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Needed: A 'Low-volume Adjustment' for Medicare Prospective Payment to Small Rural Providers

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Introduction

The Balanced Budget Act of 1997 set out to balance the federal budget by the year 2002 with many changes to the Medicare payment system, including the extension of prospective payment (PPS) to additional health care services. A new PPS for skilled nursing facilities is already being phased in, and PPSs for hospital outpatient services and home health services will be implemented soon. Ambulance service will be paid prospectively, as well, with the imminent change in Medicare payment method to a fee schedule.

A rural provider infrastructure that is already thin could be substantially affected by the expansion of prospective payment. The introduction of PPS to in-hospital care precipitated the closure of hundreds of rural hospitals after 1983. To counter their financial losses in acute care service, rural hospitals have expanded outpatient, home health, and long term care services on their balance sheets. Also hoping to stave off a wholesale loss of access to in-hospital services in rural areas, federal policy makers have initiated alternative payment systems for particular classes of rural hospitals, such as sole community providers, heavily Medicare-dependent hospitals, and limited service Critical Access Hospitals.

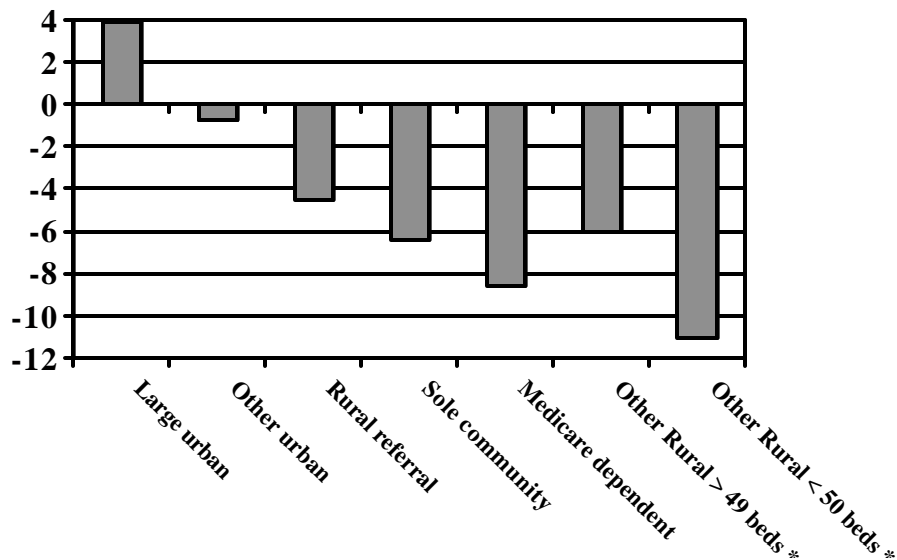
Today, hospitals and other small rural providers are again likely to lose substantial revenue as the new prospective payment systems are implemented. This paper explains why this is the case by delineating the payment problems experienced by low volume rural providers. It will also suggest a method for making appropriate low-volume adjustments for certain situations and for certain services.

Low volume providers

The situation of small rural providers can be illustrated with Medicare payments to hospitals. In 1998, Medicare payments to all hospitals totaled 2.6% over their Medicare

costs. In contrast, Medicare payments to rural hospitals are 6.4% under their Medicare costs. The situation for the group “rural hospitals with less than 50 beds” is even worse, with Medicare payments 11.1% under costs. These results are displayed in Chart 1, which shows the Medicare gains and losses by hospital category for 1998¹. There are a number of factors contributing to the underpayment of rural hospitals by Medicare: the asymmetry in the disproportionate share adjustment for rural and urban hospitals, for one, and the depressing effect of the generally lower wage adjusters for rural hospital, for another. However, a key factor, and the focus of this discussion, is the lower volume experienced by small, rural hospitals, and the effect of the low volumes on cost per unit of service. The points to note in Chart 1 are that the small rural hospitals of under 50 beds are the group that loses most under Medicare. They are followed by the small, rural, Medicare- dependent hospitals, and then Sole Community Hospitals. The chart represents all rural hospitals.

Chart 1: Medicare Payment Gains and Losses by Hospital Type



* rural hospitals that do not qualify for federal protection programs

The majority of small hospitals are located in rural areas, as would be expected. In urban areas only 26% of hospitals have fewer than 100 beds, while in rural areas 81% of hospitals have under 100 beds.

