CHAPTER 8

Using market competition in fee-for-service Medicare

RECOMMENDATIONS

8A The Congress should give the Secretary demonstration authority to initiate competitive pricing demonstrations.

***YES: 14 • NO: 0 • NOT VOTING: 0 • ABSENT: 3**

8B For demonstrations that prove successful, the Secretary should have the authority to implement competitive pricing. The Congress should have a fixed period of time to review and approve any implementation plan.

YES: 14 • NO: 0 • NOT VOTING: 0 • ABSENT: 3

***COMMISSIONERS' VOTING RESULTS**

CHAPTER 8

Using market competition in fee-for-service Medicare

In this chapter

- Key design issues
- Two competitive pricing demonstrations
- Building upon demonstration experience

After reviewing the design and results of two Medicare demonstrations—the competitive bidding for durable medical equipment (DME) demonstration and the participating heart bypass center demonstration—the Commission finds that they suggest competitive pricing can reduce costs without adversely affecting quality or access. Accordingly, the Commission recommends that the Congress grant CMS the authority to initiate competitive pricing demonstrations and incorporate into program operations the approaches that are proven successful. The Congress should have limited time to review CMS's plan. This constraint is intended to create an implementation process that favors action on competitive pricing. The Commission finds the initial evaluation of the DME demonstration particularly compelling, and voted to recommend that competitive bidding for DME be expanded and integrated into the Medicare program. However, as this recommendation is contingent on the results of the final evaluation, the Commission will await issuance of the final evaluation report before forwarding this recommendation to the Congress.

Members of the Congress have expressed interest in pricing fee-for-service Medicare products and services using market-based competition. The appeal of such an approach is based on the theory that if the market failures inherent in the health care sector (for example, lack of consumer information or subsidies that distort the price signal) can be corrected, competition among providers and suppliers will result in a price for their goods and services that more closely reflects their costs than other pricing methods. In a competitive marketplace, providers would have the incentive to offer, or bid, prices close to their costs to gain Medicare market share or other competitive advantages.

By giving providers and suppliers—who should understand their costs better than policymakers—an incentive to offer prices close to their costs, competitive pricing has the potential to improve the value gained from beneficiary and program spending. To implement such a program, policymakers must design the market and bidding incentives to achieve a balance among Medicare's objectives. In some circumstances, the goals of access, quality, choice, equity, and efficiency may be in conflict.

Using market competition to set prices for fee-for-service products and services—generically referred to as competitive pricing in this chapter—would be a departure from Medicare's current payment methods. Medicare now bases its payments on an assessment of average or, ideally, efficient providers' costs. While effective at stemming inflationary tendencies evident under prior cost-based payment approaches, today's Medicare fee schedules and prospective payment systems may not always accurately reflect the level of and change in providers' resources required to deliver particular goods and services.

This chapter considers how market competition could apply to the program by first briefly discussing the key design issues that any competitive pricing approach must address. Second, it describes how each of these design issues was handled under two Medicare demonstrations—the competitive bidding demonstration for durable medical equipment (DME) and the Medicare participating heart bypass center (referred to as the coronary artery bypass graft [CABG]) demonstration. Both demonstrations tested whether competition could lower prices without an adverse effect on quality or access. Evaluation of the recently completed DME demonstration in two markets found that Medicare and beneficiaries saved money when prices were based on suppliers' bids. Quality of products and services and access to them were described as good, although isolated reports of product substitution and inadequate service among some providers suggests caution. The CABG demonstration found that a national competition among facilities performing bypass surgery resulted in providers accepting lower payment, lower costs in the majority of sites, and high quality of care for beneficiaries, but no consistent positive change in market share across participating sites.

This chapter concludes by discussing the next steps for building upon these demonstration results and the ways successful aspects of the demonstrations may be pursued. The Commission supports testing competitive bidding approaches in demonstrations and, when the results are positive, expanding the program as a permanent aspect of Medicare in market areas and for products that are appropriate. Specifically, the Commission recommends that the Congress direct CMS to initiate competitive pricing demonstrations. The Secretary should have the authority to incorporate tested competitive pricing approaches proven successful into the Medicare program, allowing the Congress limited time to review and approve (or disapprove) CMS's implementation plan. Overall, the Commission believes the implementation process should favor action on competitive pricing.

The Commission finds the initial evaluation of the DME demonstration compelling, and voted to recommend that competitive bidding for DME be expanded and integrated into the Medicare program. Because this recommendation is contingent on the results of the final evaluation, the Commission will await the release of the final evaluation report before forwarding that recommendation to the Congress. Certain aspects of the CABG demonstration also appear to hold promise, including bundling payment and public recognition for quality care. However, given concern about the demonstration design and the lack of interest in participating in a recent, similar demonstration, the Commission makes no recommendation regarding that demonstration at this time.

Key design issues

Three key areas must be addressed in creating a competitive pricing model for Medicare. First, the market must be defined in terms of the product, geographic boundaries, and eligible participants. Second, a bidding process that provides incentives for competitive bids and balances factors such as price, quality, and capacity must be created. Third, beneficiary protections and education programs may be needed particularly if quality, access to care, or beneficiary choice of provider are adversely affected.[1] The following section discusses some of the tensions that exist in each of these design features.

Defining the market

This first step in any competitive system involves determining which product(s) will be priced by market competition, where the competition will occur, and what types of entities will be allowed to participate. These decisions affect the degree and nature of competition and its potential for improving efficiency and quality, and resulting in Medicare savings.

1 This chapter generally uses "provider" to include both providers and suppliers.

Defining the product

First, the relative scope of the product (i.e., goods or services) must be determined. The product could be defined based on the classification system already in place for fee-for-service Medicare (e.g., a Healthcare Common Procedure Coding System code or a diagnosis related group [DRG]), a larger bundle of services, or a more narrowly defined product. Bundling creates incentives for providers to be cost efficient because it does not reward provision of a higher volume of services within the bundle. On the other hand, it can lead to stinting on care. In addition, the product should be specified so that the unit of service and, therefore, price, is comparable across providers. Depending upon the nature of the product, the bid for a product may need to be adjusted for differences in the health status of patients.

Defining the geographic boundaries

Competition can occur on a local, regional, or national basis. This choice may depend on the service and nature of competition. Because the relative competitiveness of individual markets varies depending on the number of providers and their relative market share, the effectiveness of competitive bidding approaches will likely vary by market. Similarly, if the market is defined to include multiple local markets, the degree of competitiveness will vary within market areas.

Defining eligible providers

Competition could be open to all providers that offer the selected product or it could be restricted by such factors as provider type or whether providers meet a quality of care threshold measure. The more inclusive the field, the higher the number of participants and the greater the possibility for price competition. (This competitive dynamic may be mitigated, however, if multiple winners are allowed. A higher number of winning bidders tends to reduce the chance for any one bidder to garner a large segment of the market and thus their willingness to offer a low bid.) Different types of providers tend to have different cost structures, so competition that does not make allowances for these differences may drive higher cost provider types out of the market. This outcome may be acceptable if beneficiaries continue to have choice among quality providers.

