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Reimbursing for Health Care Services

Joseph P. Newhouse *

Summary

The literature on contracting has focused on the power of the contract and especially the mix of fixed price and cost reimbursement type contracts. For health care services there is the additional issue of what the base of any fixed price contract should be; e.g., for hospitalized patients, per day, per stay, or per episode (including post acute care). More aggregate bases are more powerful. I suggest that more aggregate bases are more likely optimal, the less independent are various inputs (typically, the more substitutable). I illustrate with the experience of the American Medicare program.

In what follows I consider fundamental properties of reimbursement systems for health care services. I illustrate these properties using the example of reimbursement for inpatient and post acute care in the American Medicare program, a near universal, federally financed program of insurance coverage for Americans over 65 years of age.¹ I have chosen this example for two reasons. First, it illustrates a number of important difficulties in making decisions about better properties. Second, I am personally familiar with those difficulties, having had to wrestle with them for the past ten years while serving on the Medicare Payment Advisory Commission, an entity established by the American Congress to advise

*. Harvard University. I would like to thank Tom McGuire for helpful comments on an earlier draft.

1. The program also covers the medical costs of certain disabled persons under 65 and those of any age with End Stage Renal Disease, but 85 percent of its spending is for the elderly. The federal funds come from both payroll taxes and general revenues. Beneficiaries pay no premium for the portion of the program that pays for inpatient care, but they pay a premium that is 75 percent subsidized for the coverage of physician services (over 95 percent of beneficiaries elect this coverage). For most services there is some cost sharing that may be covered by supplementary private insurance.

it on how and how much the Medicare program should pay hospitals, physicians, health plans, and other health care providers.²

My purpose is to illustrate problems I encountered in trying to apply economic analysis to issues of provider reimbursement and to suggest a direction for improvement. I sketch an extension of contract theory to incorporate the level of aggregation in the basis of payment, as well as the more traditional concern with the fraction of cost reimbursement. I suggest that more aggregated bases of payment are more desirable, the less independent are inputs; typically this will mean the more substitutable are the inputs. The pervasiveness of information problems and the rapidity of technological change also affect the optimality of contracts. Some of the material here is treated in more depth in Newhouse (1996; 2002a; 2002b).

Medicare's administered pricing methods are reasonably well known, in particular its use of Diagnostic Related Groups (DRGs) to pay for inpatient care, but before plunging into some of the problems with those methods it is important to recognize that Medicare could have used other methods to determine a supply price. Many economists might think first of bidding. In the Medicare context this might take the form of hospitals' submitting a price, with Medicare either paying some function of the low bid and leaving the balance to the patient or else excluding bidders whose price exceeded the desired capacity.³

Three problems arise with bidding. First, the product for which bids are sought must be well specified, and this condition is often problematic for the services that Medicare is purchasing. Second, Medicare started from a principle that consumers should have access to (almost) all providers on (almost) equal financial terms.⁴ As a result, it lacked a credible threat to exclude from coverage a provider submitting a high bid. Finally, many smaller markets have only one nearby hospital, thus giving that institution substantial market power.⁵

2. The Commission was formed in 1997 as a merger of two prior commissions, on both of which I had the privilege of serving. I served as a Commissioner of the Physician Payment Review Commission from 1993 to 1996; this Commission dealt primarily with Medicare payment of physicians. I chaired the Prospective Payment Assessment Commission in 1996 and 1997, a Commission that dealt with the problems discussed here and more generally with the reimbursement of institutional providers. Both of the prior Commissions dealt with health plan reimbursement. The Congressionally mandated reports of the Medicare Payment Advisory Commission are available at <http://www.medpac.gov/>.

3. Medicare's paying the low price and leaving the balance to the patient would be analogous to reference pricing for pharmaceuticals.

4. This was exactly true for institutional providers such as hospitals; in the case of physicians, there was a 20 percent coinsurance requirement, but the provider prices to which the 20 percent coinsurance is applied are constrained to a small range of variation (essentially they can vary by 10 percent) and over 90 percent are exactly equal, so even the 20 percent coinsurance rate does not in practice cause any meaningful variation in the price facing consumers for choosing alternative physicians.

5. There may also be only a small number of physicians in a given specialty in a small community; even in somewhat larger communities, several physicians may practice as a group, pricing similarly

An alternative to bidding is to negotiate prices. This could in principle be done either with individual providers (e.g., negotiate a price with each hospital) or collectively (e.g., negotiate an agreement with an association of hospitals, much as Germany and Canada do with associations of physicians). If negotiations are carried out with individual providers, however, the same problems arise as with bidding. And the United States has no institutional mechanism to negotiate collectively. Beyond that, collective negotiations require an implied threat of a work stoppage if Medicare's offer is unsatisfactory to providers. It is not clear that this would be politically acceptable in the United States. Whether for these or other reasons, since its inception nearly forty years ago Medicare has used an administered price system to set supply prices.⁶

Many of the analytic issues raised by using administered prices also occur in countries that negotiate prices, as well as in countries with national health services and other direct delivery systems, where the issue the issues are how to set an overall budget and allocate it across providers. In fact, the American Veterans Health Administration, a direct delivery system, uses a reimbursement system patterned on the Medicare system in allocating resources across the hospitals it operates.

The properties I consider here have to do with the power of the payment system, the interrelationship among different payment systems for different providers, and the level of the payment or, alternatively, its rate of increase over time. All three properties, especially the first two, are interrelated. I show that the resolution of these issues has important implications for how patients are treated and describe difficulties in reaching a more optimal payment system. In the way of preliminaries, however, I first briefly sketch the Medicare payment systems and recent changes in them for those unfamiliar with them.

and pooling income.

