

Collecting Data on Physician Services and Hours Worked

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*A report by staff from University of Minnesota School of
Public Health, Division of Health Policy and Management
for the Medicare Payment Advisory Commission*

August 2012

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A report to the Medicare Payment Advisory Commission

August 3, 2012

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Executive Summary

The study described here was conducted at the request of the Medicare Payment Advisory Commission (MedPAC) to answer the question of whether larger, subspecialized, medical practices (whether independent or part of a larger more integrated health system) can, with reasonable efficiency, effectiveness and accuracy, determine how clinical service providers (physicians and other health professionals) allocate time to clinical effort for patients receiving specific services in the inpatient, outpatient and office settings. This is a “methods study” and did not address appropriateness or “value” of care provided. The principal goal was testing the ability of medical practices of varying clinical specialties and organizational designs to access and organize information and data that could be used to examine assumptions of how existing payment models and methods reimburse for physician services.

Summary findings from this study demonstrate:

- a) Practices participating in this study were likely to utilize electronic information systems (including electronic health records) that are capable of allocating time spent by provider engaged in a broad range of clinical activities (and settings) with specificity and accuracy;
- b) The practices in the study utilized internal clinical services management models which assign providers to specific clinical services and settings for defined periods of time (e.g. a week or month) to optimize the efficiency and productivity of the practice; and
- c) The practices in the study were likely to have productivity expectations of physicians (and other licensed providers) assigned to clinical services “slots”.

While information and data requests made by this study were novel, most participating groups were able to accommodate requests relatively efficiently and effectively from existing records.

Introduction

Under Medicare's physician fee schedule payment system, payment rates are based on relative value units (RVUs), which account for the relative costliness of inputs used to provide physician services: physician work, practice expenses, and professional liability insurance (PLI) expenses. The RVUs for physician work are designed to reflect the relative levels of time and intensity associated with providing each service.

Recently, concerns have been raised about how the Medicare physician fee schedule values practitioner work. Specifically, does it accurately account for the amount of physician time spent providing services? These concerns are particularly relevant in a setting of changing health care organizational strategies and the recent increase in larger single and multiple specialty practices with sophisticated information technology and management support systems. Given these issues, the Medicare Payment Advisory Commission (MedPAC) contracted with us to develop an instrument for collecting data on physician services and hours worked, to search for methods that might be employed to allow the Centers for Medicare and Medicaid Services (CMS) to improve their estimates of hours worked per service. This report presents a summary of our efforts to develop an approach to collecting data on physician services and hours worked.

Background

This project focuses on RVUs for practitioner work, which account for about 48 percent of fee schedule payments. Research for CMS and the Assistant Secretary for Planning and evaluation (ASPE) of the Department of Health and Human Services (DHHS) has shown that the time estimates for some services are likely too high. Overstated time estimates can cause a service to be overvalued and other services to be undervalued.

The accuracy of the work RVUs has taken on greater importance now that the Patient Protection and Affordable Care Act (PPACA) is law. Section 3134 of PPACA requires that the Secretary establish a process to validate the fee schedule's RVUs. The validation process is to include a sampling of services that meet criteria such as rapid growth, use of new technologies, and substantial changes in practice expenses. The process is to consider work elements, including time.

Work RVUs also have an important effect on the compensation physicians receive from Medicare and private payers. In a study for MedPAC, researchers at the University of Minnesota found that, when combined with a target compensation amount, the most common practitioner compensation model within provider organizations is based on the number of work RVUs provided by physicians [1]. Greater accuracy of the work RVUs—and the time estimates that influence them—could change the levels at which physicians are compensated.

As reported in their June 2011 Report to the Congress, MedPAC is interested in developing a more objective approach to estimating physician time. Time estimates currently rely on surveys conducted by physician specialty societies, and MedPAC is concerned that their members may have a financial stake in the process. A MedPAC analysis found that time explains most of the variation in work RVUs between service categories, explaining from 72 percent to 90 percent of the variation in relative values for physician work between service categories [2]. This indicates that the accuracy of time estimation has an important effect on how physician work is valued.

The purpose of this study was to determine if the larger, more organizationally sophisticated medical practices of varying specialties can accurately and reliably report time spent by clinical providers allocated to specific clinical services that, when taken in totality, sufficiently represent the greater majority of all clinical effort produced by the practice. This project was designed as a “methods study”; an examination of the potential to effectively capture practice data produced for varying sources; e.g.: electronic medical record, service billing and practice operations and management systems, and to aggregate and re-configure available practice information for purposes of effectively determining time spent by provider, per clinical service by service type and category. Inasmuch as many of the physician services reimbursement methods are developed from assumptions of how physicians spend their clinical time, the ability to accurately and reliably measure and quantify time spent by physicians, within specialty medical practices and by services, will allow for productive refinements of these reimbursement models and methods over time.