Creating a bidding process

The next step in creating a competitive pricing approach is to design a bidding process that specifies how bids are solicited and accepted. Bids could be submitted confidentially so that competitors do not know each others' bids until later, if at all. Under this approach, the bids could either be considered best and final, or further negotiation could take place before reaching a final agreement. Alternatively, bidders could publicly announce the price in an auction process.

The cycle for rebidding for services, another key aspect of the process, also needs to be considered at the outset. A longer bidding cycle may be less administratively burdensome, allow for more continuity in providers, and discourage bidders from lowballing (bidding below costs in the hope of driving competitors from the market and recouping costs later by increasing the price and volume). On the other hand, longer cycles create barriers for other competitors to challenge initial winners, which may, in turn, dampen competition. Also, unless payments are automatically adjusted for inflation, longer cycles can mean that payment is not adjusted during an interval in which provider costs may change. As a result, bids may be higher than otherwise to compensate for this uncertainty in cost trends.

Establishing bidder incentives

Establishing incentives for providers to bid competitively is central to the bidding process. Incentives can take the form of rewards or penalties. In either case, the underlying motivation for providers to bid low tends to be the potential of retaining or increasing market share or reducing costs per beneficiary served. Possible rewards for bidding low include:

- Bundled payments. For hospitals equipped to work with physicians and other types of providers (e.g., post-acute), bundled payments allow more flexible reimbursement approaches that align providers' incentives and may lead to more cost-efficient care. When providers retain the savings from improved efficiency, their profits increase.
- Marketing advantage based on meeting a quality standard for winners. To the extent that winning a national quality designation is perceived as a way to increase market share, providers may decide the increased share is worth bidding lower.
- Less regulatory oversight. Providers that win the competition could be relieved from certain regulatory requirements, such as audits or surveys, compliance with which can be costly for providers.
- Increased market share. If under competition beneficiaries have access to fewer providers, winners stand to gain increased market share. If they are able to provide a greater volume of services or products at a profit, increased market share would increase their total profits.

The possible penalties for high bids include:

- Threat of exclusion from the marketplace. Those offering bids that are too high are prohibited from participating in the Medicare market for the duration of the bidding cycle.
- Restricted access to the market. Less competitive bidders would have their market share curtailed. For example, nonwinning providers could be prohibited from serving new enrollees for the duration of the bidding cycle.

- Higher cost sharing for beneficiaries. All bidders would continue to participate in the market, but beneficiaries using high bidders would be required to pay higher cost sharing. The potential effectiveness of this approach is constrained by the prevalence of supplemental insurance among beneficiaries, which insulates beneficiaries from most cost sharing.

- Lower prices for losing bidders. Losing bidders that continue to participate in Medicare would receive lower payment rates than winning bidders.

Determining selection criteria

Bids must be assessed and arrayed to calculate a reference price or a cutoff point. Price, quality, and the capacity of providers to meet the needs of beneficiaries factor into this calculation. The way and order in which the assessments are made can affect the intensity of the competition and the resulting characteristics of the winning bidders.

- Price. Depending on the nature of the service or product, bids may need to be adjusted to promote comparability across bidders. If the cost of the product or service is greatly influenced by the relative health status of the beneficiaries served, the bid may need to be adjusted for the relative risk of the beneficiary population served. This adjustment would not be necessary for products when the relative health status of beneficiaries served does not significantly affect product costs. Adjustment for local variation in input prices would only be necessary if bids to serve different geographic areas were being compared with one another.

- Quality. As discussed in Chapter 7, although quality of care can be difficult to measure, certain metrics are available. The purchaser can choose providers based on outcomes data, such as mortality, rehospitalization rates, or satisfaction surveys; process measures, such as how often aspirin is given after a heart attack; or structural measures, such as infection control systems. The sequence for considering quality indicators and bid prices of each bidder is important, as is the weight given to each. For example, a review of quality information (which can be labor intensive, particularly if CMS conducts site visits or convenes a multidisciplinary review panel) can eliminate competitors before the bid price is considered, or quality can only be examined among low price bidders to prevent poor performing providers from being included among the winners. The latter approach may save administrative costs, but tilt the terms of the competition toward price rather than quality. Ultimately, therefore, policymakers must decide how much Medicare should pay if both low- and high-cost quality providers are available.

- Capacity. If the bidding results in selective contracting, CMS should assess the capacity among potential winning bidders to check that the reduced number of providers or suppliers is able to handle the increased volume of beneficiaries. Assessing capacity can be imprecise, depending on the nature of the product. For example, while a DME supplier may currently serve a certain number of beneficiaries, low capital costs make it possible to increase service rapidly. Determining that upper bound can be difficult, depending upon the assessment of providers' interest in expanding, access to capital, and ability to attract staff, among other factors.

Setting payments and sharing savings

How payments are set based on the bids and how savings are shared with beneficiaries are also intrinsic to the bidding process. Payment could be set equal to the lowest, median, or mean bid, or some other benchmark. Designs that set payment at or above a number of bids have the advantage of giving beneficiaries choice and preventing the program from becoming too dependent on one provider or supplier. Moreover, having multiple winners creates a second level of competition: After winning the bidding process, a provider would then need to compete to earn beneficiaries' business. On the other hand, having multiple winners leaves savings on the table if CMS pays above the price offered by a number of bidders.

When coinsurance is calculated as a percentage of Medicare's payment rate, as it is for services covered under Part B, beneficiaries' savings can automatically follow from lower payment rates. For other services, including inpatient hospital services, the government may need to specify how to divide savings from lower payment rates between beneficiaries and the program.

Protecting and educating beneficiaries

Since competitive bidding can significantly change choice of providers, beneficiaries need to be informed about how changes in policy will affect them.[2] CMS may need to monitor outcomes to make sure that a reduced number of providers receiving lower payment rates does not adversely affect quality of and access to care.

Two competitive pricing demonstrations

CMS conducted demonstrations to test the impact of two variations of competitive bidding. The competitive bidding for DME demonstration based Medicare's payment for medical equipment and supplies on suppliers' bids. Under the CABG demonstration, providers competed on price and quality to receive a

2 Similarly, providers need to be educated about the terms of the demonstration and why they may not have been selected, but this issue is beyond the scope of the chapter.

bundled payment for all inpatient hospital and physician services related to two DRGs. In addition to the payment, they were designated as Medicare-recognized high-quality facilities. This section explores how each of these demonstrations navigated the design questions discussed above and the results.

Competitive bidding for durable medical equipment

CMS conducted the demonstration in two sites: Polk County, Florida, and San Antonio, Texas. The demonstration ended in both sites on December 31, 2002. As part of its evaluation, CMS surveyed beneficiaries in the demonstration markets as well as in two comparable sites to measure the impact of competitive bidding on access to care and the quality of DME goods and services. CMS also compared the bid prices to the fee schedule to determine whether competitive bidding produced savings. During the three years of the competition, providers lowered their prices an average of 20 percent each year, saving Medicare and its beneficiaries approximately $8.5 million.[3] Evaluations to date characterize beneficiaries' access to, and the quality of, goods and services as good. However, the most recent evaluation notes that "a few isolated findings cause concerns" (Karon et al. 2002).