6. In addition to the traditional Medicare program, which I discuss here and which accounts for 86 percent of the beneficiaries, there is also a Medicare + Choice program, which enrolls the remaining 14 percent of beneficiaries in health plans or Health Maintenance Organizations. The Medicare + Choice program sets administered capitation rates per person per month for the health plan, and the plan then negotiates rates with hospitals, physicians, and other providers. The traditional program, however, uses administered prices for all providers.

1. A Partial Description of the Medicare Inpatient and Post Acute Care Reimbursement Systems

When the American Medicare program began in July 1966, inpatient hospital services were naturally a covered service, as were stays in a skilled nursing facility and home health services, meaning nurse or nurse aide visits to the home for skilled nursing services or rehabilitative therapy. The latter two services are considered post acute care, because they are used when a patient is well enough to be discharged from an acute care hospital, but is still in need of some formal care.⁷ Although Medicare coverage of skilled nursing facilities requires at least a three-day stay in the hospital, coverage of home health services does not, and in fact about half of home health visits are for individuals without a hospital stay. Strictly speaking, this half should be excluded from the definition of post acute care, although most of the data that are readily available, including the data I present below, include this half.

When it began in 1966 the Medicare program set reimbursement to hospitals for inpatient services as its “share” of the hospital’s total cost, where its share was defined as the proportion of total inpatient days accounted for by the program’s beneficiaries. Although reimbursement remained cost based, limits on per day reimbursement were added in 1972. Reimbursement for post acute care services was also cost based up to specified dollars per day or dollars per visit limits. For the first two decades of the program the share of Medicare costs accounted for by post acute care was small, well under 5 percent of total program costs (Table 1).

Between 1974 and 1983 the real costs of the entire Medicare program rose 11 percent per year, whereas real federal tax revenue only grew 2.1 percent per year (Table 1).⁸ In response to the rising share of federal revenues going to Medicare, the federal government in October 1983 changed the reimbursement of hospitals, the provider accounting for the most dollars. It phased in a Prospective Payment

7. In addition to skilled nursing facilities and home care, post acute care in the Medicare context includes services in a rehabilitation facility and in so-called long-term hospitals, those with a greater than 25 day length of stay (the median stay in short-term general hospitals is now around 7 days). To keep matters simple, I will generally omit these latter two provider categories from my discussion; the two categories I discuss, skilled nursing facilities and home health care, represent about three-quarters of the spending on post acute services.

8. I have used the Gross Domestic Product deflator to put increases in real terms, and I begin with 1974 rather than 1966 because disabled and end stage renal disease beneficiaries became eligible on July 1, 1973. (That is, prior to that time the program included only elderly beneficiaries.) Federal tax revenue is computed on a fiscal year basis, accounting for the shift in 1976 to begin the fiscal year in October rather than July (so the period for tax revenue from 1974 to 1983 is 9.25 years).

Table 1 : Medicare Expenditures on Inpatient and Post-Acute Services, Various Years (millions of 2002 dollars)^a

Year	Total Program Cost	Inpatient Hospital	Skilled Nursing Facility	Home Health ^b
1974 ^c	33,978	23,695	789 ^d	427
1983	85,867	55,176	747	2,246
1993	152,242	79,352	5,689	11,444
1998 ^e	180,325	84,201	12,035	11,212
2002 ^e	265,700	104,900	14,600	10,500
AACR 74-83	10.8 %	9.8 %	-0.6 %	20.3 %
AACR 83-93	10.7 %	3.7 %	22.5 %	17.7 %
AACR 98-02	10.2 %	5.6 %	4.9 %	-1.6 %

a. GDP deflator.

b. Sum of Part A and Part B spending.

c. Disabled and ESRD beneficiaries added July 1, 1973.

d. Value is for 1975. Sources: Health Care Financing Review, Medicare and Medicaid Statistical Supplement, June 2001, Health Care Financing Administration (Publ. No. 03424), pp. 106, 131, 172, 198. 2002 data from (Board of Trustees of the Federal Hospital Insurance and Federal Supplementary Insurance Trust Funds, 2003) accessible at <http://www.cms.hhs.gov/publications/trusteesreport/2003/tabic1.asp>

e. 1998 and 2002 values for total program cost include managed care enrollees, but other data for 1998 and 2002 exclude managed care enrollees, or about 15 percent of enrollees.

System for inpatient care that was based on Diagnostic Related Groups (DRGs).⁹ The DRG system grouped hospitalized patients into one of approximately 500 categories according to diagnosis and procedure and paid the hospital a lump sum for each patient in a given category.¹⁰ Reimbursement for post-acute services and for hospital outpatient services, however, remained cost based.

Despite the enactment of the Prospective Payment System, total program costs kept rising at a steady rate. Between 1983 and 1993 the real rate of increase in costs remained 11 percent per year. Although the economy grew more rapidly over this period and hence federal tax revenues picked up somewhat, at a 3.5 percent annual real growth rate they still fell far short of the rate of increase in

9. Hospitals changed over from the cost-based to the DRG system at the beginning of their first fiscal year after October 1, 1983; additionally, there was a five year transition until the system was fully implemented; that is, in the five years after 1983 payment was a linear combination of the old and new systems. The last hospital was not fully on the new system until September 1989 (for a hospital with its fiscal year beginning in September).

