Dental Productivity Measures

What are RVUs?

Relative Value Units are used to quantify the productivity of a dental program, to set fee schedules, to determine reimbursement of professional employees, etc. They are an attempt to include all of the knowledge and resources utilized in the delivery of dental services, such as time, dental materials, malpractice risk, complexity, etc. within a single measurement. In a relative value scale, the values assigned to each procedure or task are not absolute values, but rather are values that reflect the relative or proportional use of resources among the procedures in the scale. For example, if the time required to provide a dental service were used as the only factor in calculating a relative value scale, and the time required to provide a single surface amalgam filling were chosen as the baseline, then that amalgam filling could be assigned the relative value of 1. Any dental procedure that took twice as much time would be assigned the value of 2; half as much time, the value of 0.5, and so on. Relative Value scales can be based on a single factor (e.g. time or fee) or a combination of factors as are Resource Based Relative Value Units.

Why are RVUs important?

The development of Resource Based Relative Value Units (RBRVUs) in medicine came about in the late 1970s because of a concern among researchers about the limitations of the Usual, Customary, and Reasonable (UCR) payment system used by Medicare and insurance companies for physician payment. The Medicare Fee Schedule was adopted in 1992 to address the shortcomings of the UCR system and replace it with one based on RBRVUs. The RBRVU scale was developed by a research team from Harvard School of Public Health to measure the relative work effort of physicians for a wide range of services.

Relative Value Studies Inc. (RVSI) of Denver, Colorado began similar research in 1985 to develop Relative Values for Dentists (RVD), a RBRVS for dentistry (they currently also provide the ongoing research for the medical RBRVS most commonly used by States in their Worker’s Compensation Programs). Their research identified six criteria that were deemed to be consistent factors in determining the relative value of a procedure. They include the following:

- time
- skill
- risk to patient
- medico-legal risk to the practitioner
- severity of the problem (i.e., emergent, acute, chronic, prophylactic)
- unique supplies not separately billable

Using these criteria, a random sample of dentists across the country are surveyed to evaluate those dental procedures they perform frequently or feel qualified to evaluate. The individual six criteria are not weighted so as not to distort the findings. RVSI’s surveys have shown practicing dental practitioners to be largely consistent in their assessment of relative value without weighting criteria.
The RVD is currently indexed to the *Current Dental Terminology* (CDT) and supplemented by additional coding as recommended by practicing dentists. The CDT codes and descriptions are reprinted in the RVD.

If your program chooses to pay dentists by base salary plus bonuses based on productivity, the use of an RVU scale can help to balance differences in case mix among different providers, and therefore presents a fairer method of measurement than the dollar value of the services provided. A specialist who provides many high level (and high dollar) services would have his/her productivity skewed compared with a general dentist who provides lower level preventive and restorative care, when compared on a dollars-produced basis; but an RVU scale can balance the discrepancy.

For examples of how RVUs can be used, click on the following links:

- [Washington State Healthcare Authority RVU Cookbook](#) (used with permission)
- [CDT-4 RVU Spreadsheet](#)
- [IHS RVU table 2004](#)

**What are Service Minutes?**

Service Minutes (SMs) have been used in the Indian Health Service Dental Program for over two decades. As the term would suggest, service minutes are a time estimate, expressed in minutes, of the amount of time required to complete a specified dental procedure. Service minute values were initially determined using time-motion studies. Service minute values have been assigned to the *Current Dental Terminology* (CDT) codes as well as to IHS specific codes not included in the CDT. Service minutes are currently used to measure dental productivity, levels of need for dental services in the communities served by the IHS, and to estimate budget, staff, facility, and other resource needs. Service minutes are a raw time scale rather than a relative value scale.

SM have some well-recognized disadvantages that render them less than ideal for their intended uses. SM cannot account for the varying lengths of time required to provide specific dental services when the services are provided alone versus as one of multiple services provided at the same visit. For example, the SM value for a single surface permanent amalgam, code D2140, is 12 minutes. If a D2140 is provided as the only service during a dental visit, the time required to provide the service far exceeds 12 minutes when set-up and clean-up time, the time needed for local anesthesia, and the time required to actually prepare and place the restoration are combined. However, when the D2140 is provided along with several other services in the provision of quadrant dentistry, for example, and the time required for set-up, clean-up, and local anesthesia are averaged over all of the services provided, then the 12 minute value is probably a fairly accurate estimate. Other, more complex services are probably more accurate as single procedures, but over-estimate the time required when done as one of multiple procedures. For example, a service such as a four or more surface or incisal angle permanent anterior composite, code D2335, with a SM value of 45 minutes, may take 45 minutes to complete on tooth 8, but does not take an hour and a half to complete on teeth 8 and 9 at the same time.
Based on these drawbacks, the Indian Health Service is currently in the process of developing an IHS-specific RBRVS to replace Service Minutes.