Currently, DME items are paid according to a fee schedule based upon allowed charges in 1986 and 1987 and subsequently updated by an inflation factor. This fee schedule has failed to keep Medicare's payment rates aligned with the costs of providing the goods and services covered by the benefit and has resulted in overpayments as high as 30 percent (GAO 1998, OIG 1999). CMS has explored several avenues to reform payments under this benefit, including freezing the payment update; negotiated rule making; applying its inherent reasonableness authority; and the alternative discussed here, competitive bidding.

Defining the market

To define the market for competitive bidding, CMS chose several categories of products covered by the durable medical equipment and prosthetic and orthotic supplies benefit, selected two sites, and invited both local and national providers to participate.

CMS defined the products under this demonstration based on the existing codes used for payment under the current fee schedule. These codes apply to products that have no service component (e.g., a crutch tip) as well as those that have substantial service components, such as delivery of equipment, instructions to beneficiaries on how to operate and store the equipment, maintenance, and some repairs. The products within each code are specific and intended to be comparable.[4] Nevertheless, some variation exists. The same code may be used for several products of differing cost. For example, catheters that range in price in the private market between $1 and $18 are paid under the same code, for which Medicare pays $11 (GAO 1998). In addition, the same code may be billed for a service that may vary in quality (e.g., timeliness of delivery or adequacy of equipment repair), depending on the supplier or individual encounter. Given this variation, bidders that use lower-cost items and provide less costly services have a competitive advantage, at least in the short term. Because winning bidders must compete with other winning bidders for beneficiaries' business, providing low-cost, low-quality items may be a poor business strategy in the long run, however.

The Balanced Budget Act of 1997 required the demonstration to include oxygen and supplies among the product categories to be tested; otherwise, CMS used its discretion in selecting test products. It picked items that represented a significant share of the DME market, items CMS suspected might be overpaid on the fee schedule relative to market prices, and included products with characteristics that might influence the design and effect of competitive bidding (for example, items that have a service component or are relatively low priced). For Polk County, CMS solicited bids for five categories: oxygen and supplies, hospital beds, enteral nutrition, urological supplies, and surgical dressings. In San Antonio, the categories of products included manual wheelchairs, nebulizer inhalation drugs, and noncustom orthotics in addition to oxygen and hospital beds. All of these categories combined account for about 50 percent of Medicare spending on DME. CMS excluded custom-fitted orthotics and prosthetics, which have a high service component, from the demonstration in both sites.[5]

Although CMS had the authority to designate up to five sites as market areas, it chose to operate the demonstration in two. The Polk County site had 92,000 beneficiaries and about 40 major suppliers. San Antonio had 118,000 fee-for-service beneficiaries and 48 major suppliers. Suppliers in each site included a mix of both small and large companies.

Any DME supplier in good standing with Medicare was eligible to participate in the demonstration.[6] Since it is not necessary

3 This estimate compares the competitively-bid price with the fee schedule prices, based on the assumption that volume did not change. Utilization data are not yet available for either items included or not included in the demonstration.

4 Examples are hospital beds with variable height, without side rails, with mattress and rental of stationary compressed gaseous oxygen system, including contents (per unit), regulator, flowmeter, humidifier, nebulizer, cannula mask, and tubing.

5 CMS reclassified some noncustom-fitted orthotics tested in San Antonio to custom fitted after the demonstration began.

6 To participate, a supplier had to have a Medicare supplier number, could not be under a sanction or suspension, and needed to comply with federal and Florida or Texas licensure requirements.

for a supplier to be physically located within a market to provide services in that market, the demonstration design did not exclude providers located outside the market areas. This geographic inclusiveness reflects the nature of the product, which can in some instances be delivered through the mail and is often delivered to the beneficiary's residence, rather than at the DME supplier's location. DME suppliers include drug stores, mail-order suppliers, and offices equipped with laboratories and staffed by licensed professionals, such as orthotists. The suppliers vary widely in terms of size; the largest are several national chains with nearly $1 billion in revenue and the smallest may submit fewer than 150 claims per year for a very narrow selection of items.

Creating a bidding process

CMS created a bidding process that attempted to balance incentives for participation with concerns about access, provider quality, and cost savings. They conducted 2 rounds of bidding in Polk County 2 years apart for a 2-year contract period, and 1 round of bidding in San Antonio, with resulting prices effective for 23 months.

Under this demonstration, the key motivation for suppliers to offer low bids was the threat of exclusion or limited participation in the market. For noncustomized orthotics, surgical dressings, and urologic supplies, CMS excluded bidders above the cutoff point. For hospital beds, wheelchairs, and enteral nutrition pumps, nonwinning suppliers could complete their rental agreement at regular fee schedule amounts.[7] For oxygen, nebulizer drugs, and enteral nutrition supplies, nonwinning suppliers could maintain a relationship with a beneficiary if it was initiated before the demonstration prices took effect and if they accepted demonstration prices for their goods and services. Allowing some nonwinning suppliers to continue serving established clients at demonstration prices reduced sudden disruptions for beneficiaries who had relationships with suppliers before the implementation of the new system. Since nonwinning suppliers could not take new clients in the demonstration categories, the nonwinners would presumably exit the market over time or successfully rebid in a subsequent bidding round. Nonwinners could also choose to sell products outside the demonstration or sell to non-Medicare patients.

Bidders were required to bid for all products within a category: They could bid on one, some, or all of the categories. CMS did not require bidders to serve the entire market area geographically, though many chose to do so. Suppliers bid one time in each category; that is, the process of offering a price was not iterative. CMS sealed bids so suppliers did not see other suppliers' bids.

After suppliers submitted bids, CMS used a multistep process to select the winners. First, an evaluation panel considered each bid submitted by category.[8] The panel could reject a bid if it was unreasonably low; this addressed concerns that the supplier might not be able to purchase and supply the equipment at the bid price. For all acceptable bids, the evaluation panel calculated a composite bid price for each supplier (see text box at right). This composite was a weighted average of a supplier's prices for all items in a category using weights based on each item's share of the category in the preceding year.[9] This had the effect of weighting a bid more favorably if the bidder lowered prices for items that Medicare purchases frequently rather than discounting low volume or unusual items. CMS used composite prices to rank each supplier's bid in the category in order from lowest to highest; they were not used as payment rates.

Next, in the ranked list of bids for each category, the bid evaluation panel identified a cutoff composite bid price at the point where the cumulative estimated capacity of lower-priced suppliers equaled the projected demand for the category. CMS assessed the capacity of suppliers based on a number of factors, including annual sales, number of beneficiaries served previously, and, in some cases, site visits to the suppliers. The agency set the cutoff to include more winners than it strictly needed to allow for the possibility that some of the winners might fail to meet the quality requirements in the next step. Members of the bid evaluation panel chose natural breaks among the composite amounts in determining the cutoff price to ensure a large difference between winning and nonwinning bid amounts. Nevertheless, some in San Antonio objected to being excluded because they believed they were so close to the cutoff line (within a dollar) that there was no appreciable difference between the winning bids and their own.