10. The payment system accounted for geographic variation in wages by varying payment based on a wage index for the local area. There were also higher payments for teaching hospitals, extra payments for hospitals treating a large proportion of Medicaid patients, and extra payments for outlier or very expensive cases. The outlier payments were based on services rendered and so reduced the power of the system, but the threshold for determining where outlier payments began was set so as to limit the payments to 5 percent of total spending. I have relegated these details to a footnote because they are not critical to the main argument.

Medicare costs. As a result of the growth in the overall program, Medicare had become an eighth of all federal spending by the mid 1990s and consumed more than 2 percent of GDP. In 1997 the Congress therefore took additional measures to restrain Medicare costs.¹¹

The Congress focused particular attention on post acute care services and hospital outpatient services, which in the period after 1988 had expanded especially rapidly. To shorten what is already an overly long paper, I ignore hospital outpatient services in what follows, but remark in passing that the changes the Congress made in paying for outpatient services reinforce the inferences I draw from the changes in the payment systems for post acute care services.

Between 1988 and 1996 spending on skilled nursing facilities and home health services grew in real terms by around 25 percent per year, or a factor of 5 to 7 over the entire eight year period. As a share of all Medicare spending, post acute care rose from just 2 percent of spending in 1983 to 11 percent in 1993 and 15 percent in 1996. By 1997 the Congress viewed spending on these services as out of control and ended cost based reimbursement for them. Specifically, it mandated that a prospective payment system for skilled nursing facilities be introduced with a three year transition beginning in 1998.¹² Additionally, the Congress mandated that a prospective system analogous to DRGs be developed for home health services.¹³ While this system was being developed, the Congress reduced payment for each home health visit; in October 2000 the new prospective payment system for home health services was introduced with no transition.¹⁴

The changes in reimbursement methods had a dramatic effect on post acute care spending, especially home health spending. Real home health spending reached its peak of \$18.5 billion (2002 dollars) in 1996 (not shown in Table 1). From 1997 to 2000 it fell by a factor of two to around \$8 to 9 billion. Spending has subsequently resumed growing and in 2002 was \$13 billion, still well below its peak. Not all of the fall can be attributed to the changes in reimbursement, however, because enforcement of anti-fraud provisions was markedly stepped up at about the same time. Nonetheless, the bulk of this decrease is likely attributable to the payment changes.

Despite these changes, the cost of the total Medicare program continues to grow. The 1997 actions reduced the rate of growth in total program spending for

11. Table 1 breaks the period at 1993 instead of 1997 because, except for total program cost, data from 1994 and later are not comparable to earlier data. See note d to Table 1.

12. Between 1998 and 2001 skilled nursing facilities were paid a linear combination of the old cost-based and the new prospective systems; by mid-2001 the new system was entirely in place.

13. It also mandated the development of prospective systems for rehabilitation facilities and for long-term hospitals. These systems have now been implemented.

14. In January 2002 a transition to a prospective payment was introduced for rehabilitation facilities and in October 2002 a transition for hospitals with stays of longer than 25 days.

the two subsequent years (not shown), but growth subsequently quickened and over the entire 1998–2002 period the real rate of growth, 10.2 percent per year, has remained well above the rate of GDP growth.

My point is not the seeming constancy in the real growth rate, which is something of an artifact of the periods I have chosen.¹⁵ Rather, I want to emphasize that this is both a large and a growing program. Medicare is now 2.6 percent of American GDP and 13.2 percent of the federal government budget. Government economists and actuaries project that it will become 5 to 6 percent of GDP over the next three decades, when the baby boomers are over 65 and thus eligible for Medicare (Board of Trustees of the Federal Hospital Insurance and Federal Supplementary Insurance Trust Funds, 2003; Crippen, 1999). I regard these projections as likely to be low.¹⁶ Given the current size of the program and its projected growth, how and how much to pay providers will almost certainly remain an important policy issue in the United States. Analogous issues will surely be important in the countries comprising the European Union as well.

2. The Power of Medical Care Contracts

Much has been written in the economics literature about government or private insurers' contracting with suppliers and specifically about the power of contracts in health care (Chalkley and Malcolmson, 1998; 2000; Dranove and Satterthwaite, 2000; Laffont and Tirole, 1993; Newhouse, 1996; Shleifer, 1985). The literature defines power as the fraction of any cost saving action that the contract or reimbursement method allows a provider or a firm to keep. The lowest powered contract is thus a cost reimbursement contract since the firm keeps nothing of any savings; the highest powered is a fixed price contract. Higher powered reimbursement systems or contracts have the desirable property of giving the firm greater incentives to produce a given output efficiently.

Well known economic models of contracting (Laffont and Tirole, 1993; Shleifer, 1985) assume that the purchaser can verify the product (e.g., a pencil, a police uniform), but may not know the cost of the individual producer.¹⁷ These models focus on the tradeoff the purchaser or procurer faces between giving the firm's

15. The growth in the number of beneficiaries has reasonably steady at about two percent per year.

16. The assumptions behind the Trustees projections are detailed in their report, but assume that growth in real cost per beneficiary will be well below historical experience. Moreover, the projections do not include the cost of adding a benefit for drugs taken on an outpatient basis, something for which both major political parties have expressed support and which was enacted into law in December 2003, after this paper was written.

17. Laffont and Tirole, however, assume the regulator has a prior on upper and lower bounds for cost.

managers an incentive to keep production costs down and the purchaser's desire to extract rent. If the product is verifiable (contractible) and the number of firms or potential entrants is large, a standard result is to use a fixed price contract in a bidding context or yardstick competition, an administered fixed price set at the average of similar firms.