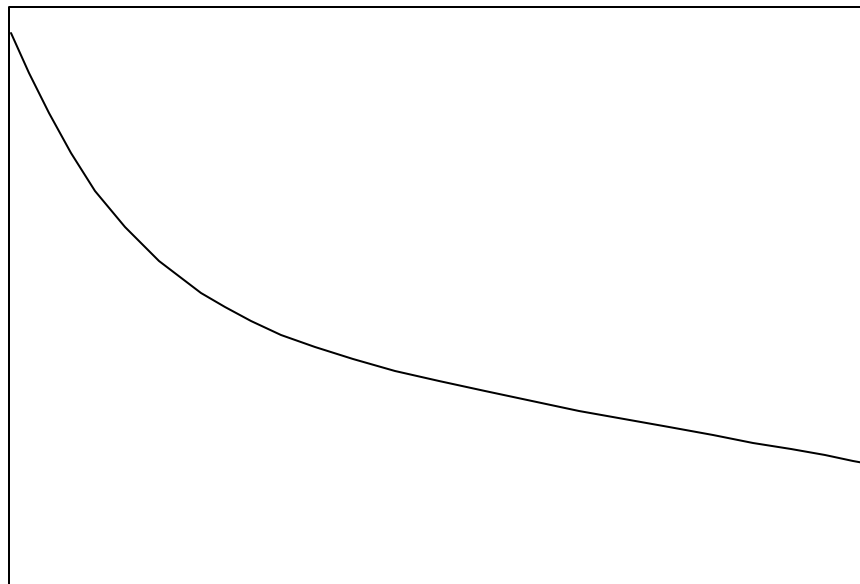
¹ The data for Chart 1 is calculated from Table C-15, report to congress: Selected Medicare issues, MedPAC, June 2000

Low volume affects unit costs

Almost all services have fixed costs associated with them. These are costs that are incurred and are relatively independent of the volume of service provided. For example, some equipment may be required whether one service is performed or one thousand services. Similarly, there are minimum staffing requirements, although these may be mitigated in some instances by sharing staff between services. The fixed costs result in high costs per unit of service at low volumes. As volume increases, fixed costs are spread over a larger revenue base and unit costs are reduced. Also, as volume increases, the variable costs associated with the services may have a more dominant effect on per unit cost. Figure 1 is a standard picture illustrating this effect that appears in basic economic texts.

Figure 1: Cost per unit versus volume

Cost per unit



Volume of service (units)

This is usually an oversimplification of the actual variation of costs with volume, as the costs more often follow a step function. There is a base level of fixed costs, then the costs increase slowly with increasing volume due to the incremental costs associated with providing each service – for example, supplies and utilities, then when the existing resources reach their full capacity another staff person or piece of equipment has to be acquired, resulting in a sharp increase in the total costs, and an increase in the unit costs. This is illustrated in Figures 2 and 3.