Finally, CMS evaluated suppliers below the cutoff price for quality. The evaluation included site visits to the suppliers and at least five references for the quality of each supplier. Suppliers below the cutoff price that did not meet the quality standards were then given the opportunity to address quality deficiencies. This process allowed CMS to negotiate improvements with suppliers, which is generally not permitted in fee-for-service Medicare. CMS then offered those suppliers that met the standards an agreement to become a demonstration supplier. For each product category in both sites, there were at least four or five winning suppliers from which beneficiaries could select.

Once CMS chose a cutoff bid for a category, it calculated the prices for products within the category. While payment for a single item within the

7 Prices for rental equipment are determined under the fee schedule. The duration of a rental lease can be up to 15 months.

8 The bid evaluation panel was composed of staff from Palmetto GBA, one of the four intermediaries that process all of the claims for DME, and associated companies.

9 Initially, CMS based the item's share of the category on allowed charges. Subsequent rounds of bidding in this demonstration based the share on volume.

Comparing bids and calculating prices under competition

CMS developed systems for calculating prices for durable medical equipment under its demonstration. Each winning supplier is paid the same price, regardless of what they bid. The system is designed to ensure that no winning supplier is paid less, on average, than their original bid. This text box explains the detailed calculation used.

CMS first defined the category for competitive pricing and then came up with a way to take into account all the items within the category. One such category was oxygen, which has 15 items. CMS required suppliers to bid for each individual item, but then rolled all these bids together within the category to come up with a composite bid. The composite is simply a weighted average of the bids across the items, with the weights reflecting the volume of purchases in the previous year.

The table below illustrates a hypothetical example of how the composite bid for each supplier is calculated across a category with two items: one accounts for 90 percent of all items Medicare purchased within the category, and the other for the remaining 10 percent. For this example, there are three suppliers. Since item 1 dominates the category, bids for this item drive the composite bid.

	Supplier		
	A	B	C
Bid for item 1	$0.80	$1.00	$1.00
Weight for item 1	0.9	0.9	0.9
Bid for item 2	$3.00	$8.00	$9.00
Weight for item 2	0.1	0.1	0.1
Composite bid	$1.02	$1.70	$1.80

Once the composite bids are calculated, the next step is to determine the market price that CMS will pay. There are two parts to this step. The first part is to determine winners, or those suppliers that will be accepted into the program for that category. The second part is to determine the payment rate for each item.

CMS determines a cutoff bid within the distribution of composite bids. In the example of the three-supplier, two-item category above, the cutoff composite bid is $1.70. This means that supplier C will not be a winner within this category.

To determine prices for items in the category, CMS averages the winners' bids for specific items after adjusting the bids to account for the relationship between the cutoff bid and the supplier's specific composite bid for the category. Because supplier B's composite bid is the cutoff bid, no adjustment is needed (the adjustment factor is 1.00). For supplier A, the adjustment factor is 1.67 ($1.70/$1.02). Supplier A's bid price for each item is then multiplied by this factor; then, this adjusted bid price is averaged with supplier B's bid price. So, for item 1, the price paid to all winning suppliers will be ($0.80 × 1.67 + $1)/2, or $1.17.

	Supplier		
	A	B	
Item 1			
Bid price	$0.80	$1.00	
Adjustment	1.67	1.00	
Adjusted price	$1.34	$1.00	
Price for Item 1			$1.17
Item 2			
Bid price	$3.00	$8.00	
Adjustment	1.67	1.00	
Adjusted price	$5.01	$8.00	
Price for Item 2			$6.51

This method of determining prices ensures that no supplier is paid less than their original bid, on average. Prices for some items may be below the bids of some winning suppliers; others will be higher. For item 2, for example, supplier B will be paid about $1.50 less than the bid. However, since the payment for item 1 is higher than supplier B's bid, and item 1 represents a greater share of all items in the category, supplier B's total payments in the category will be higher than the bids. ■

category could be less than the bid price, Medicare's prices would be set to provide winners with revenues totaling at least as much as the revenues implied by their composite bid. Beneficiaries shared in savings, as CMS calculated their 20 percent coinsurance off of a lower price.

Protecting and educating beneficiaries

The demonstration included structures and processes to monitor compliance and protect beneficiaries. Suppliers and consumer advocates were concerned that, by excluding providers with high bids, beneficiaries would be limited to a pool of lower-quality suppliers. They were also concerned that because there were fewer suppliers, these suppliers would compromise on service and quality, and solely compete with one another by reducing price. Some advocates noted that relationships with suppliers, especially those that provide fittings or similar services, could be disrupted by excluding nonwinning bidders. Disabled

beneficiaries were particularly concerned as they may use a supplier of prosthetics or orthotics for many years.

Allowing multiple bidders to participate partly dealt with these concerns, and CMS took other measures to promote quality and access to care. First, CMS screened winning bidders for quality. Second, the agency required an ombudsman in each site to investigate all complaints to resolve quality issues. The ombudsmen also helped promote use of both winning and nonwinning bidders as appropriate under the transition policies. For some types of DME, these transition policies allowed beneficiaries to continue established relationships with nonwinning suppliers that agreed to provide DME at the competitively determined price. In addition, CMS conducted extensive outreach to inform beneficiaries and their referral agents about the winning suppliers in each category. Third, to measure the impact on quality and access, CMS conducted surveys of beneficiaries in the demonstration markets before the competitively bid fee schedule went into effect and while it was in place. For each site, CMS chose a comparison market and surveyed beneficiaries in those markets to compare their satisfaction and experience. In addition, every winning bidder was required to comply with prescriptions for a particular brand of a product.

The demonstration administrators also provided extensive information to suppliers, referral agents (such as discharge planners and home health nurses, who tend to direct beneficiaries to DME suppliers), and beneficiaries to recruit and prepare all participants. In Polk County, beneficiaries, referral agents, and others felt that public information and notification were effective.

Results

Generally, the competition resulted in lower prices for DME without a substantial negative impact on beneficiaries' access or the quality of the goods and services provided. If utilization had remained constant, Medicare's allowed charges would have been reduced by $8.5 million, or about 20 percent. The two rounds of the Polk County bidding process also allowed the evaluators to compare prices over time. Round two prices were lower for almost all of the items in the oxygen and surgical dressings categories. Hospital bed prices changed little from round one to round two. Prices for urologic supplies increased. Enteral nutrition was not rebid.[10]

The administrative costs of the demonstration totaled $4.8 million. Start-up costs associated with designing the system and programming new billing processes were the largest single component of this amount ($1.2 million). As might be expected, administrators can gain economies of scale when expanding the number of sites, increasing the ratio of savings to administrative costs. For example, adding the San Antonio site cost $510,000 over 3 years, while saving about $4.4 million. The evaluators noted that a program implemented on a larger scale might require some costs not included in the demonstration, such as hiring and paying a permanent staff for the bid evaluation panel. On the other hand, some offsetting administrative savings would likely result from reducing the number of claims paid based on the DME fee schedule.