(Laffont and Tirole, 1993) show that if the number of firms is not large or there are barriers to entry such that at least some firms earn rents, a mixed contract that incorporates elements of cost reimbursement is optimal. In the health economics literature (Ellis and McGuire, 1986) had earlier suggested a similar result, with the degree of cost reimbursement a function of the degree of moral hazard by suppliers, although Ellis and McGuire were concerned with the right level of output as opposed to cost minimization for a given output. (Chalkley and Malcolmson, 1998) extended these results to show that if some dimensions of the product are not verifiable (not contractible) and if firms are pure profit maximizers, firms will always stint on the dimensions that are not verifiable unless they receive a cost reimbursement contract. On the other hand, if firms have an element of altruism in their objective functions, as may well be the case in health care, a mixed contract, moving away from full cost reimbursement to include some elements of a fixed price, is optimal. With sufficient altruism a full fixed price contract is optimal.

The literature has thus focused on adjusting the power of a contract by the proportion of cost reimbursement that is used. It has given less attention to another dimension of the contract that is important in health care, the level of aggregation that defines payment for the service for which the insurer contracts. For example, the insurer can contract with a hospital at a very disaggregated level of service, such as a separate price per day for room and board, for the operating room, and for each drug and supply. Or the insurer can contract for an all-inclusive daily price or for a still more aggregated all-inclusive per stay price. The hospital can also be on a fixed budget, a variant of which would be a fixed capitation rate for all beneficiaries in a health plan irrespective of whether they use the hospital.

As the level of aggregation increases, the power of the contracting method increases. The logic is straightforward. The manager's incentive to exert unobserved effort to economize on the production costs only extends to the product that is priced; hence, very disaggregated payment systems only offer an incentive to produce the very disaggregated product at minimum cost. There is no incentive to put forth effort to economize on the number or variety of disaggregated services. More aggregated bases of payment, such as a capitated payment, offer incentives to exert effort to combine the disaggregated services efficiently, but by offering no marginal revenue for additional services offer incentives to stint on unobserved dimensions and to select good risks (Newhouse, 1996; 2002b).

My purpose here is to focus on the level of aggregation of the product in the contract. Although I have not attempted to construct a formal model, the insights from the previous literature apply in determining the appropriate level of aggregation. In particular, the literature's suggestion to mix cost reimbursement and fixed price contracts, not necessarily linearly, can be applied to a richer mix of contracts.

An extension of this literature suggests that more aggregated bases of payment are more desirable, the greater the degree of dependence, typically substitution, among the disaggregated services in treating the medical problem, since the more aggregated payment offers a greater incentive for effort to combine the services in an efficient fashion. This can be seen by considering the case where no substitution is possible, a fixed proportions production function. In that case it is only the sum of the input prices across the relevant inputs that matters. How any sum is allocated to specific disaggregated inputs (e.g., separate prices for an operation and a pre-operative visit rather than a single price for both services) does not affect how the service is produced. I shall illustrate these issues below with Medicare pricing for inpatient and various post-acute services.

In practice, of course, contracts using a variety of levels of aggregation are observed. One reason for the variety is the inability to use a first best, completely specified, fixed price contract, which in turn comes from the difficulty of defining and therefore contracting for the desired health care product a priori, something Arrow emphasized 40 years ago in his classic paper (Arrow, 1963). For example, a symptomatic patient would like to contract for the treatment of the problem, but it is not clear a priori what the treatment should be and therefore what it should cost. In other words, the patient may well not know what ails him or her and thus the services required to treat the clinical problem cannot be well specified in any contract drawn up in advance. For that matter the physician may also not know what is required from just taking a history. For that reason the first step in many treatment plans is diagnostic testing to determine the cause of illness, with further treatment contingent upon the results of the tests. Subsequent treatment in turn will depend upon the patient's response to the initial treatment. Conceptually one could imagine a contract that specified all treatments in all contingencies. But such a contract is not observed, suggesting that transactions costs preclude drafting it, and even if they did not, the rapid rate of technological change in medical care would quickly render such a contract obsolete.¹⁸

18. Beyond these considerations there are certain dimensions of performance that are probably non-contractible, such as rewarding a physician for keeping up with the literature or for being empathic with patients. Some contracts with physicians do attempt to move in this direction, for example, increasing reimbursement based on better patient satisfaction reports, but the portion of compensation at risk is usually a modest five percent or less. Some contracts with health plans and hospitals are now also starting to reward process measures that promote quality, such as greater rates of prescribing beta

It follows from (Chalkley and Malcolmson, 1998) that the greater the difficulties in specifying the product to be bought or the more non-contractible the product, other things equal, the lower should be the power of the contract. Perhaps for this reason Medicare began with low powered, cost reimbursement contracts for institutional providers such as hospitals and skilled nursing facilities.¹⁹ The DRG system in 1983 introduced a higher powered system for hospitals by paying a lump sum per admission rather than reimbursing cost. Importantly, the decision to use a per admission rather than a per day basis for contracting raised the power of the system, since the hospital pocketed the cost savings from eliminating the marginal day of the hospital stay, an example of how the level of aggregation affects the power of the payment system.

Although some casual commentary at the time suggested the DRG system was a near maximally powered system, (McClellan, 1997) showed that this was not the case. Hospitals received on average about 55 cents of revenue for every dollar increase in costs, whereas this figure would have been zero for the highest powered reimbursement system. The principal factor reducing the power of the DRG system was its recognition of surgical and some medical procedures in the definition of the “diagnostic” related groups, so that reimbursement depended upon treatment choices, another illustration of how the level of aggregation in the product being priced determines the power of the system.