Figure 2: Total cost versus volume of service

Total cost

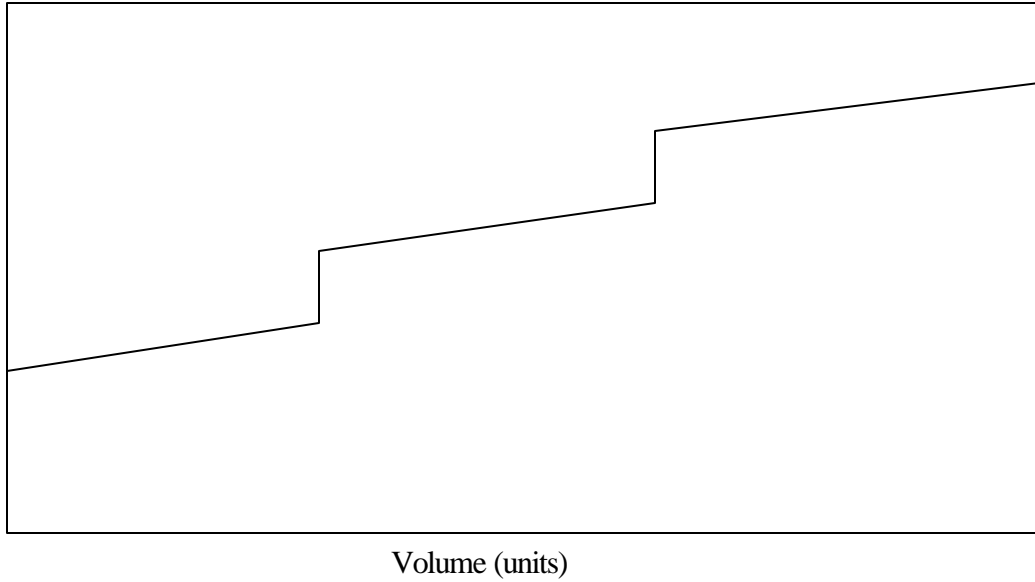
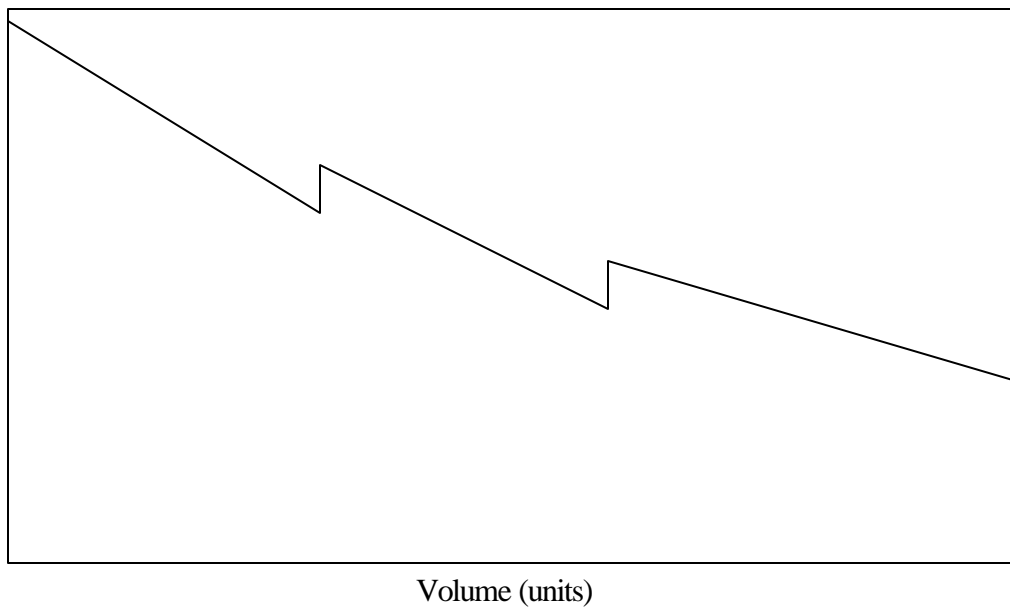


Figure 3: Unit cost versus volume of service

Cost per unit



Ambulance Service

A simple example of this concept is ambulance service, which has relatively high equipment and staffing costs independent of the volume of service to be provided. If 24-hour availability is required, then an ambulance and staffing teams of two individuals are required for each shift.

Assume that the purchase cost of an ambulance is \$100,000 and that it is depreciated over 10 years, for an annual capital cost of \$10,000. Assume that the costs of 24-hour staffing are \$240,000, and that supplies and gas cost \$50 per run. The staffing and capital costs are incurred independent of the number of ambulance runs.

The cost for 100 runs is:

Depreciation	\$ 10,000
Staffing, etc.	\$240,000
Supplies and gas	<u>\$ 5,000</u>
Total cost	\$255,000
Cost per run	\$ 2,550

The cost for 1,000 runs is:

Depreciation	\$ 10,000
Staffing, etc.	\$240,000
Supplies and gas	<u>\$ 50,000</u>
Total cost	\$300,000
Cost per run	\$ 300

The cost for 3,000 runs is:

Depreciation	\$ 10,000
Staffing, etc.	\$240,000
Supplies and gas	<u>\$150,000</u>
Total cost	\$400,000
Cost per run	\$ 133

At some point, the capacity of the single ambulance and team will be reached, then a second ambulance and team would be required. At that point the unit costs would take a jump, and then would decline again as volume increased further.

While this hypothetical example shows the dramatic effect of increasing volume on unit costs for a high fixed cost activity like ambulance service, similar effects are at work in almost all services.

Emergency Departments and Laboratories:

A rural hospital required by Medicare to maintain and staff an emergency department 24 hours a day, may receive only a few visits per day. Most of the costs associated with operating the emergency department are fixed, so the cost per patient visit is high, and there is little that the hospital can do to reduce these unit costs.

The hospital laboratory must be staffed, even if the volume is not sufficient to occupy a lab technician full time. This can result in a high unit cost. As volume grows so that it cannot be managed by a single technician a second technician will be required, but again there may not be sufficient volume to occupy their time fully. This inevitable underuse of the staff will result in high costs per unit, but again there is little that a rural hospital can do to avoid the costs.

