imaging modalities.<sup>12,13</sup> In 2012, additional regulations were imposed, expanding the MPPR to include a 25% cut to the PC.<sup>12,13</sup> CMS further expanded the MPPR in 2013, applying it to physicians in the same group practice (same Group National Provider Identifier) taking care of the same patient on the same

**Table**

Nonfacility relative value units in radiology. Note that nonfacility payment, in most instances, is higher than that of hospital-based centers primarily owing to a higher PE RVU. Free-standing imaging centers receive more practice expense compensation than do hospital-based centers, as the practice expense of owning and operating equipment and providing staff resources is significantly more than the practice expenses covered by the physician in a hospital setting.<sup>10</sup>

Procedure	2014 Work RVU	2014 PE RVU	2014 MP RVU	2014 Total RVU	2014 Payment	2015 Work RVU	2015 PE RVU	2015 MP RVU	2015 Total RVU	2015 Payment	2014-15 Payment rate % difference (%)
PA and lateral chest x-ray	0.22	0.63	0.02	0.87	\$31.17	0.22	0.54	0.02	0.78	\$27.89	−10.6
CT chest without contrast	1.02	4.31	0.06	5.39	\$193.08	1.02	3.96	0.06	5.04	\$180.20	−6.7
CT abdomen and pelvis without contrast	1.74	4.26	0.11	6.83	\$218.88	1.74	3.77	0.11	5.62	\$200.94	−8.2
CT abdomen and pelvis with IV contrast	1.82	7.21	0.11	9.14	\$327.42	1.82	6.80	0.12	8.74	\$312.50	−4.6
CT head without contrast	0.85	2.59	0.05	3.49	\$125.02	0.85	2.35	0.05	3.25	\$116.20	−7.1
MRI brain with and without contrast	2.29	8.66	0.14	11.09	\$397.27	2.29	8.15	0.14	10.58	\$378.28	−4.8
MRI lumbar spine without contrast	1.48	5.28	0.11	6.87	\$246.10	1.48	4.66	0.08	6.22	\$222.39	−9.6
MRI joint lower extremity without contrast	1.35	5.73	0.11	7.19	\$257.57	1.35	5.16	0.08	6.59	\$235.62	−8.5
Abdominal ultrasound (complete)	0.81	3.13	0.05	3.99	\$142.93	0.81	2.61	0.05	3.47	\$124.07	−13.2
Lower extremity Doppler ultrasound	0.45	2.70	0.05	3.2	\$114.63	0.45	2.93	0.05	3.43	\$122.64	+6.5
V/Q scan	1.07	8.42	0.08	9.57	\$342.82	1.07	8.57	0.08	9.72	\$347.54	+1.4
Insert pleural catheter with image guidance	3.12	12.35	0.66	16.13	\$577.82	3.12	11.10	0.30	14.52	\$519.16	−10.2
Mediport catheter placement	6.29	31.19	0.56	38.04	\$1363	6.29	23.49	0.58	30.36	\$1087	−20.3
IVC filter placement	4.71	69.53	0.66	74.90	\$2683	4.71	69.31	0.67	74.69	\$2674	−0.4
Percutaneous renal tumor ablation	6.8	80.69	0.61	88.1	\$3156	6.8	81.66	0.64	89.1	\$3190	+1.1

MRI, magnetic resonance imaging; IVC, inferior vena cava.

day.<sup>12,13</sup> From 2006–2013, it is estimated that total losses in reimbursement due to the implementation of the MPPR policy were approximately \$1.2 billion.<sup>15</sup>

The primary justification offered by CMS for these reimbursement cuts is the pursuit of efficiencies, or overlapping and duplicative work within both the PC and TC, when patients receive multiple imaging examinations during a single day.<sup>16</sup> The rationale for reducing TC reimbursements stems from activities that are not repeated during multiple examinations on the same patient at the same time period, including preparing and cleaning the imaging examination room, obtaining consent, educating the patient, positioning the patient, preparing an intravenous line, and the use of other medical supplies.<sup>14</sup> However, when multiple imaging examinations are performed, the radiologist is responsible for all subsequent images, which are as time consuming as the initial examination is. Therefore, reductions in PC reimbursements are especially controversial.