The reason for incorporating treatment choice into the design of the DRG system rather than using only diagnosis is not hard to see. Consider the treatment of a patient with a heart attack (acute myocardial infarction). Such a patient would typically be treated either medically (i.e., only with drugs), with an angioplasty, or with a bypass graft operation.²⁰ Not surprisingly, the cost of treating a patient medically is much less than either an angioplasty or a bypass operation. Rather than having a single DRG group for all heart attack patients, therefore, the system

blocker drugs following a heart attack. These contracts raise several other issues such as multi-tasking. See (Newhouse, 2002b).

19. Also at the time no practical, high powered alternative existed, since private insurers either reimbursed a share of costs or paid a percentage of charges, an equivalently low powered method. In the case of physician services Medicare began with and continues to use a reimbursement method with only marginally more power than cost reimbursement, namely, a detailed fee-for-service system with fees for several thousand different services. Visits, for example, are reimbursed approximately in proportion to the length of the visit. Each laboratory test or radiologic study has a different fee. Thus, if a physician can save time or resources in performing a given procedure, he or she can pocket the difference (or perform more procedures in a given time), but any cost savings from reducing the number of services by treating a patient conservatively garners no reward, except possibly through a reputational effect, since payment rises with the number of services delivered. Beginning in the 1990s legislation established that total Medicare payments to all physicians would be an inverse function of the number of services delivered; nonetheless, at the individual physician level payment rises with the number of billable services performed.

20. The latter two procedures are alternative methods of opening the coronary arteries to improve blood flow to the heart.

established groups that distinguished payment according to how the patient was treated. For heart attack patients with no comorbidities (i.e., no other diagnoses) who survived, the DRG weight in 2001 for patients treated medically was 1.08, for patients who received an angioplasty it was 1.87, and for patients who received a bypass operation it was 5.38.²¹ Payment to the hospital is proportional to these weights, so hospitals received five times the amount for patients receiving a bypass operation than for those treated only with drugs. If the reimbursement had been the same lump sum for all heart attack patients irrespective of treatment, that is, had reimbursement been a function of only the diagnosis of heart attack, it is likely that few hospitals would have had bypass capabilities and perhaps not angioplasty capabilities, because they would have taken a loss on each patient so treated, illustrating how the choice of the product to be priced affects power.²²

One might have imagined an alternative system that would have grouped heart attack patients according to their clinical characteristics, for example, paying a lump sum that varied according to age, sex, co-morbidities, ejection fraction, and other physiologic measures. Implicitly the reimbursement system would have incorporated a set of clinical guidelines for how to treat a given heart attack patient, approximating a contract that specified how to treat a patient under various clinical contingencies.

As far as I know, such a contract is not used anywhere in the world. I alluded above to the transactions costs involved in writing such contract. But the issues are even more fundamental. There is no clinical consensus on the guidelines to be used, even in the case of heart attacks, a common problem with many well accepted clinical trials of standard treatments.²³

The lack of clinical consensus also causes problems for an alternative to very detailed or complete contracts, namely the typical American incomplete contract that relies on the language of the insurer's paying for "medically necessary services." In implementing this contract the American "managed care" effort of the late 1980s and early 1990s sought to use a command-and-control technique of

21. http://www.dir.ca.gov/t8/9792_1b.html. If the patient received a bypass operation and a catheterization in the same admission, the weight was 7.52.

22. American hospitals are generally privately owned and make their own decisions about capital investments. In some cases regulation may constrain those decisions, but other than a few basic capabilities such as a laboratory, hospitals are not required to have any specific capital facilities in place.

23. The lack of clinical consensus in much of medical care manifests itself in the well known variation in rates of many procedures across geographic areas (Wennberg and Gittelsohn, 1973), (McPherson, et al., 1982), (Chassin, et al., 1986), (Dartmouth Medical School, 1999), (Phelps, 2000). Bypass rates, for example, vary across 12 large American areas by a factor of 4, with the areas distributed reasonably uniformly within the interval (Chassin, et al., 1986). A substantial component of this variation arises from disagreement among physicians on how a given patient should be treated. Some variation may reflect variation in factor prices or factor endowments, including the skill of the physician, but such factors cannot begin to account for the amount of variation that is observed.

prior medical authorization. At its most extreme, the patient's physician was required to obtain permission from the insurer before undertaking certain procedures ("prior authorization"), and to obtain permission would have to describe the clinical characteristics of the patient. In part reflecting the lack of consensus on how to treat a given patient, however, this technique met strong resistance from physicians and to some degree from patients as well, and has now largely been abandoned.²⁴

The implication of this well known argument is that we cannot attain the first best; it is not feasible for an insurer, public or private, to specify a priori an insurance contract that would stipulate how each patient should be treated in any given state of the world and how much should be paid for that treatment. As a result, contracts in health care have tended to be less than maximally powered and have left the physician considerable discretion about how individual patients should be treated.

3. The Interrelationship among Different Payment Systems: Unbundling and Selection

The DRG system was a more aggregated base of payment and therefore a higher powered payment system than the prior cost reimbursement system, which functioned like a payment system with a very disaggregated base of payment. But because the product, a hospital stay, was not and could not be specific about the bundle of inputs it paid for, it offered an incentive to unbundle elements of the hospital stay. Any element of care that was removed from the inpatient stay would add to the hospital's profit.