Overall Methods

This study was conducted with the cooperation of health care organizations, or ‘groups’, in five specialties: radiology, cardiology, primary care/family medicine, gastroenterology (GI), and colon and rectal surgery (CRS). We developed a draft data collection approach and conducted a preliminary pilot of the approach with one of the participating groups. We then expanded the study to an additional four participating groups to test the approach in a wider range of specialties and organizational settings.

The goal of the study was to determine the feasibility of collecting data on physician services and hours worked, including the ability to match data on physician time and service. We sought to collect data from each participating practice from a week’s worth of service on: work relative value units (WRVU) per provider, current procedural terminology (CPT) coded services conducted per provider, and clinical time spent per provider.

Study Universe

Larger, more organizationally and managerially sophisticated practices were identified for participation under the assumption that practices of this type are more likely to have access to required data with the ability to retrieve such data with reasonable effort. Smaller, less integrated practices may not have these capabilities. The experience of the principal investigator coupled with in-depth conversations with senior managers of large health care groups reveals that larger subspecialty groups typically share design and operating characteristics that facilitate the collection of data of interest. These characteristics include:

- Physicians are assigned to specific clinical activities according to a prescribed work schedule. Consequently, the majority of the total available physician services potential work effort is assigned and accounted for weekly by specific clinical service;
- Many such groups have electronic health records and related systems which record procedures conducted and billing codes for procedures in an easily retrievable format. Virtually all large systems and practices are likely to have this capability in the near future; and

- Physicians are organized as clinical specialty departments with clinical sub-specialization (e.g. cardiology – interventional, electrophysiology, diagnostic imaging, general/consultative).

Based on this knowledge, we selected study sites based on size, clinical integration, management structure, and data capabilities, including:

- Large and clinically subspecialized group;
- Group operates from a model and systems base that allows for the availability of sophisticated electronic management systems, including electronic systems that track and quantify time spent per physician by clinical effort category;
- Physician services are organized to deliver an effective and efficient patient experience while optimizing the professional services potential of the physician group, including collaboration of subspecialized physicians within the group;
- Group utilizes an established electronic health record;
- Group is willing to provide a lead department physician or manager to represent the site in the study and manage data collection at site; and
- Group is willing to release the required data to investigators (following privacy protection procedures)

Study sites were located in the Minneapolis/St. Paul Minnesota ‘Twin Cities’ area. We did consider the importance of sampling for geographic diversity, as in a full study. However, we felt that the limited methods development purpose of this study was best suited to an approach that allowed for close collaboration with study sites, and that working with sites located in a proximate geographic region would allow for greater ease of collaboration.

Although this study was conducted for the Medicare Payment Advisory Commission, we did not limit the collection of data to only Medicare patients. Few providers make decisions on patient care based on a patient’s insurance status. Provider work schedules are also blind to payer. Therefore, we assume that the time providers spend per procedure per patient is not affected by patient insurance status. This allows us to expand the study sample beyond Medicare patients to all patients receiving service during the period of observation to allow for a larger study pool. Further, in a previous study, we found that many non-Medicare payers reimburse

providers using Medicare RVUs [1]. If, in practice, the time estimates for RVUs will also influence payment outside of Medicare, patients outside of Medicare should be included in the development of these estimates.

Data Collection Instrument

Our goals in developing a data collection instrument were to develop a tool which (a) collects data on time worked and procedures conducted by physicians and other health professionals; (b) collects this data from existing electronic medical records and/or management records, and (c) can be provided to health care organizations to guide them in reporting data drawn from their existing records with a minimum of data collection burden on the organization.

Based on these principles and using information and shared knowledge from multiple health care contexts, we developed a simple data collection method which gathers existing data retrospectively to provide an estimate of average time spent by providers on procedures. The protocol is outlined below (**Figure 1**). Data were collected on all patient encounters for a one week period of service, regardless of patient insurer or insurance status.

Figure 1: Pilot Data Collection Protocol

- 1. Identify data source.** Identify existing data sources that provide information on:
 - Procedures conducted by CPT code per provider
 - WRVU value per CPT code
 - Hours or time worked per provider, either per CPT code or per shift
- 2. Identify time period.** Identify a week in the past where these data sources are available and that is representative of a 'normal' week in your organization (i.e. not a major holiday, major change of process or EMR).
- 3. Collect data.** Pull identified data records for identified time period.
- 4. Identify service categories.** Identify the major service categories for your organization. Map CPT codes uniquely to each service category.
- 5. De-identify data.** (*Can be conducted by study staff*) Remove provider names or system IDs from the dataset and replace with unique study codes to ensure privacy protection.
- 6. Merge and clean data.** (*Can be conducted by study staff*) Merge datasets to associate data elements of time, provider, CPT code, WRVU per CPT code, service category, and date.

Pilot Study

Introduction

We developed and tested a pilot data collection method using one medical group. In developing the method, we worked in collaboration with staff from the pilot site, taking into account existing data capabilities and practice patterns.

