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The RBRVS For Oncology Services¹

By Judith Dernburg, M.A.

The long-awaited results of Harvard's phase III vignettes for evaluation and management (E/M) services in the specialties of oncology and hematology have been completed. This article provides an in-depth look at Harvard's methodology, as well as the actual vignettes.

On January 1, 1992, the Health Care Financing Administration (HCFA) implemented the 1989 legislation reforming the Medicare payment system for physician services. The cornerstone of payment reform is the Medicare Fee Schedule (MFS), which is based on the resource-based relative value scale (RBRVS). The MFS incorporates three major components of resource costs: physician's work, practice costs, and malpractice expenses. For a given service, uniform relative values are established for each component. These relative values are then adjusted by geographic factors to account for local variations in costs. Finally, the relative values are multiplied by a conversion factor to compute payment for the service. The MFS is being phased in over a four-year period ending December 1995. During the transition, Medicare payments will blend the MFS and existing "customary, prevailing and reasonable" (CPR) payments.

Issues Facing Oncology

In the time between the fee schedule proposed in the *Federal Register* of June 1991 and November 1991, when the final

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rule was promulgated, several changes were made that affected all specialties, including clinical oncology. First, the entire impact of the transition to the MFS was no longer assumed to be borne by the fee schedule component of charges.² Second, HCFA determined that the physician's presence is not required for provision of many chemotherapy services. Under the MFS, physicians can only bill for professional services for three specific chemotherapy codes: CPT 96440 (chemotherapy into the pleural cavity requiring thoracentesis); 96445 (into the peritoneal cavity); and 96450 (in the CNS requiring lumbar puncture).

Oncologists are also affected by changes in reimbursement for evaluation and management (E/M) services. Because E/M codes were interpreted differently across and within specialties, enactment of the MFS required that these codes be redesigned to ensure that they would be interpreted and used in the same way by all physicians. Our research has shown that time is highly correlated with the work of E/M services and we recommended that time be included as part of the definition of new codes.³

Specialty Results

Full implementation of the MFS will increase payment on average for procedures provided by medical specialties, due primarily to higher payments for E/M services. Table 1 shows that when MFS is fully implemented, the national average charge for three physician-provided chemotherapy procedures will increase by as much as 7 to 83 percent. Depending on one's assumptions about volume response and the dollar value of the conversion factor, projections show a gain in Medicare income of 8 to 15 percent for general internal medicine.⁴ This article summarizes the methods and data used to derive the RBRVS for services provided by oncologists; the data represent the final results of six years of research.^{5,6,7} It also examines the impact of the RBRVS on physicians' fees. In reviewing these data,

it should be kept in mind that they represent average charges. The effect on individual physicians will depend upon their practice patterns and current charges.

General Methodology

Because Harvard's study called for expertise in a variety of fields, staff consulted with physicians, third-party payers, and health service researchers. Technical consulting groups (TCGs) were appointed whose members were nominated by specialty societies in a process the American Medical Association coordinated. In each specialty, physicians representing a mix of academic and private practice were selected. TCGs provided the main source of substantive information on medical practice. A small group of TCG members, representing every specialty, served as a cross-specialty panel whose task was to agree on a set of services that would align the work of all specialties on a common scale.

Physicians' work was defined as comprising both time and intensity. Time was measured and work was measured using magnitude estimation. Intensity is defined as work per unit of time (W/T) and has several dimensions: mental effort and clinical judgment; technical skill and physical effort; and stress due to risk. The total work of a service was partitioned into work performed before, during, and after the service itself (pre-, intra- and post-service) because, typically, the duration and intensity of each phase differs markedly.