Surveys indicated product quality, reliability, and customer service did not change. Beneficiaries reported that their satisfaction with the products and services they received remained high following the demonstration.

Even though the number of suppliers was reduced, beneficiaries continued to have access to DME. Polk County residents indicated that, both before and after the demonstration, they usually received oxygen on the day they ordered it, the same number of refills at the same interval, similar training, and a similar number of visits from a breathing specialist. San Antonio referral agents, who are presumably even more knowledgeable about quality and access than new users of DME, said that the few problems they encountered were transitional in nature (e.g., becoming familiar with the delivery time of new suppliers).

Some findings concerned the demonstration's evaluators. In Polk County, there were statistically significant declines in providing portable oxygen and in training for surgical dressing and urological supply users. Portable oxygen is important to beneficiaries' quality of life as it allows beneficiaries to use oxygen while out of the house. The decline in use has not yet been explained by evaluators. Among the possible explanations are bidding strategies that may hamper beneficiary access. For example, one industry representative speculated that the winning portable oxygen bidders could bid below costs for portable oxygen, while simultaneously bidding above costs for oxygen concentrators (an alternative therapy used in the home) as a way of lowering their composite bid for the oxygen category, with the intention of reducing the provision of portable oxygen.

Similarly, both beneficiaries and referral agents in Polk County complained that suppliers did not always provide preferred brands for urological supplies and, as a result, beneficiaries were not as comfortable with the equipment. It is possible that suppliers addressed these problems after bids for urological supplies increased in the second round of bids.

In San Antonio, some winning suppliers provided improper equipment and inadequate service to wheelchair users. In Polk County, fewer suppliers made home deliveries and suppliers made less frequent routine visits to maintain equipment, although these findings are not necessarily negative. Fewer home deliveries may be attributable to increased

10 This category was dropped because nursing homes are the primary users of these products. CMS allowed nursing homes to maintain their relationships with nonwinning suppliers and few changed their providers.

use of mail-order services, and fewer equipment maintenance visits may indicate better equipment. On the other hand, fewer visits may reduce opportunities for patient assessment. The third evaluation report will provide additional information on quality and access from postdemonstration surveys of beneficiaries, as well as information about any changes in volume of services delivered.

Overall, the initial evaluation results suggest that the market largely functioned as was hoped. Entry and exit in the market appeared healthy, pricing behavior appeared rational, and consumers switched suppliers if one failed to meet their needs. Each site had a large number of bidders. And, of the 16 winners in Polk County's second round, half were winners in the previous round and half were new. When there were anecdotal reports of quality problems, referral agents tended to direct beneficiaries to better-quality suppliers. Also, the fact that bids for urologic supplies went up in the second round following findings in the initial evaluation that urologic suppliers' profit margins were down suggests that the market corrected itself.

CABG demonstration

Using its existing demonstration authority, CMS (known as the Health Care Financing Administration at the time of this demonstration) conducted the CABG demonstration between 1991 and 1996. It examined the effect of selecting facilities based on discounted price, quality of care, and geographic dispersion to receive a bundled payment for hospital and physician services related to cardiac bypass surgery. It selected a total of seven sites, each of which could market themselves as a Medicare Participating Heart Bypass Center to increase market share.

The evaluation found that the demonstration generated considerable interest among providers, reduced the costs to Medicare and the majority of participants, and increased quality of care. It did not, however, increase market share for the majority of participating sites as many expected. To date, CMS has not successfully relaunched the demonstration.

Defining the market

As a first step in defining the competitive marketplace, CMS selected services surrounding two procedures that were high cost and growing in volume. CMS defined the product as all inpatient hospital and physician services that apply to the two DRGs related to bypass surgery: DRG 106 (with catheterization) and DRG 107 (without catheterization). Payment for hospital services included an estimated outlier amount based on each hospital's previous experience, any related readmissions, and standard Medicare hospital pass-through payments. Physician services included not only those by thoracic surgeons, cardiologists, anethesiologists, and radiologists (all of whom were assumed to be involved in every bypass surgery), but also any other consulting physicians. For example, if a bypass patient was also depressed, the consulting psychiatrist would be paid under the bundled payment. However, the bundle excluded predischarge and postdischarge physician services, except for the standard inclusions in the surgeon's global fee.

All 734 hospitals nationwide that performed coronary artery bypass graft surgery on Medicare patients in 1986 were eligible to participate. Participation was national, but local market pressures largely motivated the competition.

Creating the bidding process

CMS invited applicants to submit their best price for the bundled payment. Hospitals calculated separate cost estimates for Part A hospital and Part B physician services, decided on a set discount rate for each, and then offered Medicare an overall global payment rate.

An outside panel of experts reviewed the quality of each of the 27 hospitals that submitted formal applications and selected 10 finalists to be evaluated further according to 11 criteria:

- Price-related criteria, such as relative prices, discount rates, financial risk, and volume discounts were weighted 50 percent.
- Quality criteria, including severity-adjusted mortality and appropriateness of care were weighted 25 percent.
- Service criteria, such as coverage of unrelated procedures and readmissions were weighted 10 percent.
- Financial incentives offered to patients (i.e., reduced cost sharing) and referring physicians, the quality of the bypass information systems, and total Medicare and non-Medicare bypass volume were weighted 5 percent each.

After scoring each of the 10 applicants from 0 to 100 on each criterion, CMS combined these weighted scores for a total score.[11]

These finalists then negotiated extensively with CMS to verify the price discount the applicants offered and arrive at the final bid. When this process was complete, it turned out that four hospitals actually bid higher than current payment levels, rather than discounts, and a fifth hospital submitted a bid with rates identical to CMS's projected expenditures. CMS staff then negotiated ambiguous points in the applicants' proposals, including price, beneficiary incentives, quality assurance, and information systems. Because patients still had full choice of hospitals and physicians from which to receive care, potential capacity was not a concern in this demonstration.

11 Since these weights were subjective, CMS conducted a sensitivity analysis to test the robustness of the rankings by modifying the weights. Doing so had little effect on the ranking of the top four to five hospitals.

CMS selected four hospitals—St. Joseph's Hospital in Atlanta, St. Joseph Mercy Hospital in Ann Arbor, the Ohio State University Hospitals in Columbus, and University Hospital in Boston—and, in May and June of 1991, these hospitals began receiving payments. At CMS's invitation, three of the six remaining finalists (St. Vincent's Hospital in Portland, St. Luke's Hospital in Houston, and Methodist Hospital in Indianapolis) submitted new bids and were added to the demonstration in the second quarter of 1993.