Setting

The pilot site for the data collection method was a large cardiology group. The group is a mixed academic/community group which employs approximately 50 cardiologists. They provide cardiology services including interventional cardiology, electrophysiology, advanced heart failure care, congenital heart disease care, preventive cardiology, pulmonary hypertension care, and women's heart disease care.

The practice schedules physician work in advance by week and health care setting, such as inpatient office practice or hospital. Physicians are scheduled for blocks of time, usually of 4 hours, and are expected to fill that time as efficiently as possible with work. Eighty to 90% of a block of time is scheduled in advance with patient visits, with the remainder reserved for same-day visits or new patients. However, if during a block of time physicians experience slack time, they are expected to fill it and maximize productivity (e.g., physicians will read echocardiograms). Physicians are employed and expected to work 42 weeks of the year. They give up the flexibility of an individual practice in exchange for the ability to sub-specialize and participate in a group of a size that allows each physician to become more efficient.

Methods

We held extensive conversations with a representative from the pilot site to learn about how the practice functioned, how time and services were tracked, and which data sources would be feasible to use in a retrospective analysis. We also discussed the goals of the study in depth, and worked together to describe a methodological approach that would use existing practice resources to provide information on time and services.

For the collection method to meet the study goals, it needed to collect data on both time worked and procedures completed by providers. In the pilot practice, these data came from

multiple sources. Data on procedures completed was recorded by the practice as part of their billing system and maintained in an electronic medical record system. Data on time worked was recorded on paper, in weekly management schedules. When both the study investigators and practice representative had come to an understanding about a preferred data collection method and sources of data, the practice representative returned to the cardiology group to collect the necessary data.

The practice representative led and managed the data collection effort within the cardiology group. He engaged two staff members familiar with each of the different data sources – one staff member familiar with the electronic medical record (EMR) and billing records, and one familiar with the scheduling records and administration. Data drawn from the EMR included information on CPT coded services conducted by provider, date, and facility. Data drawn from scheduling records included information on shifts worked by provider, date, and facility. The practice representative then assigned service codes to CPT and facility. This information was provided to the study investigators who de-identified the data set by replacing provider names with alphanumeric study identifiers and aggregated all of the data points in a single file.

The final data elements included in the dataset were:

- Provider ID: Alphanumeric study ID for each health care provider
- Provider Type: Type of health care provider, such as physician or other health professional (including nurse practitioner and physician assistant)
- Facility ID: Alphanumeric study ID per facility in which services were conducted
- CPT code: 5-digit numeric Current Procedural Terminology code for a service conducted and billed for by a provider
- CPT description: Short description of CPT coded service
- Service Code: Short description of service type, including office practice, imaging, procedural interventional, procedural electrophysiology, and hospital inpatient
- Date: Date of service
- Hours: Number of hours worked per physician per facility type

Hours worked included time spent by health care providers on patient care services and related tasks, such as seeing patients, reviewing tests, preparing for and performing surgery and procedures, communicating with patients and family members, consulting and communicating with other health professionals about patient care, and completing medical charting or electronic medical record data entry. We excluded any hours worked on administrative functions (such as staff meetings or trainings), travel, breaks, or on-call time from the dataset. Other health professional procedures and hours include those billed incident to and independent of a supervising physician. Procedures conducted by other health professionals and billed as incident to a supervising physician are attributed to a physician. Procedures conducted by other health professionals and billed independently were attributed to the health professional.

The dataset contained information on services conducted and hours worked by 49 physicians and other health professionals over a 5-day business week period in April of 2011. This week was chosen as an average week within the practice (i.e. an average number of physicians were on vacation, there were not additional patient demands due to a holiday).

This dataset allows us to associate hours worked per provider in a single facility to the set of CPT codes billed for during that period of service. Using these data, we can calculate the average amount of time worked per CPT coded service within a single provider's shift.

Results

We were able to successfully collect data on physician hours and services from the pilot site.

There are two major advantages of the dataset collected from the pilot site. First, the estimate of an average amount of time worked per CPT coded service includes pre-, post-, and intra-service times. This is an advantage over recording time per procedure based on time spent by provider in an electronic medical record, which may only represent intra-service time or a portion of service time. Second, the data are provided at the individual provider level, which allows for the examination of variance in time spent per procedure by individual physician.

There are also limitations inherent in this dataset. Existing data sources do not allow us to link time directly to a CPT coded service, only to a block of time worked in a particular setting on a particular service category. Calculating an average time per CPT coded service conducted during this block may mask variation in time spent per service. However, there are group

expectations for productivity per block of time that indicate that an entire shift would be filled with productive clinical service with little slack time.

Pilot Site Feedback

We discussed the experience of data collection with a representative from the pilot site. The experience of the pilot site provided insight into needed capacities and study processes to ensure that useful data on physician time and work are collected.