Ratings of intra-service work were obtained through a national survey of practicing hematologists and oncologists. Using magnitude estimation, respondents were asked to rate services by comparing them to a reference service, which was chosen to represent a commonly performed procedure and given a value of 100 on a ratio scale. Thus, a physician who judged a service to require twice as much work as the reference service, rated its work as 200; a service deemed half as much work would be rated 50. The reference service for hematology/oncology was

Table 1. Reimbursement for Physician-Provided Chemotherapy Services in the Medicare Fee Schedule
PER SERVICE

CPT	Description	1991 Charges*	Medicare Fee Schedule Charges*	Percent Change
96440	Chemotherapy administration into pleural cavity, requiring thoracentesis	\$65.65	\$81.63	24%
96645	Chemotherapy administration into the peritoneal cavity, requiring paracentesis	47.82	87.41	83
96650	Chemotherapy administration into CNS (e.g., intrathecal) requiring lumbar puncture	65.68	70.44	7

* These represent HCFA's estimates of average charges for 1991 obtained by inflating 1989 Part B charges by the Medicare Economic Index. The second column represents the national average MFS reimbursement. All charges shown are for internal medicine.

"a routine office evaluation for a 77-year-old female with nodular small cleaved-cell lymphoma."⁸

Pre- and post-service work represents close to 50 percent of the total work of a typical surgical service and 30 percent of an E/M service. To measure pre- and post-work for E/M services, which is often fragmented, the best approach was first to ask physicians to estimate the intra-service work and then to estimate total work for the same service. Pre- and post-service work was the difference between the two. For surgical services, seven activities that comprise the global surgical service were defined. Pre- and post-service work is the product of time for each component and the average work per unit time (intensity). Intra-service work was added to pre- and post-service work to obtain total work.

Cross-Specialty Alignment

In the national survey, each specialty used a different reference standard to rate the work of other services. In order to create a common scale of work for all specialties, the separate scales had to be linked. The key to producing a common scale was identifying pairs or "links" of services from different specialties whose work was approximately equal. These pairs were selected by a cross-specialty panel of TCG physicians following a structured method of face-to-face discussion.

Some specialties, such as radiology or pathology, are "insular;" that is, they have

few links to other specialties. The position of these specialties on the common scale of work is very sensitive to a change in the value of even one link. Hematology/oncology has 13 links, which is sufficient to ensure the specialty's stability on the common scale of work.

Computing the Payment Impact

The effect of an RBRVS-based fee schedule on the income of physicians in different specialties was assessed. The objective was to compute the impact of the RBRVS if it were implemented without alteration. Two assumptions were made: first, it was assumed that moving to the RBRVS from a CPR-based payment system would lead to no change in the total volume of a service (i.e., no volume offset). The second assumption was that total Medicare expenditures for physicians' services would be budget neutral. These assumptions differ from those HCFA used in implementing the MFS. While HCFA assumed budget neutrality in calculating the conversion factor, it assumed that, in response to the new fee schedule, there would be an increase in volume for some services. Harvard wanted to estimate the effect of changes in fees alone on the income of physicians. These results are shown in Tables 2 through 6.

Methods of Data Collection

The development of the RBRVS required the collection of primary data from

Table 2. Vignettes for Evaluation and Management Services Hematology/Oncology: RBRVS Study Phase III
CONSULTATIONS

Service Vignette	Intraservice	
	Time	Work
a. Initial office consultation for an 80 year-old male with newly diagnosed adenocarcinoma of the prostate and negative metastatic work-up.	50	143
g. Initial office consultation for a second opinion regarding initial therapy for a 32 year-old patient with biopsy-proven Hodgkin's lymphoma.	56	163
i. Initial office consultation for a second opinion regarding treatment for an 80 year-old male with newly diagnosed adenocarcinoma of the prostate and negative metastatic work-up.	48	134
j. Initial office consultation for a second opinion regarding treatment for a 23 year-old female with Stage IIA Hodgkin's disease with positive supraclavicular and mediastinal nodes.	52	164
k. Initial office consultation for a second opinion regarding treatment options for a 40 year-old female with a two-centimeter adenocarcinoma of the breast.	54	162
m. Initial hospital consultation for a 66 year-old female with enlarged supraclavicular lymph nodes, found on biopsy to be malignant.	52	171