The opportunities to receive a global payment and gain a competitive edge in their local markets were the prime motivating factors for facilities to offer a competitive price. A bundled payment can align physician and hospital incentives more effectively than under current payment methods. Physicians and hospitals are paid separately for their roles in bypass surgery; therefore, physicians have little incentive to reduce hospital or other physicians' costs even though physicians directly influence those costs. For example, physicians have little financial incentive to move patients out of the intensive care unit (ICU) sooner; use less expensive, equally effective drugs; or minimize the number of consults.

In contrast, with a global payment for hospital and physician services, the hospital can restructure physicians' payment to give them the financial incentive to be more cost efficient. For example, each site under the demonstration created a pool of funds from which consulting physicians (such as pulmonologists, nephrologists, internists, and neurologists) were paid their regular Medicare allowable fees. Any money left over from the pool at the end of the year was awarded to the four specialists involved in bypass surgery (thoracic surgeon, anesthesiologist, cardiologist, and radiologist) who had control over the number of consulting physician services. Any deficits from the pool were made up with lower payment amounts in the next period.

In addition, two sites allowed physicians to share in hospital cost savings, further creating incentives to lower costs. One site awarded physicians one-quarter of any hospital cost savings that they personally generated, on top of the originally negotiated payment. Another awarded surgeons more operating room time and converted their physician assistants in surgery and nurse specialists into hospital employees because of positive changes in surgeon practice patterns.

Some sites also gained efficiencies by reducing staff and introducing clinical nurse specialists to oversee each bypass patient's stay. This new position helped smooth transitions from service to service, avoid costly complications, prepare patients and families for early discharge, improve communications among specialists making clinical decisions, and review standing orders and recommend changes. Sites also substituted several less expensive or generic drugs for more costly ones; in fact, two hospitals saved $100,000 per year from doing this.

All four of the original participating institutions wanted to protect or expand their current market.[12] First, they believed it was to their advantage to participate at the beginning of the program if it became the basis for selective contracting or a permanent part of the program. Second, other payers were very interested in bundled CABG payments, and the hospitals feared that the failure to be at the forefront could harm their private market. Third, they worried that another hospital in their local market would be designated a Heart Bypass Center. These fears indicate that hospitals believed the imprimatur of being a Medicare Participating Heart Bypass Center would allow them to maintain, or preferably gain, market share and increase volume.

Educating and protecting beneficiaries

Efforts to protect patients were not needed under this model of competitive bidding because quality criteria were used for selection and patient participation was voluntary. Beneficiaries benefitted under the demonstration by having both a lower and a single copayment for both hospital and physician services.[13] Individual sites were responsible for informing beneficiaries of the designation and the reduced coinsurance.

Results

Overall, this demonstration had a positive impact by reducing providers' costs, improving quality, and reducing Medicare spending. Medicare saved about $42.3 million on bypass patients treated in the demonstration hospitals, a savings of roughly 10 percent of the expected $438 million spending on bypass patients (this included a 90-day postdischarge period). Eighty-six percent of the savings came from CMS-negotiated discounts; 5 percent resulted from lower than expected spending on postdischarge care; and 9 percent came from a shift in market share towards lower-cost demonstration facilities. In addition, beneficiaries (and their supplemental insurers) saved $7.9 million, for a total estimated savings of $50.3 million over 5 years.

Participating sites were largely successful in reducing their internal costs per episode. Of the four original sites whose costs were evaluated in great detail, three had absolute decreases in costs per case ranging from 2 to over 23 percent from 1990 to 1993, depending on DRG and hospital. These hospitals used and improved their existing microcost systems in order to link specific services to patients and attach direct costs to them. This is thought to have been a major impetus for changes in physicians' practice patterns: These hospitals had statistically significant declines of 10 to

12 Parts of the evaluation focus exclusively on the four original sites.

13 CMS set the coinsurance at a fixed actuarial amount below the (estimated) negotiated Part B amount for a typical admission.

40 percent in direct ICU and routine nursing expenses, and in two of those hospitals, declines of roughly 30 percent in pharmacy costs per case complemented falling laboratory costs of 20 to 60 percent. The three additional hospitals added to the demonstration in 1993 also reduced costs through more cost effective practice patterns, but high costs were less of an issue at the outset.

The fourth original site's costs went up 10 to 24 percent in both DRGs (including wage and other price increases). It did not develop a microcost data system that was so instrumental in reducing costs for other sites. Another site that was disappointed in its cost savings acknowledged that its original strategy in participating in the demonstration had been to increase volume, rather than reduce costs (Cromwell et al. 1998).

As might be expected given the selection criteria, the demonstration hospitals had higher than average quality, as measured by inpatient mortality rates, at the outset of the demonstration. Their overall inpatient mortality rates were lower than Medicare's national rates: an average of 4.6 percent for the demonstration participants compared to 5.2 percent from 1991 to 1996. Holding many patient risk factors constant, the evaluation found that demonstration hospitals reduced inpatient mortality rates, which was notable considering their lower than average baseline mortality rates. These rates declined among competitor hospitals at a similar rate. Beneficiaries receiving care through the demonstration sites were more satisfied with the nursing care, length of stay (which was shorter), and reduced paperwork, compared with beneficiaries at competitor's facilities.

Bundling payments under the demonstration also benefitted the hospitals in their private managed care contracting. By the end of the demonstration, hospitals invested in data systems, billing and collection methods, and staffing improvements (i.e., clinical nurse specialists), and nearly all of the facilities signed new private managed care contracts that bundled payment of heart surgery. Administrators of participating sites noted that the efficiencies prompted by the bundled payment under the demonstration also accrued to private payers. They believed they were able to negotiate much lower payment rates with private payers.

Despite these important positive results, the majority of participating sites did not see the increase in market share or volume expected; in fact, several experienced decreases in one or both.[14] Several factors may account for this. First, many of the sites did not widely advertise the designation. Various participants said they:

- did not want to offend cardiologists by interfering with patient communication;
- found advertising the designation difficult because they were prohibited from using the more easily understood Medicare Center of Excellence label;
- found that, under managed care contracts, referral patterns and hospital choice were not as influenced by marketing directly to the patients;
- expected CMS to promote the designation (although this promise was never made); or
- planned to market the designation partly by waiving the deductible and coinsurance for those without supplemental insurance, which CMS ultimately prohibited.

A second factor was changing local market conditions and technology. In some of the participants' market areas, competing hospitals were developing bypass surgery capabilities and opening catheterization labs, drawing volume away from established open heart surgery programs. At least one participant also felt that it already had significant market share and did not need to expand it. In retrospect, this facility speculated that the design of the program was better suited to newer hospitals who needed to gain market share.

Finally, the failure to increase market share may be partly attributed to beneficiaries' and physicians' reluctance to change their patterns of care in response to quality information. Less than one-third of the patients in the demonstration sites responded that the knowledge of the national designation affected their decision to use the demonstration site. Overall, only 6 to 7 percent of patients in the demonstration and competitor hospitals reported considering a different hospital than the one in which they were treated. Similarly, although two-thirds of referring physicians knew about the demonstration status of the hospitals, this knowledge had little or no effect on physician referral patterns.