The site representative noted that thorough preliminary discussions were necessary to understand the goals of the study and assess his practice's capability to contribute. Before data collection, we held a series of meetings with the practice representative discussing the goals of this study, to collect basic information on physician time and work, and the possible broader goals of MedPAC, to reform payment systems to more accurately reflect time and effort spent by providers in health care services. We had in-depth discussions on how the pilot site functioned administratively and clinically to understand their work practices and data capabilities. This allowed the study team and pilot site representative to come to a common understanding about the specific data that would need to be collected to meet the study goals. The representative said that, "I think that the time we spent up front really made the difference. Then we didn't waste time pulling data that was meaningless."

The representative also discussed the importance of having an established electronic medical record (EMR) and staff experienced in querying the EMR, billing, and scheduling data to collect the data needed for the study in a timely and efficient manner. The pilot practice has been using the same EMR for the past ten years, and two staff members with five to seven years of training and experience in the EMR, billing and scheduling systems were tasked with querying the data. Importantly, the staff members were familiar with the functioning the clinic and were able to do basic reasonableness checks of the data that resulted from their queries. It was also necessary to have the pilot site representative be in an administrative position where he could oversee and direct the data collection process.

The pilot site did not experience any direct reward for participating in the study. They already have a strong focus on provider productivity, and the data collected were not used for internal practice improvement. However, the site representative felt that it was important to

participate in the study because it may have an impact in the future on “the way certain procedures are rated and paid.” It was also of personal value to the pilot site representative to be involved in “a project that touched on a national level” and was outside of the normal scope of his duties.

Overall, the pilot site representative thought that the actual data collection was fairly simple once the site understood the data needs and goals of the project. The experiences of this site highlighted the importance of a recruitment process for sites which includes in-depth discussions on the uniqueness of the site itself and on study and MedPAC goals, and the importance of an established EMR and experienced staff in data collection.

Expanded Study

The expanded study includes four additional sites sampled on the basis of variation in specialty and site characteristics. The specialties included in the expanded sample are primary care/family medicine, gastroenterology, radiology, and colorectal surgery.

Methods

Recruitment: We recruited provider groups throughout the Minneapolis-Saint Paul area between November 2010 and March 2011. We held an initial provider meeting with the pilot group, study investigators, and MedPAC to talk with potential participating groups about the study and their ability to participate. Investigators then followed up with potential participating groups to determine their availability and willingness to participate in the study. Criteria for group inclusion in the study are described in the ‘Study Universe’ section above. The groups represented practices which met the study criteria, were located in the geographic region, and were willing to participate and contribute staff and leadership time needed to participate in the study. Only one of the six groups we approached declined to participate due to inability to dedicate staff time to participation at time of recruitment. Recruitment materials are provided in Appendix A. The University of Minnesota Institutional Review Board (IRB) determined that the study was exempt from IRB review under category 4 of existing data prior to study recruitment.

Protocol development process: We conducted an extensive data collection protocol development process with each participating group. We held an initial meeting with senior

leadership of participating practices to describe the study, the goals of the study, and the data we hoped to collect from their practice. Each group used a unique arrangement of practice organization, management, and internal data collection and monitoring. We held further meetings as necessary with group leadership and staff to discuss the particulars of their organization and data and determine how best to collect the needed data within their setting.

Data collection and handling: We determined, in collaboration with each group, that a combination of billing or electronic medical record (EMR) and scheduling data would work best to provide the requested data. Data were collected by staff in each group in separate data files for RVU and CPT data (from billing records or EMRs) and time data (scheduling records). Study investigators and staff then de-identified the data, associated the data sets from each group, and aggregated the data in a single electronic file. All data were handled in accordance with standard data privacy practices.

Data and Sample

Data: We collected data from each group on WRVUs, CPT coded services, and time spent per individual provider. ‘Provider’ refers to either a physician or other health care provider (i.e. nurse or physician assistant) who provided clinical services.

We also, where possible, collected data on the service category associated with a worked unit of time. Through discussion with the pilot group we determined that it would not be feasible, using existing data sources, to easily and accurately determine time spent per individual service and CPT code. Therefore, we attempted to reach a similar level of granularity by determining time spent per service category. Service categories were determined by each individual group based on the major categories of service they provide. For example, the cardiology group provides hospital inpatient, imaging, office practice, procedural electrophysiology, and procedural interventional service categories. The gastroenterology group provides hospital, clinic, and surgery service categories. The goal was to have CPT codes mapped uniquely to each service category. While this was generally feasible, there were some areas where CPT codes were not unique across service categories. Groups designated service category based on provider schedule and location of service.

Sample: We requested data from a one week period of service for each group. We specified that each group select a week period of service that was representative of a normal

week in their organization throughout the year (e.g., not too many providers were on vacation, a usual number of patients were seen).

Population

Each group participating in the study has unique organizational and clinical characteristics. A brief description of each is provided below.