Low-Volume Adjustment for Medicare PPS

While it is not proposed that a prospective payment system take account of the step function effect, it could and should take account of the impact of low volume on the cost per unit of service where the volume is due to low population density, and the service preserves access to care in the area. The Medicare program *is* designed to make fair payments to providers by 1) covering the costs of an efficient provider, and 2) adjusting for factors for which a provider should not be held accountable. For example, the inpatient prospective payment system currently adjusts for medical education costs, local wage scales, and a disproportionate share of Medicare patients. Low volume is yet another factor that should merit adjustment to the payment rates when a provider is small and located in an area of low population density.

Criteria to qualify for an adjustment

Two policy issues must be resolved to determine who qualifies for an adjustment:

- the specific quantifiable criteria that can be used to identify the providers who are in need of a low volume adjustment and in a situation such that access would be adversely affected if the provider were to drop the service.

- Whether the adjustment be automatic or should only be provided to those who file an application for this special adjustment. An example of an appeal mechanism is the geographic wage reclassification system.

This latter decision may be dependent on the particular criteria established to qualify for an adjustment – if the criteria are such that HCFA (or the Medicare intermediaries) can calculate them using existing data bases, then the adjustment could be automatic, but if they require data that would not be available to HCFA, or analyses that HCFA would not want to do because of the time involved, then an application mechanism would be required.

Criteria to qualify for an adjustment could include:

- rural location
- small size/volume (Medicare or total volume)
- isolation, such that provider is key to access (indicated by proportion of cases from catchment area going to the provider, or distance to nearest other provider)

Types of services

The particular services that may require a low volume adjustment include:

- outpatient hospital services
- ambulance services
- home health services (although fixed costs are low, so may not be necessary)
- inpatient hospital services
- skilled nursing facility

Analysis required

In order to establish thresholds for the criteria to qualify for an adjustment, and to design the adjustment, some analyses will be required. Specific questions that should be answered include:

- At what volume level are average unit costs impacted substantially by fixed costs?
- What is the relationship of fixed costs to variable costs?

These two questions are clearly related. There are certain fixed costs that have to be incurred regardless of the volume of service being provided. As volume increases the average cost per unit drops, and the variable costs associated with providing the services

starts to dominate the average unit cost. It would be necessary to determine a volume below which a provider would be considered to be low volume. This should probably be done using the total volume of the provider, and not just the Medicare volume. It would also be necessary to understand how the unit costs vary as volume drops.

The first step in this analysis would be a literature review on the fixed and variable cost structure of the services involved. If this is not sufficiently definitive, then some empirical analysis may be required.

Any empirical analysis will require data on both volumes of service and costs from providers. Data issues will include the fact that the Medicare Cost Report does not include much useful information on volumes of outpatient service, either in total or for Medicare, and that there are multiple products being paid for within each of the prospective payment systems. It may be necessary to merge data from different data bases, such as Medicare Cost Report data with data from the American Hospital Association on volumes of service, or to use data from states that have reports which include volume and cost data.

Adjustment structure and potential impact

There are a variety of payment mechanisms that could be used to calculate and make the payment to the providers:

- An additional payment per unit of service could be established prospectively, perhaps based on the volumes incurred over the previous several years.
- The provider could be paid on the basis of their costs, with interim payments during the year and a final settlement based on actual costs.
- A payment could be made for higher expected unit costs based on a calculation of reasonable expected fixed costs. This adjustment could be made during the year as interim payments and be subject to a final settlement.

It is important to note that the total Medicare payments to small rural providers are a small proportion of total Medicare payments, so the financial impact of the proposed adjustments on the Medicare program would be minimal. For example, rural hospitals of under 50 beds received only 2% of Medicare inpatient PPS operating payments, and rural hospitals of 50 to 99 beds received only 4% of the payments. It is worth noting that this 6% of Medicare payments is for 10% of the total Medicare discharges, so these hospitals are inexpensive for Medicare².

For the sake of discussion, assume that 25% of under 100 bed rural hospitals would qualify for a low volume adjustment, and that the adjustment would add 10% to the

² ProPAC, Medicare and the American Health Care System: Report to Congress, June 1996, Table 3-2.

Medicare inpatient payments to these hospitals. The impact on the Medicare inpatient hospital payments would be 0.15%, or \$1,500 for every \$1 million in Medicare payments. If the adjustment were only to apply to under 50 bed hospitals, with 25% qualifying and a 10% average increment to the payments, then the impact on total Medicare inpatient operating payments would be only 0.05%. That is \$500 for every \$1 million in Medicare payments. This seems a small amount to pay for the preservation of access in rural communities.