### *Bundling of Codes*

Reductions in radiology reimbursement have also been seen with changes in (CPT<sup>®</sup>) coding and the development of new bundled codes. The AMA's Specialty Society Relative Value Scale Update Committee (RUC) in conjunction with CMS has identified "potentially misvalued" services. CMS defines "misvalued services" as services performed and thus billed together, which frequently incur some degree of overlap in time and effort.<sup>17</sup> CMS and RUC have developed methods to identify codes billed together 95%, 90%, and 75% of the time. These analyses often result in the development of new codes, which are subject to revaluing. Revaluing initiates a controversial cascade, ultimately causing payment reductions in TC, PC, and hospital payments, and provides a relatively short time (approximately 3 months) between notification and implementation.<sup>18</sup>

The development of new bundled codes is most drastically noted in mammography. A number of breast intervention (CPT<sup>®</sup>) codes were identified by a "75% reported together" screen, codes that are reported using a separate surgical code and a separate imaging guidance code.<sup>19</sup> As a result, the entire "family" of breast interventions has been restructured into 14 new bundled codes, with resultant sizable reductions: an average 24% reduction to the PC, and a 17% reduction to the TC, across the family.<sup>19</sup> Stereotactic biopsy alone has been reduced by 45% for the PC and 3% for the TC.<sup>19</sup> These reductions also affect patients undergoing breast interventions as hospital outpatients, with CMS paying hospitals 50% less in 2014 in comparison with 2013.<sup>19</sup> This has implications for the delivery of breast imaging care, for recruiting radiologists into breast imaging or breast imaging fellowships, and for keeping patients within the radiologist's health care system. For example, breast imaging can be used to justify bringing patients and their families into a specific health care system, as the revenue associated with other types of imaging needed by the patient and her family can compensate for the decreased reimbursement from the breast imaging studies.

### *Coverage of Screening Examinations*

Another controversy related to reimbursement is the denial by CMS of coverage of screening examinations, thus leading to difficulty in getting (CPT<sup>®</sup>) codes approved for screening imaging examinations, particularly for CT colonography and lung cancer screening. In 2009, CMS denied coverage for CT colonography (CTC, also referred to as virtual colonoscopy) as a screening test for colorectal cancer, by concluding that there is inadequate evidence for its effectiveness.<sup>20</sup> The American College of Radiology (ACR) responded by releasing a statement urging the Congress to pass

legislation to require Medicare coverage of CTC.<sup>21</sup> In this statement, the ACR cited the multicenter ACR Imaging Network—sponsored trial, published in the *New England Journal of Medicine*, as evidence that CTC is comparable in effectiveness to standard optical colonoscopy for the detection of cancer and precancerous polyps. The National Cancer Institute Colorectal Cancer Progress Review Group was cited for predicting that the wider use of colorectal screening could potentially save up to 20,000 lives annually. In addition, because private insurance companies such as CIGNA and UnitedHealthCare covered screening CTC, ACR stated that the CMS denial of coverage would unfavorably affect the minority and underserved populations.<sup>21</sup> At present, there is still no broad coverage for CTC, and (CPT<sup>®</sup>) codes include 74261 (CTC, diagnostic, including image postprocessing; without contrast material), 74262 (CTC, diagnostic, including image postprocessing; with contrast material(s) including noncontrast images, if performed), and 74263 (CTC, screening, including image postprocessing).<sup>22</sup>

In contrast to the screening CTC coverage denial, in February 2015, CMS issued a statement allowing coverage for screening of lung cancer with low-dose CT. Along with this statement, CMS listed specific beneficiary criteria including age of 55–77 years, no signs or symptoms of lung cancer, and a tobacco smoking history of at least 30 pack-years.<sup>23</sup> This decision had been anticipated after the agency had issued a preliminary decision to cover screening in November 2014. The decision still resulted in criticism from more than 40 medical societies urging the CMS to additionally provide coverage for adults older than 77 years.<sup>24</sup> Other groups have expressed concern over low-dose CT screening owing to its high false-positive rate.<sup>24</sup>

### *Future Payment Models*

Although the Affordable Care Act increases Americans' access to health care, it significantly affects how physicians are reimbursed. The traditional fee-for-service model puts volume above value, rewarding the treatment of disease rather than the promotion of health.<sup>25</sup> To improve quality and control the cost of health care, the White House economics team believed it was necessary to change the way physicians are paid. Under the Affordable Care Act, resources are allotted to CMS to test new payment models to determine which model has the highest quality care at the lowest cost. In this era of health care reform, the traditional fee-for-service reimbursement model is being replaced by specific quality metrics, which link payment to performance and value.<sup>26</sup> This new model has been coined "pay for performance," and incentivizes health care by using rewards and penalties.