Group 1: Cardiology: A full description of group 1, the pilot group, is given in the pilot section of this report above. This is a large cardiology group with a mixed academic and community practice which employs approximately 50 cardiologists. They provide cardiology services including interventional cardiology, electrophysiology, advanced heart failure care, congenital heart disease care, preventive cardiology, pulmonary hypertension care, and women's heart disease care. Provider work is organized by pre-determined schedule.

Group 2: Gastroenterology: Group 2 is an independent specialty practice that includes approximately 75 providers. They provide gastroenterology services to adult and pediatric patients, and include sub-specializations in pediatrics, inflammatory bowel disease, acid reflux, esophageal disorders, colon cancer prevention, liver and biliary tract disease, hepatitis and pancreatic disease. They conduct both inpatient and outpatient procedures at a network of clinics and hospitals. Providers work at multiple locations as organized by a pre-determined schedule. This group provided data on a subset of their providers which they chose as a representative sample of the clinical services provided, time spent, and WRVUs produced on average by all of their providers.

Group 3: Primary care / family medicine: Group 3 is a mid-sized family medicine clinic with an academically-affiliated community practice. The group includes providers who are mostly physicians with a specialty in family practice, but who also include psychologists and pharmacists. The clinic is one of a network of clinics owned and operated by a large multi-specialty group practice organization. Providers work in a single location as organized by a pre-determined schedule.

This group has been pilot testing a new care model for patients with especially complex medical, social and psychological conditions. This care model applies a "team approach" to these patients making use of a physician as team leader. Other members of the team include: nurse practitioners, clinical pharmacists and behavioral health specialists (typically clinical social

workers). This pilot study effort was launched to produce a more effective approach to the management of more complex challenging patients. One driving goal is a more cost-effective approach to patients who, otherwise, consume health services inefficiently and ineffectively.

This model was included in the study because it is comparatively novel, and the customary health services billing models and methods do not apply.

Group 4: Radiology: Group 4 is an independent specialty practice which includes approximately 30 providers. The group provides imaging services with specializations in x-ray, computed tomography (CT), magnetic resonance imaging (MRI), ultrasound, mammography, bone density, hysterosalpingogram (HSG), pain management procedures, interventional radiology, vein treatment, nuclear medicine, and positron emission tomography – computed tomography (PET/CT). Providers work in multiple settings as organized by a pre-determined schedule. However, provider shifts are not associated with geographic location, but are instead associated with a subset of radiology (e.g., mammography or MRI). Provider shifts are scheduled to focus on a single area, but if providers are not busy they may pull in images from other areas to maintain productivity.

Group 5: Colon and Rectal Surgery: Group 5 is an independent physician-owned specialty practice which includes approximately 30 providers including surgeons and clinical support staff. The group specializes in diagnosis, evaluation and treatment of patients with colon and rectal conditions and diseases including colorectal cancer and inflammatory bowel disease. They include specialties in anorectal disorders, biofeedback, colonoscopy, cancer care, diverticular disease, flexible sigmoidoscopy, inflammatory bowel disease, and pelvic floor disorders. It has affiliations with academic practice. Providers work based on pre-determined schedule – however, these schedules are generally full-day (8 hours). This group provided data on one of their providers as an example of general work completed and time spent per week by providers in the group.

We collected data on a varying number of providers within each practice. The number and type of providers included in each data set is shown in below (**Table 1**).

Table 1: Study Population					
	Group 1 Cardiology	Group 2 Gastroenterology	Group 3 Family Medicine	Group 4 Radiology	Group 5 Colon & Rectal Surgery
Type of providers included	Physicians and other health professionals	Physicians	Physicians	Physicians	Physicians
Number of providers included	44 physicians, 12 other health professionals	5	44	19	1*

* While the group has approximately 30 providers, data from a single provider was selected by the participating group as being representative of the average work of a provider in the group.

Results

The results of data collection efforts are displayed by participating group in a summary matrix on the next page (**Table 2**). The technical study elements examined for each site (e.g., clinical services, time spent by provider) are displayed on the vertical axis. Within each corresponding matrix cell we summarize results from applications of the study protocol to each practice site, together with editorial comments to clarify observations.

There are two key results from this study:

1. Practices were able to access the data elements required to satisfy the requirements of the study. Most did not do so routinely; i.e., these data elements are not presented routinely as a management report or decision-making tool. They were, however, available within existing management systems with reasonable effort.
2. Actual time spent by individual physicians per specific clinical effort (CPT code) was not available for all participating practices. However, available practice data allowed us to estimate average time spent per physician per clinical service. Physicians are typically scheduled, as individuals and groups, into categories of clinical activity by “time slot”. Clinical units produced (by clinical category) were quite easily accounted for during these periods of clinical service assignment.