Avoiding double-paying physicians and coordinating with supplemental insurers were the two most significant administrative challenges. Subsequent improvements in information systems now appear to prevent the possibility of paying for the same physician service twice—once as part of the bundle and again if the service is billed separately.

Building upon demonstration experience

These demonstration results suggest that harnessing competitive market forces can result in better prices for goods and services in fee-for-service Medicare without compromising quality. However, neither approach has been subsequently adopted as an extended demonstration, nor as a permanent part of the program.

14 Two sites increased market share and four sites increased volume, including the two that gained market share. Two sites experienced little change in market share, while three had decreases.

CMS does not currently have the authority to selectively contract, either as part of a demonstration or as part of the permanent program. By providing the agency with the ability to exclude noncompetitive bidders from participating in the program, selective contracting authority can reward and encourage competitive bids. CMS also does not have the authority to adopt a successfully demonstrated purchasing approach as a permanent aspect of the program.

MedPAC's recommendations encourage an implementation process that favors action. Allowing CMS the administrative flexibility to tailor competitive pricing strategies improves the likelihood that the many variables that influence the success of such an initiative can be addressed in a thoughtful and case-by-case manner. The Congress has a strong interest in promoting payment approaches that are consistent with the intent of the program—improving beneficiaries' access to quality care without unduly burdening taxpayers or beneficiaries—and should have an opportunity to intercede if those goals are not being achieved.[15] This process should not encourage micromanagement or delay, however. Since the Secretary is best equipped to assess the appropriateness of a given geographic area for competitive bidding, the specific sites should not be subject to Congressional review.

RECOMMENDATION 8A

The Congress should give the Secretary demonstration authority to initiate competitive pricing demonstrations.

RECOMMENDATION 8B

For demonstrations that prove successful, the Secretary should have the authority to implement competitive pricing. The Congress should have a fixed period of time to review and approve any implementation plan.

IMPLICATIONS

Spending

- Medicare demonstration experience suggests competitive pricing can result in savings, depending upon the markets and products selected for competitive pricing.

Beneficiary and provider

- Medicare demonstration experience suggests that competitive pricing can result in reduced beneficiary spending for quality goods and services. Beneficiaries' choice of provider could be restricted if Medicare contracts exclusively with winning bidders; otherwise beneficiary choice would not be affected. The impact of this approach on providers would vary by provider and product, depending upon the design and providers' bidding strategy.

In considering how these two somewhat limited demonstrations can be expanded upon, policymakers must recognize several issues:

- Competition may work better in some geographic areas than others. In rural areas of the country, for example, there may not be a sufficient number of providers or beneficiaries to produce a competitive dynamic. Analysis of DME markets indicates that the competitive dynamic varies by geographic market and may not be the same for each product (see text box, p. 144).

- Competition may work better for some products than others. Adjusting bids to account for differences in health status is particularly important for services where the cost varies with the complexity of the patient, and the accuracy of current case-mix adjustment methods may not be sufficient. Services that are less influenced by the relative health status of the patients served, such as laboratory and diagnostic imaging services, may be particularly good candidates for this purchasing approach.

- The results of a demonstration relying on competitive forces may be influenced by the market conditions and Medicare payment policy at the time. For example, competitive pricing may be more likely to result in savings when there is excess capacity in the delivery system and purchasers are in a better position to negotiate low payment rates. Similarly, changes in fee-for-service rates, like pending Medicare physician payment rate reductions, may affect provider willingness to participate in a new demonstration. Providers told CMS staff this was a reason for not participating in a renewed CABG demonstration.

- The results of a demonstration might not be the same when implemented more broadly. Providers in a demonstration may take different strategies when the competitive terms are limited to only a small segment of their market. For example, a supplier doing business in many market areas may be able to afford to bid low in one or two markets and cross-subsidize any losses from profits in other market areas. However, if CMS conducted bidding in a larger subset of markets, cross subsidization may not be as likely and the bids could be higher.

- A demonstration that reduces payment or volume for a subset of services that tends to have a higher profit margin (e.g., heart bypass surgery) may undermine the financial viability of core services (e.g., emergency department services) that are cross subsidized.

15 The Congress currently has the authority to disapprove major rules within 60 days from transmittal to the Congress through a joint resolution under the Congressional Review Act. Under this Act, the President has the right to veto the resolution.

Competitive bidding for DME

The Commission finds the initial evaluations of the DME demonstration compelling, and voted to recommend that such competitive bidding be expanded and integrated into the Medicare program. Because this recommendation depends on the results of the final evaluation, the Commission will await issuance of the final evaluation report before forwarding that recommendation to the Congress. Due for public release this summer, this evaluation will be an important indicator of the impact on quality and access in both sites, as well as our first indication of whether competitive bidding has affected the volume of items supplied. It will also provide the first information on the results of initial and follow-up surveys of San Antonio beneficiaries.

The Congress and CMS will have numerous design choices to make in the broader implementation of competitive bidding for DME. Although the Commission has not undertaken an exhaustive consideration of possible options, the following design choices have merit:

- Expanding into markets that stand a good chance of producing savings helps to prevent administrative costs from exceeding savings achieved from competitive forces.
- Including transition policies, such as those in the DME demonstration, that allow beneficiaries to continue receiving service from current suppliers may help allay their concerns about reduced choice of providers. Similarly, allowing them opportunities to receive services from nonwinning providers is another option. For example, all beneficiaries could be required to use winning DME suppliers for a period of time. If after that period, a beneficiary was dissatisfied with his or her choice of suppliers, he or she could use a nonwinning supplier. Allowing beneficiaries to opt out may satisfy those who are disgruntled, while directing the majority to winning bidders. These policies may be necessary to gain the support of beneficiaries, one of Medicare's key political stakeholders, for this purchasing approach. In dissecting reasons for the demise of the Medicare Competitive Pricing Demonstration, which sought to determine Medicare's payment for health plan care through competitive bidding, policymakers cited the united opposition of health plans and beneficiaries (Nichols and Reischauer 2000).
- Testing bidding of products under a demonstration prior to competitively bidding these products on a larger scale may help identify problems that could be averted upon broader implementation. For example, adverse product substitution that might stem from coding problems (e.g., codes that include an overly broad array of goods or services) or imprecise prescribing practices (e.g., the failure of a physician to specify the brand or type of product essential for the patient) could be addressed prior to expansion. Identifying a problem within a demonstration does not necessarily mean that it is not appropriate for expansion, however.
- Monitoring is needed and immediate assistance should be available. Such activities would help avoid decreased quality or access that could result from reducing the number of suppliers and the price paid for their services. Having multiple winners in each category also appears to promote quality and access while fostering competition.