What are Composite Time Values?

From the late 1970's until 1997, the Department of Defense (DoD) dental programs used a measure called Composite Time Values (CTV) to measure productivity, population need, and resource requirements. CTVs were based on time-motion studies of the time required to provide the most common dental procedures, with the time needed for other services extrapolated by expert panels from those directly measured. However, rather than using the raw time measure, the DoD chose to make CTVs relative to an index procedure. A single surface amalgam was chosen as the index procedure, and the time required for this procedure was determined to be 17 minutes. Therefore, the single surface permanent amalgam was assigned a CTV of 1. A procedure that required twice the time of a D2140 would be assigned a CTV of 2, and so on. Within the Army, CTVs were known as Weighted Work Units (WWU).

What are Dental Weighted Values?

Dental Weighted Values: In 1997, DoD replaced CTV with Dental Weighted Values (DWV). DWVs are based on the 95% level of the National Average ADA fee survey and other regional fee schedules. Whenever a large discrepancy was found between the ADA average fee and the regional fee schedules, averages are computed. CDT codes were used for common dental procedures, Current Procedural Technology (CPT) codes for pathology, surgical, and other services not adequately described in the CDT-2, with the dental fee schedules applied to the CDT codes and HCFA data applied to the CPT codes. The dollar value assigned to each code was then divided by 100 to arrive at the DWV. For example, the DWV for the code D2140 is 0.75, with the average fee for this procedure being $75. The change to a cost-based value unit was precipitated by the need to be able to compare the cost of services provided by DoD dentists with the costs of contracted care. The recognized shortcoming of DWVs is that the fees that DoD pays for contracted services vary by region (as do all dental costs), so a direct comparison is still not accurate without adjustment of the fees by region. DWVs are now applied to CDT-3 codes.

How about using the number of patients seen to measure productivity?

The number of patients seen per unit time (usually per day) is a quick and easy measure of clinic productivity. However, it is also a measure that is very much at the mercy of broken appointments and clinic scheduling practices. For example, if the clinic schedules long appointments during which multiple procedures are accomplished, then the number of patients seen will be small. If, on the other hand, short appointments are scheduled and few services provided at each visit, then the number of patients seen will be high. Broken appointments will also greatly impact this measure, and are not within the control of the clinic.

What about measuring productivity by the number of services provided?
Services provided is a more sensitive measure than is the number of patients seen, but it still has its drawbacks: it fails to account for the amount of time required to accomplish each individual service. A system that counts services over-values simple, brief procedures such as dental x-rays while under-valuing complex procedures such as dentures or surgical extractions by giving them the same unit value of “1”. Under such a system, two providers who both work a full day could have vastly different levels of productivity caused solely by the case mix of their patients for the day.

What about measuring productivity by collections?

Dollars billed or collections are commonly used to measure productivity of dental practices in the private sector. The fee for each service should take into account the time required, skill level needed, malpractice risk, materials consumed, etc. Therefore, the fee serves as a multi-factorial measure of the resources required for each service provided, and as a productivity measure addresses many of the shortcomings of patients seen and services provided. The one main drawback of collections/billings as a productivity measure is that it lacks regional comparability: dental fees vary widely by region of the country, rural vs. urban setting, etc. If the productivity measure is to be used only for internal comparisons, then collections may be as robust a measure as you need. If, however, you want to compare your clinic’s or provider’s productivity with other organizations, then collections are less useful. The use of a sliding fee scale will also skew results depending on the economic mix of your patient base.

Resources

- Relative Values Studies Inc. of Denver, Colorado has been publishing a commercial relative value scale for dental practices for many years. Information on their products can be obtained by calling (303) 534-0506 or toll free at 1-800-824-2133, or on their internet website at [http://www.rvsdata.com/](http://www.rvsdata.com/).