Table 2: Results

Group has ability to...	Observed ability & Comment	Group 1 Cardiology	Group 2 Gastroenterology	Group 3 Family Medicine	Group 4 Radiology	Group 5 Colon & Rectal Surg.
display WRVU by provider?	observed	Yes	Yes	Yes	Yes	Yes
	comment	Data were available and easy to access.	Data were available and easy to access.	Data were available and easy to access.	Data were available and easy to access.	Data were available and easy to access.
display CPT by provider?	observed	Yes	Yes	Yes	Yes	Yes
	comment	Data were available and easy to access.	Data were available and easy to access.	Data were available and easy to access.	Data were available and easy to access.	Data were available and easy to access.
display clinical time spent by provider?	observed	Yes	Yes	Yes	Yes	Yes
	comment	Clinical time includes total time spent per provider work shift.* Time estimates were based on provider schedule. Data were accessible with some effort.	Clinical time includes total time spent per provider work shift.* Time estimates were based on provider schedule. Data were accessible with some effort.	Clinical time includes total time spent per provider work shift.* Time estimates were based on provider schedule. Data were accessible with some effort and delay (all data requests went through a supervisory corporate entity).	Clinical time includes total time spent per provider work shift.* Time estimates were based on provider schedule. Data were accessible with some effort.	Clinical time includes total time spent per provider work shift.* Time estimates were based on provider schedule. Data were accessible with some effort.
match time spent to CPT & WRVU information ?	observed	Yes	Yes	Yes	Yes	Yes
	comment	Time, CPT and WRVU data were matched by date, provider, and service category.	Time, CPT and WRVU data were matched by date, provider, and service category.	Time, CPT and WRVU data were matched by date and provider.	Time, CPT and WRVU data were matched by date and provider.	Time, CPT and WRVU data were matched by date and provider.
display CPT by service category?	observed	Yes	Yes	No	No	Yes
	comment	Service categories include: hospital inpatient, imaging, office practice, procedural electrophysiology, and procedural interventional. CPT codes map uniquely to service categories.	Service categories include: hospital, clinic, surgery, and other. CPT codes do not map uniquely to service categories.	CPT displayed by shift. Shifts were general care and could not be easily divided into service categories.	CPT displayed by shift. Shifts included multiple types of care and could not be easily divided into service categories.	Service categories include: screening, surgeries and procedures, evaluation and management, and medicine. CPT codes map uniquely to service categories.

* Time spent per provider work shift includes time spent on all activities during that shift, including direct patient contact, medical record charting, provider consultations, and related services. On-call and administrative time is excluded.

Discussion

This study has two major findings on the ability of practices to collect data on physician services and hours worked. First, practices were able to access the necessary data elements, although this was a novel use of their data. Second, these data will allow us to estimate an average time spent per physician per clinical service by shift or ‘time slot’.

An important third finding we have come to through executing the data collection process with multiple sites is that it is likely possible to organize data systems to report these data on a regular basis. All participating practices have a functional EMR and related electronic management systems. Modifications to EMR applications can be made to more accurately track individual physician’s time with each clinical activity if required (by payers). Tracking physician time per clinical activity can be achieved by practices integration of: the EMR, billing systems, and management systems. To-date, there have been no requirements to pursue these capabilities. Refinements in reimbursement methods would encourage management practices in this direction.

The process used to recruit participant groups and determine how to collect the necessary data within their practice proved to be an important aspect of data collection. As noted by the pilot study group, in-depth discussions on how the group functioned clinically and administratively and the specifics of the data set required were needed to allow the study team and group representative to establish a data collection process specific to the group which allowed for collection of all of the necessary data. We found that this was also true with the groups in the expanded study. Groups generally had the needed data existing in-house, but usually in different data systems with no linkage between time and service data. The novelty of the request to link these two data sets required that study investigators and group leaders and staff work through exactly how to link the data sets so they would accurately represent provider work.

The data sets collected from all groups have advantages and limitations that match the data from the pilot site. The estimate of an average amount of time worked per CPT coded service includes pre-, post-, and intra-service times provides an advantage over recording time per procedure based on time spent by provider in an electronic medical record, which may only represent intra-service time or a portion of service time. The data are also provided at the

individual provider level, which allows for the examination of variance in time spent per procedure by individual physician.

The main limitation of the data set is that existing data sources do not allow us to link time directly to a CPT coded service, only to a block of time worked in a particular setting on a particular service category. Calculating an average time per CPT coded service conducted during this block may mask variation in time spent per service. An additional limitation of the study is that the sample was limited to a single geographic area in the Minneapolis/St. Paul ‘Twin Cities’ region. We did consider the importance of sampling for geographic diversity, as in a full study. However, we felt that the limited methods development purpose of this study was best suited to an approach that allowed for close collaboration with study sites, and that working with sites located in a proximate geographic region would allow for greater ease of collaboration. Within the data set, some groups did not provide data on all of the providers in a practice, but on a small sample which was chosen by groups as a representative subset. Thus, the data sets from these groups may not capture the full diversity of services and time within the group. It is important to note that due to these limitations, data from this survey are not generalizable to other populations. The intent of the study was to determine the feasibility of collecting this type of data set, and not to collect a data set that would be used for other analyses of trends.