practicing physicians. To obtain data for oncology, a national telephone survey of a random sample of the specialty was conducted in 1990. A stratified random sample of more than 160 physicians was selected from the AMA Masterfile of physicians. The interviews were conducted by telephone and administered by a university-based survey research organization. However, it was expensive and time-consuming to obtain ratings of work using national telephone surveys, because the method limited the number of services that could be studied at any one time to no more than 40. In phases I and II, a method of charge-based extrapolation was used to estimate relative values for an additional 2,000 services, but there were a number of resulting problems. When surveyed and extrapolated values were compared for those codes for which both were available, there were differences of 40 percent or more. Since there are more than 5,000 physician codes, some way of replacing the charge-based extrapolation for these codes was needed.

In phase III, a small group of physicians, known as the Technical Assessment Panel, and a mail survey were used to study additional services. There were two

Table 4. Vignettes for Evaluation and Management Services Hematology/Oncology: RBRVS Study Phase III OFFICE VISITS

Service Vignette	Intraservice	
	Time	Work
. Routine follow-up office evaluation at a three-month interval for a 77 year-old female with nodular small cleaved-cell lymphoma.	16	45
c. Follow-up office visit for a 40 year-old male with known ITP (idiopathic thrombocytopenic purpura) and bleeding gums, who now has a nose bleed.	21	80
d. Office visit for restaging of an established patient with new lymphadenopathy one year post therapy for lymphoma.	33	116
e. Weekly office visit for 5FU therapy for an ambulatory established patient with metastatic colon cancer and increased shortness of breath.	18	70
f. Follow-up office visit for a stable 50 year-old female with metastatic breast cancer.	16	47
h. Initial office visit for a 73 year-old male with an unexplained 20 pound weight loss.	49	154

* Reference Service

goals for the further study of hematology/oncology in this phase: to collect data on

Table 3. Vignettes for Evaluation and Management Services Hematology/Oncology: RBRVS Study Phase III HOSPITAL VISITS

Service Vignette	Intraservice	
	Time	Work
l. Hospital admission, examination and initiation of induction therapy for a 42 year-old patient with newly diagnosed AML (acute myelogenous leukemia).	78	244
n. Follow-up hospital services on the third day for a patient with neutropenia, a fever responding to antibiotics and continued slow gastrointestinal bleeding on platelet support.	19	105
o. Follow-up hospital services on the fourth day for a stable 72 year-old lung cancer patient undergoing a five-day course of infusion chemotherapy.	30	137
p. Follow-up hospital services on the second day for a patient with AML, fever, elevated white count and uric acid, undergoing induction chemotherapy.	12	49
q. Follow-up hospital services on the second day for a stable but nauseated patient with AML, in remission, hospitalized for administration of consolidation chemotherapy.	19	85
r. Follow-up hospital services on the second day for a 73-year-old female with recently diagnosed lung cancer, who complains of unsteady gait.	22	97

the work and time required for physician-performed chemotherapy; and to modify some of the vignettes provided by the American Society of Clinical Oncology (ASCO) and to add additional vignettes. Phase III vignettes for office and hospital visits and consultations are shown in Tables 2-4. The tables include mean values of intra-service work and time for each vignette.

Common Code Results

Tables 5 and 6 summarize the changes in total allowed charges for E/M codes for Medicare services provided by hematologists and oncologists. These data are based on 1989 billings updated to 1991, and on simulations of the impact of the fee schedule. The average allowed charge for E/M services increases both absolutely and relative to invasive and diagnostic procedures. Because hematology/oncology is not classified as a specialty by HCFA, the specific impact of the fee schedule on income cannot be measured.

Remaining Issues

The RBRVS has been accepted by much of the medical and research communities, government, and the public as an improved method of compensating physicians for

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their services. Yet enactment and implementation raise questions regarding its impact on different specialties. A number of issues relate to the research that produced the work values which are at the heart of the MFS. For example, it became clear that revision of E/M codes was essential to the development of the MFS. The need for other CPT-4 coding improvements has been recognized by researchers and practitioners alike.⁹ Another remaining issue is the development of a method to treat practice costs in a resource-based framework.