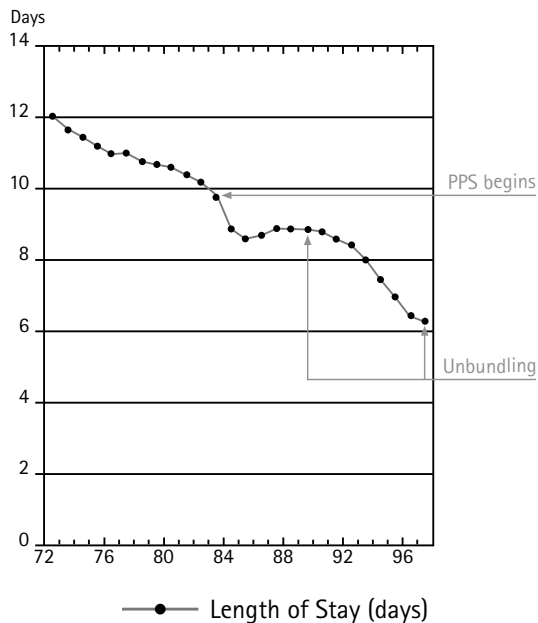
In line with the higher power of the DRG system, hospital length of stay for Medicare beneficiaries fell an unprecedented 9.2 percent in the first year of the system and another 3.5 percent in the second year (Figure 1).²⁵ There were some

24. The abandonment may also reflect the infrequency of denials or failure to authorize; even when it was at its peak, initial denials varied between 2 and 6 percent depending on the nature of the service, and ultimate denials (after appeal) varied between 1 and 3 percent (Remler, et al., 1997). These values do not include any deterrent effect.

25. Although theoretically ambiguous in its effect on admissions, admissions also fell 6.4 percent. Theory would have predicted a fall in long stay patients, but because of technological change, the admissions fall was probably disproportionately in short-stay patients, who could now be treated as outpatients. If this is correct, the fall in length of stay for a given patient was even greater than the observed change. Changes in coding, induced by the new incentives to code patients in more severe and therefore more highly reimbursed DRGs, essentially make it impossible to estimate a pure effect of the system on length of stay conditional on admission.

adverse effects on quality of care, but these appeared minimal relative to the savings the system brought about (Rogers, et al., 1990) and so the system was generally regarded as a policy success that increased efficiency. It also, of course, gave the Congress a greater degree of budgetary control over the program than was the case with cost reimbursement, because the Congress set the amount to be paid for each DRG unit annually rather than simply reimbursing a formulaic share of cost. In effect, Medicare payment to hospitals was now budgeted, with the budget being adjusted for the volume of admissions and the case-mix.

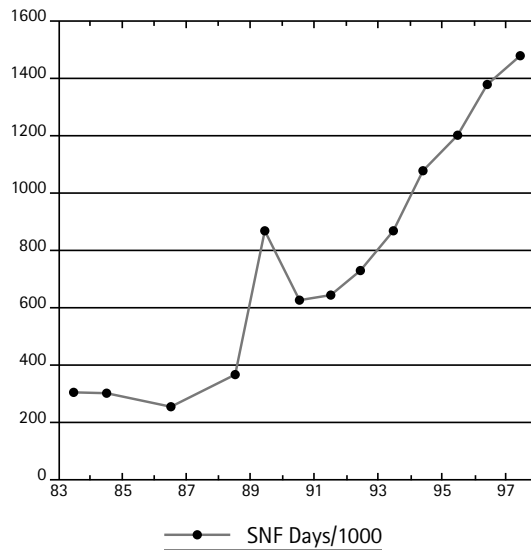
Figure 1 : *Hospital Length of Stay, Medicare Beneficiaries* – Source: *HCFA Statistical Supplement, 1999, p. 130.*



But adopting a higher powered payment system for inpatient care did not slow the rate of increase in total program costs, as noted above. A good bit of the subsequent increase in cost was attributable to unbundling the last days of the stay to post-acute care. This was temporarily retarded by regulations in the first few years of the new system, but two court decisions in 1988 held the relevant regulations to be in violation of the law, so unbundling proceeded rapidly after 1988. Figures 1 through 3 show the fall in hospital length of stay in these years, as well as the rapid increase in skilled nursing facility and home health use. The additional days in the nursing facility and additional home health visits meant increased Medicare spending, because the rate for the inpatient bundle was not adjusted downward to compensate for the unbundling and because Medicare re-

imbursed each additional day and visit in the post acute setting. Indeed, hospitals began to vertically integrate into skilled nursing facilities and into home health agencies to facilitate the substitution of post acute care for the marginal day(s) of the inpatient stay.²⁶

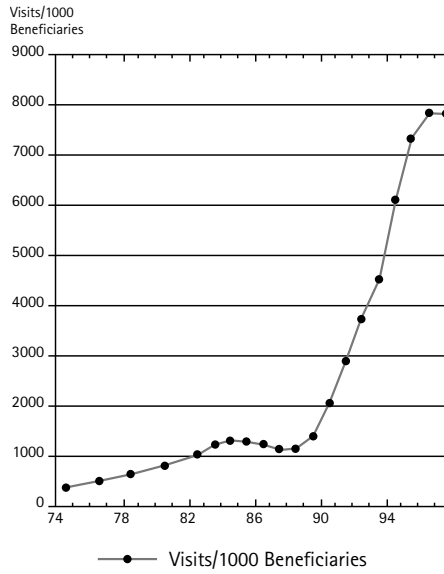
Figure 2 : *Skilled Nursing Facility Days per 1000 Beneficiaries* – Source: HCFA Statistical Supplement, 1999, p. 178. The local peak in 1989 was attributable to the removal in that year only of a requirement that the beneficiary spend 3 days in a hospital to be eligible for the skilled nursing facility benefit.