More than one study participant expressed some concern regarding the use of this type of data in estimates of time as part of an RVU-based reimbursement system. The concern was “will be punished for superior efficiency and productivity?” This concern was not unexpected in that the larger, more sophisticated specialty practices have, through hard work and capital investments (e.g., in EMR and electronic management systems) created comparatively more efficient and productive clinical and business models. Specifically, the concern is if they “expose” themselves to actual time, RVU and CPT code relationships, will this information be used to reduce reimbursements at a time when the more efficient and effective practice models could be rewarded?

Conclusions

Based upon the results of this methods study, it is reasonable to conclude that larger, more managerially-sophisticated medical practices, whether independent or organized within

integrated health systems, can track, monitor and evaluate with reasonable accuracy time spent by providers in direct patient care and related clinical efforts on behalf of patients, within the inpatient and outpatient care settings. Furthermore, with the availability of an electronic health record (EHR), the ability to pursue time allocations by provider and type of clinical effort with specificity is enhanced, with the potential for future system refinements.

It was particularly interesting that the data and informational requests made of study participants, while novel in nature (i.e. the groups had not routinely accessed, retrieved or examined provider data as requested by the study protocol) were, for the most part, satisfied with reasonable efficiency and without excessive of effort. Participants were able to address relatively complex requests for data configured according to study protocols; the required data existed within electronic clinical and management information systems. Participants found value in the data as requested by the study; i.e. study data (as requested and configured) was seen as useful for evaluating practice efficiency, including the assignment of clinical provider time.

An interesting observation was that the large, clinically sophisticated and subspecialized medical practices, it was observed that internal clinical triage protocols (methods for sorting and assigning patients based upon presentation of clinical symptoms and related co-clinical factors) may cause an efficient internal referral to the most qualified “subspecialist”. If this observation holds, then while a patient may be clinically complex and, on the surface, in need of more provider time, assignment to the more qualified and experienced provider may allow for pursuit of a proper diagnosis and treatment pathway with greater efficiency and less time spent than provided for by the framework of the reimbursement method that applies.

In summary, the data and information requests made of study participants, while novel, were not unreasonable to pursue. The typical response to the request was “yes we have that information, but don’t routinely make it for purposes of practice management or clinical productivity evaluations”. Furthermore, the combination of EHR and expanding electronic management systems are likely to accommodate future related data and informational retrieval needs with increasing efficiency.

In general, it would appear from this study that medical practices which are larger and subspecialized, with more advanced electronic data management systems can track time and effort applied by provider, per patient, and patient type, regardless of site of service.

Acknowledgements

We would like to thank Jon B. Christianson, Ph.D. for his support and insight. We would also like to thank all of the participating practices for the time, effort, and enthusiasm they dedicated to this study.

References

1. Christianson JB, Z.D., White KM, Zeglin J, *Exploring Alternative Approaches to Valuing Physician Services*, 2011, Medicare Payment Advisory Commission: Washington, D.C. p. 55.
2. Commission, M.P.A., *Report to the Congress: Medicare and the Health Care Delivery System*, 2011, Medicare Payment Advisory Commission: Washington, D.C. p. 227.

Appendix A: Recruitment Materials

Study Recruitment Letter

Dear _____,

With this letter I am inviting your organization to consider participating in an important study sponsored by the Medicare Payment Advisory Commission (MedPAC). MedPAC staff selected our research team to help them examine the ongoing utility of the relative value unit (RVU) method to quantify, value and reimburse physician services efforts. MedPAC recognizes that, as the provider side of the healthcare market place has consolidated, physician services (especially certain clinical specialties) have reorganized to take advantage of sub specialization and division of effort to make physicians services more efficient and effective.

This project is considered to be a pilot study. It focuses on how leading clinical specialty groups organize and deploy physician services within a practice, answering the basic question of “how do more efficient practice models get the work done”. Attached you’ll find a summary description of the study along with proposed methods and our approach to data acquisition.

Clinical specialties of interest include:

- Family medicine
- GI
- Radiology
- Orthopaedics
- Cardiology

We expect to conduct this pilot project in phases:

Phase I: Test the data acquisition method with one practice (cardiology)

Following this phase, leaders from participating practices will be assembled to discuss the experience of the initial pilot study. Potential Phase II participants can determine their capability to move forward with participation. A MedPAC representative will attend this meeting.

Phase II: The four groups yet to complete data collection will proceed.

Results will be examined by participants and recommendations will be made to MedPAC regarding a larger scale roll-out of the approach.

Phase III: The research team, together with MedPAC officers, will determine the value of moving forward to expand the study to up to three additional groups per specialty.