Coding

Under the CPR system, differences in definitions of services, packaging, and payment were based upon individual fee profiles and practice patterns. In producing the new MFS, uniform definitions and codes and rules for payment had to be developed. CPT-4 lacks a clear conceptual basis with agreed-upon principles for classifying, defining, and coding a large, growing repertoire of physicians' services. Services provided by different specialties are handled inconsistently. Of the approximately 7,500 CPT codes, about 1,300 are for a single specialty, orthopedic surgery, which has 186 codes for hand procedures alone.

There are fewer than 13 codes for excision of brain tumors and less than 80 codes for E/M services used by all specialties. As a result, there may be minute distinctions in work between some codes, while the variation between others will be much greater.

Although the original legislation envisioned that E/M codes would not change until 1993, the need for consistent coding accelerated their reform. Evidence from phases I and II of the Harvard study showed that there was wide variation in the use of E/M codes between and within specialties and between physicians. The new codes, designed to encourage more uniform coding, consist of three parts: a detailed definition of the complexity and severity of the presenting problem(s); average time required; and examples drawn from a range of specialties.

Specialty Differences

As recommended by PPRC and enacted by Congress, the MFS does not recognize differences in payment by specialty. The Harvard team has argued that differences in the length of training ought to be compensated by a payment system.¹⁰ Not

**Table 5. Selected New E/M Codes
Typical Intraservice Time, Intraservice Work
OFFICE VISITS**

CPT	Description	Time	Work	Average Allowed Charge	
				CPR*	1996**
99201	Initial Office Visit—level 1	10	27	\$27	\$27
99202	Initial Office Visit—level 2	20	53	34	41
99203	Initial Office Visit—level 3	30	78	40	57
99204	Initial Office Visit—level 4	45	115	61	84
99205	Initial Office Visit—level 5	60	153	67	105
99213	Established Office Visit—level 3	15	39	26	32
99214	Established Office Visit—level 4	25	64	39	50
99215	Established Office Visit—level 5	40	100	57	76

* Source: Levy, J. M., et al. Understanding the Medicare Fee Schedule and its impact on physicians under the final rule. Med. Care 1992 (in press)

** The 1996 Fee Schedule Values are those estimated by Harvard if there were no allowance for a volume offset (see text).

distinguishing between specialties works a particular hardship on those medical subspecialty practices which are characterized by long and complex office visits and consultations, as can be seen by comparing Tables 2-4 and Tables 5-6.

Practice Costs

Practice costs make a significant contribution to payment for each service in the new MFS, accounting for nearly one-half of physicians' gross revenue. Under a fully implemented MFS, approximately half the payment for each service will consist of practice costs and professional liability insurance.

The MFS incorporates practice costs using the national average allowed charge for the procedure, multiplied by the percent of gross revenue spent on overhead and professional liability insurance, averaged across all specialties, and weighted by the frequency with which each specialty performs the procedure. Since calculation of practice costs in the MFS is based on physicians' historical charges for each Medicare service, Medicare fees are, in fact, only partly resource-based.¹¹ By using historical charge-based data, the payments for practice costs distort the relative payments within and among types of services and specialties, which maintains

**Table 6. Selected New E/M Codes
Typical Intraservice Time, Intraservice Work
HOSPITAL VISITS**

CPT	Description	Time	Work	Average Allowed Charge	
				CPR*	1996**
99221	Initial Hospital Visit—level 1	30	80	49	60
99222	Initial Hospital Visit—level 2	50	131	77	97
99223	Initial Hospital Visit—level 3	70	182	84	123
99232	Subsequent Hospital Visit—level 2	25	75	34	47

* Source: Levy, J. M., et al. Understanding the Medicare Fee Schedule and its impact on physicians under the final rule. Med. Care 1992 (in press)

** The 1996 Fee Schedule Values are those estimated by Harvard if there were no allowance for a volume offset (see text).