CMS is also testing a bundled payment system, introduced in 2013 as the Bundled Payments for Care Improvement initiative. Organizations using the bundled payment system pay a fixed amount, based on historical average costs, for acute treatment of specific disease entities.<sup>26</sup> The bundled payment covers the acute inpatient hospital stay, the involved physicians, and postacute care costs. Currently, the Bundled Payments for Care Improvement initiative comprises 4 models, 3 of which use a retrospective bundled payment arrangement and 1 that involves a prospective bundled payment arrangement. Participants can select up to 48 different clinical condition episodes, ranging from acute myocardial infarction to urinary tract infection. Traditionally, Medicare makes separate payments to physicians for individual services provided for the course of treatment. CMS believes that this leads to fragmented, uncoordinated care, and rewards quantity of service rather than quality.<sup>27</sup> CMS reports research that demonstrates higher quality, more coordinated care at lower costs to Medicare using bundled payments.<sup>27</sup>

Additional payment models are being tested by CMS, and eventually a new payment paradigm would likely emerge. It is important for radiologists to be involved in conversations regarding potential changes to payment structures. Multiple radiology organizations are actively involved in advocating for radiology reimbursement. For example, the ACR strategic plan goals include assuring that existing and new practice and payment models recognize the value delivered by patient-centered radiological care (Imaging 3.0), ensuring radiology's relative value under the existing fee-for-service model, minimizing further payment cuts, and enhancing ACR members' understanding of and participation in new practice and payment models.<sup>28</sup> In addition, Radiology Political Action Committee is the bipartisan committee of the ACR, with the goal of supporting the campaigns of proradiology political candidates at the federal level through the voluntary contributions of ACR members.<sup>29</sup> Other radiology societies and subspecialty societies also have committees that advocate for reimbursement, but the ACR has been the main leader in this area.

### ICD-10

Transitioning to the new ICD-10 system would undoubtedly affect radiology reimbursement. On October 1, 2015, mandatory compliance with the ICD-10 system would be required of all health care professionals, affecting the diagnosis and inpatient procedure coding for everyone covered by the Health Insurance Portability and Accountability Act (HIPAA).<sup>30-32</sup> The United States first implemented the current version of ICD-9 in 1979.<sup>30</sup> ICD-10 includes updated medical terminology and classification of diseases, expanding approximately 14,000 ICD-9 codes to more than 69,000 new codes.<sup>30,32</sup> ICD-10 consists of 2 parts: ICD-10-CM diagnosis coding, which is for use in all US health care settings, and ICD-10-PCS inpatient procedure coding, which is for use in US hospital settings.<sup>30,31</sup> (CPT®) coding for outpatient and office procedures would not be affected by the ICD-10 transition,<sup>30,31</sup> but radiologists would likely globally increase the detail included in the history section of their reports to ensure that ICD-10 guidelines are fulfilled. This augmented attention to information in the history section is expected to occur for both inpatient and outpatient studies and procedures, as this would ensure that diagnostic and interventional radiologists are always meeting the coding standards set by ICD-10.

There are many features of the ICD-10 coding system that are new in comparison with ICD-9. ICD-10 was designed to provide more specific diagnostic information, including chronicity of disease, duration of signs and symptoms, exact location(s) of a condition, and activity during initial or subsequent encounter.<sup>31-33</sup> ICD-10 codes introduce laterality, allowing clinicians to specify right vs left, which accounts for greater than 40% of codes.<sup>30-33</sup> Additionally, ICD-10 expands severity parameters and code combinations to better capture the complexity of disease conditions.<sup>30</sup>

There is immense variability in the anticipated effect of the approximately 5-fold increase in ICD-10 codes among the radiology subspecialties. Breast imaging reported 11 primary diagnosis codes for approximately 90% of all claims under ICD-9, and there is a projected 1.1-fold increase to 12 primary diagnosis codes under ICD-10.<sup>32</sup> However, musculoskeletal radiology is projected to be the most affected, with a 28.8-fold increase under ICD-10, expanding 146 codes to approximately 4200.<sup>32</sup> ICD codes provide payers with diagnostic information required to determine medical necessity of an examination.<sup>32</sup> Radiologists are dependent on referring physicians in getting pertinent history for imaging examinations. Owing to the specificity of ICD-10, the necessity for referring physicians to provide accurate and adequate history is markedly increased. This may lead to radiologists or office staff needing to call referring physicians' offices or page referring physicians more

frequently to obtain additional information regarding patient history. Incorrect or inadequate ICD information may result in denied or delayed radiology reimbursements.<sup>33</sup> It is imperative for radiologists to adequately prepare for the transition to ICD-10 to prevent potential losses in revenue.

### Conclusion

Radiologists must understand the history and current use of RVUs and (CPT®) codes for reimbursement. This knowledge allows radiologists to remain current on controversial issues regarding reimbursement and future payment strategies, so as to understand our role in this new paradigm. Radiologist involvement in regional-, national-, and government-level discussions about future reimbursement models is crucial to ensure that our specialty remains at the forefront of medical advancements and patient care.

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