As you will see in the study description, this is not an effort to determine how physicians are to be paid. The focus is on the future application of the existing RVU system to self-organized and managed specialty medical groups.

We are not asking for a commitment of your organization to full participation at this time. What we would like is your commitment to participate in the meeting described in “Phase I” above.

Thanks for your consideration of this invitation. Please contact me with any questions you might have (zisme006@umn.edu).

On behalf of MedPAC and the research team, I look forward to hearing from you.

Sincerely,

Daniel K. Zismer, Ph.D.
Principal Investigator
Associate Professor and Director,
MHA and Executive Studies Program
Division of Health Policy and Management,
School of Public Health, University of Minnesota
Associate Adjunct Professor
Division of Medicine

Study Overview

Engaging Organized Physician Service Providers to Define an Optimal Method of Quantifying Physician Service Effort: Overview for Pilot Study Leaders

Executive Summary:

The Medical Payment Advisory Commission (MedPAC) is interested in the development of a large-scale effort to properly and reliably categorize and quantify physician effort. MedPAC is concerned that current physician services reimbursement methods may not properly categorize and quantify time for common physician services within specialties. This is a “methods” project, not a policy project. In other words, for purposes of this study, MedPAC wants the U of M research team, together with a small group of larger, well-organized physician specialty practices to lead the development of the approach. MedPAC intends that these results will inform a larger scale effort aimed at improving precision in the categorization and quantification of physician services effort.

We are inviting groups that are viewed as leaders in the organization and delivery of specialty physician services to participate in this early stage of the broader effort, creating an opportunity for them to influence recommendations to CMS. What is being asked is a data collection process that will span a period of one week. This data should include three elements: 1. procedures conducted by CPT code by provider, 2. WRVU per CPT code, and 3. Hours or time worked per provider per CPT code or by shift. CPT codes will also be categorized in broader categories such as: Hospital inpatient, outpatient, consultation, procedural, imaging, etc...

Once the collection process is complete, the U of M research team will de-identify, merge, and clean the data to fit what MedPAC has requested. Upon completion of this pilot study, the research team, together with MedPAC officers will determine the value of moving forward to expand the study.

Characteristics of the Pilot Effort:

1. One physician group per specialty identified, with an initial focus on five specialty areas: primary care, cardiology, orthopedics, GI and radiology.
2. Physician group participants are comparatively large and subspecialized.
3. Groups operate from a model and systems base where sophisticated, electronic management systems are available. This includes electronic systems that track and quantify time spent per physician by clinical effort category in order to facilitate reliable conversion of physician services effort to work relative value units and, ultimately, physician services billings.
4. Physician services are organized to deliver an effective and efficient patient experience while optimizing the professional services potential of the physician group.
5. The management and operations team at each group supports this effort, including sample audits of the electronic systems to best ensure the validity and reliability of the reporting.

Principal Goals of Data Collection

1. Capture virtually all professional efforts of the physician group for a defined period according to the effort categories provided.
2. Estimate any residual, aggregate effort not categorized.
3. Capture and quantify total physician FTE's allocated to the total effort quantified during the data collection time period
4. Convert physician effort, by category, to WRVU's produced.
5. Allocate all WRVU's produced by major payer category; e.g., Medicare, Medicaid, commercial insurer, other.
6. Audit a small sample of results to ensure reliability of results delivered from electronic management reporting systems.

Physician Services Categories to Be Observed and Quantified

Categories can be customized to the needs of each individual group practice. WRVUs can be grouped to describe similar physician categories and efforts. Some of the categories developed are shown in the following list:

1. New patient consultation – outpatient
2. New inpatient admissions – consultation
3. Established patient visit – outpatient
4. Established patient visit – inpatient
5. Clinical procedure, diagnostic – inpatient
6. Clinical procedure, diagnostic - outpatient
7. Clinical procedure, treatment – inpatient
8. Clinical procedure, treatment – outpatient
9. Reading/interpretation, laboratory (inpatient or outpatient)
10. Reading/interpretation, imaging (inpatient or outpatient)
11. Supervision of clinical staff
12. Consultation on patient with another provider
13. Patient – related administration
14. Follow-up visits on “packaged/bundled” services; e.g., procedures.

*It is important to note that categories can be developed specific to your individual practice needs. Cardiology, for example, added categories specific to procedures and imaging.

Procedural Questions for Eligibility

1. Does your group plan for physician services assignments for each week of clinical activity?
2. Does your group have the internal systems' capabilities to track physician services time allocations by the clinical categories identified?
3. Can physician time allocated, by clinical category, be reliably converted to WRVU's?
4. Can the group categorize WRVU's produced, per measured category, by payer (at least within the categories identified)?
5. Can the group verify the accuracy/precision of its electronic physician services categorizations and quantifications?
6. If other health professionals are used in the practice, can the group apply the same methods (as for physicians) to them?