CABG demonstration

After the CABG demonstration, CMS twice tried to launch similar demonstrations. In 2000, after receiving over 100 responses to a request for proposals (RFPs) for cardiac and orthopedic procedures, CMS suspended its new Centers of Excellence demonstration citing resource constraints from Y2K and the Balanced Budget Act of 1997. Later, CMS renamed the initiative Partnerships for Quality and sent RFPs to eligible providers in three states. Response was limited and ultimately interest dissolved due to a combination of factors. Those declining to participate cited pending physician fee schedule reductions and DRG classification issues, both of which have been subsequently addressed to some extent.[16]

Certain aspects of the CABG demonstration hold promise. In particular, bundling payment for Parts A and B services may effectively align incentives to coordinate care, which could, in turn, improve both quality and efficiency. In addition, rewarding facilities for high quality or improved performance with public recognition could be an incentive for all facilities to improve, assuming there were multiple rounds of competition over time (see chapter 7 for a detailed discussion of incentives for quality). However, because this demonstration simultaneously tested a number of interventions (including restructuring payments, publicly designating certain facilities as high quality, and setting competitive prices), and facilities responded differently to the mix of interventions, the demonstration's results are difficult to interpret. Providers' lack of interest in participating in a renewed demonstration also casts some doubt on the feasibility of this particular demonstration approach. Accordingly, the Commission is not making a recommendation at this time with respect to continuation of this purchasing model. ■

16 In a related matter, the Secretary has announced that CMS will contract with and pay a consortium of Virginia hospitals a bundled fee for cardiac procedures, discounted in later years of the demonstration.

Identifying new markets for competitive bidding for durable medical equipment

We have begun to explore two factors to identify vigorous, sustainable new markets for durable medical equipment (DME): the number of suppliers in a market and the relative concentration of market shares among those suppliers. We analyzed a 5 percent sample of claims for DME in 2001—about 3,500,000 claims —to measure market conditions across the country. Our initial findings suggest:

- About 75 metropolitan statistical areas encompassing about 20 million beneficiaries have as many suppliers as Polk County, or more.
- Market concentrations vary by type of DME.

The number of DME suppliers in a market (defined as either a metropolitan statistical area or a statewide nonmetropolitan rural area) varies widely across the country. Market sizes vary from 1,600 suppliers in Los Angeles to 30 in nonmetropolitan Massachusetts. The median market has about 170 suppliers. Compared to markets across the country, Polk County and San Antonio had a fairly large number of suppliers, with 320 and 370 suppliers, respectively, before the demonstration. A large total population in the market appears to attract a large number of suppliers.

The number of suppliers per 1,000 beneficiaries also varies widely. The median market has 3.4 suppliers per 1,000 beneficiaries. There are over 7 suppliers per 1,000 beneficiaries in nonmetropolitan Massachusetts but only 1 per 1,000 beneficiaries in San Diego. This could suggest that San Diego is relatively underserved compared to rural Massachusetts. Alternatively, and perhaps more likely, it suggests that in larger markets, the suppliers are simply larger instead of more numerous. DME suppliers could be very large since they do not have the same constraints as facility-based providers.

Many suppliers do not provide the full range of DME goods covered by the benefit. For example, there are over 930 suppliers in Atlanta, Georgia, but only 93 of them supply oxygen and oxygen-related supplies. We subdivided our analysis of the size of markets by the type of DME.[1] The same positive relation between the number of suppliers and the total population held, though it varied somewhat from type to type.

We also considered a measure of market concentration as a possible criteria for identifying promising markets for competitive bidding. Though a market has a large number of beneficiaries and suppliers, it could be dominated by only one or two suppliers. Such a market could be less competitive than one with fewer suppliers whose shares of the market are spread more evenly.

The Herfindahl index (HI) is widely used in health services research to measure market concentration (Baker 2001).[2] However, this measurement seems unlikely to be predictive of the outcome of a competitive pricing program. The difficulty of identifying and anticipating the behavior of potential market entrants (Bernstein and Gauthier 1998) or the behavior of winning competitors in a market with far fewer competitors following the exclusion of nonwinning suppliers substantially limits its usefulness as an indicator of whether a given geographic market is a good candidate for competitive bidding.

The HI did uncover some differences in market concentrations for the various types of DME (Table 8-1). Most markets for medical and surgical supplies were relatively unconcentrated; many suppliers had evenly distributed market shares. However, most markets for drugs and nutrition products were very concentrated; there were either very few suppliers in the market or dominant market shares were held by one or two suppliers. Markets for other types of DME were moderately concentrated.

The relative concentration of DME markets is not strongly associated with population size. Most markets, regardless of size, were highly

TABLE 8-1 **Concentration of markets, by type of DME**

Type of DME	Median index
Other DME	700
Medical or surgical supplies	780
Hospital beds	1,500
Oxygen	1,530
Wheelchairs	1,570
Orthotic devices	1,660
Nutrition	2,570
Drugs	3,660

Note: DME (durable medical equipment). The type of DME is defined using Berenson-Eggers type of service. The index is Herfindahl index score. A higher score indicates a less competitive market.

Source: MedPAC analysis of the 5 percent standard analytic file of claims for durable medical equipment in 2001.

1 To divide markets by type of DME, we used the eight-category Berenson-Eggers Type of Service (BETOS) classification. The BETOS classification assigns each DME code to one clinically-related group, such as hospital beds.

2 A Herfindahl index is based upon the sum of the squares of the market share of each competitor in the market. Two different markets may have the same number of competitors, for example, four suppliers. In the first market, each supplier has a 25 percent share; the score would be 2,500 ($25^2 + 25^2 + 25^2 + 25^2 = 2{,}500$). In the second market, one supplier has 70 percent of the market and the rest have only 10 percent apiece; the score would be 5,200 ($70^2 + 10^2 + 10^2 + 10^2 = 5{,}200$). In this hypothetical example, both markets are relatively concentrated, but the second market is far more concentrated than the first.

Identifying new markets for competitive bidding (continued)

concentrated for nutrition and drugs. However, in oxygen for example, markets with as few as 100,000 people had enough suppliers with evenly distributed market shares to be considered relatively unconcentrated, while some markets with as many as 2 million people were highly concentrated.

As a simple policy proxy, total population is probably sufficient to identify markets with many suppliers. However, identifying markets with both a large number of suppliers and an even distribution of market shares, by type of DME, requires more detailed analysis.

Refinements to the analysis should also be made. Our sample included over 50,000 DME suppliers, but some very small suppliers may not be included in our analysis. Statewide nonmetropolitan areas are not likely to be true markets because many suppliers might not provide DME to the entire market or even to most of the market. These market areas should be subdivided and tested further. Also, the analysis discussed here does not account for substantial common ownership of suppliers in any market. For example, a single chain of drugstores may operate dozens of suppliers in a single market.

Also, our use of BETOS codes in this analysis should be tested for its adequacy as a market definition. In the demonstration, CMS required suppliers in most cases to bid for every product category, thus defining the market. However, nonmanual wheelchairs were excluded from the wheelchair category, and custom orthotics were exempted from the orthotics category. Defining markets with such exemptions could lead to different results in our analysis. ■

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