In effect, the Congress had created the analogue of a second (or maybe third) best problem. It had changed the basis of payment for inpatient services to be more aggregated in 1983, arguably a move toward the first best in the inpatient market, but the more aggregated payment combined with the ambiguity of the product being contracted for inevitably offered an incentive to unbundle. Even assuming for the sake of argument that the inpatient payment system looked at in isolation was optimal, it was not at all clear that the entire system was closer to the first best from the adoption of the DRG system.

In light of the greatly increased spending on post acute services after 1988, the Congress decided in 1997 that if ending cost reimbursement was a good idea for inpatient care, it was a good idea generally, and it mandated the development

26. Often the skilled nursing facility was simply another floor of the hospital, so the patient was simply wheeled from one part of the building to another when being “discharged” from the hospital to the skilled nursing facility.

Figure 3 : *Rate of Home Health Visits – Source: HCFA Supplement, 1999, p. 198.*

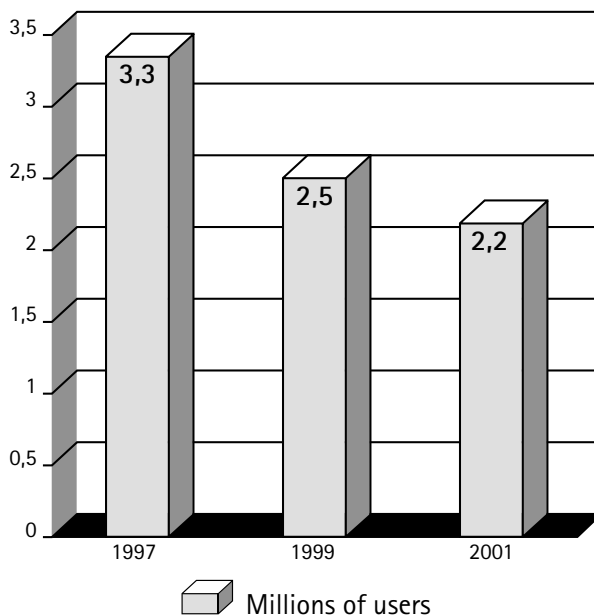
and implementation of higher powered payment systems for post acute care, as described above. The new payment systems for skilled nursing facilities and home health care, however, defined the unit of service differently, and their power differed accordingly. In the case of skilled nursing facilities, the new payment system set a fixed reimbursement per day and not per stay, as in the inpatient system. The price per day varied in part according to the characteristics of the patient, including the number of limitations in the Activities of Daily Living, and in part according to treatment.²⁷ The increase in power was particularly large with respect to the amount of therapy given to the patient, which had not previously been subjected to any limit whatever. In the first two years after adoption therapy services in skilled nursing facilities fell by almost half, and real spending on skilled nursing facilities fell about 20 percent (Medicare Payment Advisory Commission, 2003).

In the case of home health services, the basis of payment continued to be per visit through October 2000, albeit at a considerably lower per visit price. Beginning in October 2000, however, the basis was changed to a much more aggregated 60 day episode of care. In other words, a lump sum payment that varied with patient characteristics was made for a 60 day period. If there were four or fewer visits in that period, however, payment was per visit rather than a

27. See <http://cms.hhs.gov/medicaid/reports/rp1201-g.pdf> for a description of the system.

lump sum. Thus, this system was especially high powered in that there was zero marginal revenue for any visit above five in a 60 day period (but a large spike in marginal revenue for the fifth visit), whereas the prior system had reimbursed a set amount per visit irrespective of the number of visits. In response to these new incentives spending fell by half, as already described. Much of the fall was in response to the reduction in the payment rates for a visit, but there was a further fall in use after the adoption of the 60 day episode basis of payment. Overall, total visits fell by more than a factor of three in four years (Figures 4 through 6).²⁸

Figure 4 : *Millions of Home Health Users, American Medicare Program, Recent Years.*

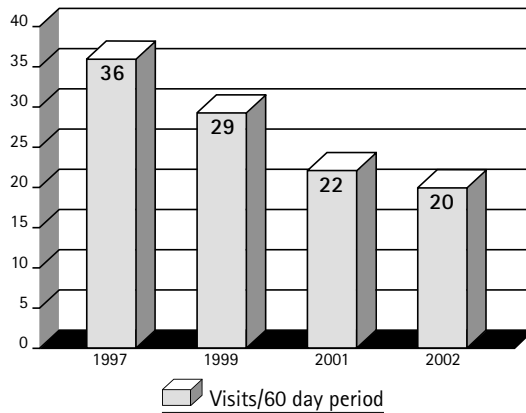


Sadly, one can say little about the welfare effects of these changes. Simply obtaining and verifying information about what post acute services were actually delivered is difficult, especially in the case of home health services, as I come to below. But there are fundamental problems of supplier moral hazard and selection in trying to understand welfare effects.

Compared with inpatient hospital services, the bundle of post acute services that should be delivered and hence the product that is being purchased is less well defined. Medical texts do not generally contain material on how intensive

28. Visits per user, of course, are impossible to interpret because of potential changes in the case mix of users.

Figure 5 : *Visits per 60 day Period of Home Health Use, American Medicare Program, Recent Years.*

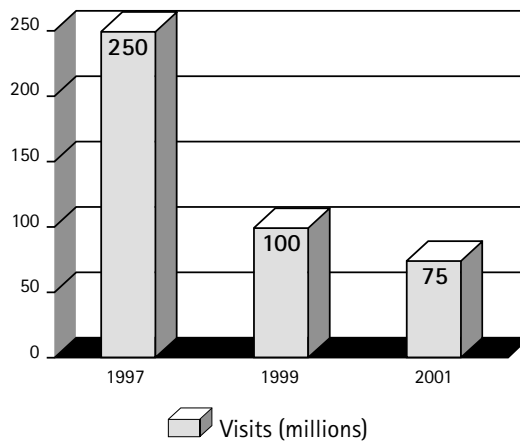


post acute care should be. Moreover, some of the care is of a personal nature. How many baths per week should a person who requires assistance in bathing receive? By definition, the higher powered payment systems introduced after 1997 offered suppliers an incentive to provide fewer services, an incentive upon which they acted, as just described. But the lack of a standard of care, together with the absence of any variation in the price facing users, makes it difficult to say anything about welfare effects.

Furthermore, the more aggregated units of payment in the new systems, especially in the case of home health, offer greater incentives to select among beneficiaries than the old cost based system, because providers will generally know more about the expected costs of the individual than the rating system adjusts for. Indeed, there is some evidence of selection. Prior to the PPS about half of the home health visits were used by those without a prior hospital stay. Such beneficiaries tended to be frail elderly, who were disproportionately receiving personal care services from nurse aides rather than skilled nursing services. Because standards for this group are even less well defined than for post hospital care, the product purchased is less well defined. As a result, both the ability to select among beneficiaries and to reduce services to a given beneficiary (supplier moral hazard) are probably greater in this group than in the group that has just been discharged from a hospital.

These implications are supported by data on the share of visits of various types of home health providers. The share of visits carried out by a nurse aide fell from 49 percent in 1997 to 27 percent in 2001, whereas the share of therapy visits rose from 9 to 23 percent and the share of skilled nursing visits from 41 to 49 percent

Figure 6 : *Millions of Annual Home Health Visits, American Medicare Program, Recent Years.*



(Medicare Payment Advisory Commission, 2003). These latter two categories of visits would be disproportionately used following a hospital discharge, whereas nurse aides tend to provide personal care services.

Even among the group discharged from the hospital, some unpublished analysis by Christopher Hogan also suggests a selection effect, in particular that the increased power of the system affected users where the clinical indications were less well defined (i.e., use was more discretionary). Hogan examined changes in the use of various types of post-acute care among DRGs where some post acute care is common (Table 2). Inspection of Table 2 reveals that the declines in the proportion of discharges using home health services is markedly less for the first four than for the last five DRGs.²⁹ The first four DRGs are all surgical procedures, whereas the last five are not only medical DRGs but are also markers for diseases of the frail elderly, consistent with the hypothesis that the declines in use were disproportionately among those patients for whom the clinical indications for home health care are less well defined.

These findings might prompt one of two reactions. First, theory suggests that if the bundle of services for post acute care is more poorly defined than for inpatient care, its payment system should be lowered powered. Or, at a finer level, the home health payment system for the last types of diagnoses in Table 2 should be lower powered than for the first diagnoses. But the system deemed unsatisfactory in 1997 because of cost increases did in fact have a lower powered payment system

29. These differences are all statistically significant because of the large number of observations.

Table 2 : *Distribution of Post Acute Care Use by DRG, 1996-2001 (Numbers do not add to 100 percent because of the use of other post acute care services.) – Source: Unpublished data from Christopher Hogan.*

DRG and Sample Size	Year	No Post Acute	SNF Only	SNF+HH	HH Only
001 Craniotomy					
N=1740	1996	46 %	13 %	4 %	15 %
N=1568	2001	47 %	14 %	3 %	11 %
107 Coronary Bypass with Cardiac Catheterization					
N=3381	1996	51 %	3 %	4 %	38 %
N=4073	2001	49 %	7 %	5 %	31 %
209 Major Joint and Limb Reattachment					
N=17718	1996	19 %	17 %	19 %	22 %
N=18551	2001	17 %	20 %	16 %	17 %
210 Hip and Femur Procedures Except Major Joint					
N=6846	1996	15 %	40 %	19 %	9 %
N=5946	2001	10 %	47 %	18 %	5 %
88 Chronic Obstructive Pulmonary Disease					
N=18115	1996	65 %	6 %	2 %	25 %
N=19417	2001	74 %	8 %	2 %	12 %
89 Simple Pneumonia and Pleurisy					
N=20376	1996	59 %	14 %	3 %	21 %
N=23402	2001	64 %	18 %	3 %	11 %
127 Heart Failure and Shock					
N=32796	1996	56 %	8 %	3 %	30 %
N=31765	2001	68 %	3 %	12 %	14 %
296 Nutritional and Metabolic Disorders					
N=10955	1996	50 %	16 %	4 %	25 %
N=12051	2001	58 %	20 %	3 %	11 %
320 Kidney and Urinary Tract Infections					
N=8407	1996	53 %	19 %	3 %	22 %
N=9427	2001	57 %	24 %	3 %	11 %

for post acute care than for hospital care. One might argue that the unbundling that system caused was a once-and-for-all event and that payment to hospitals in the aggregate could ultimately have adjusted for it. But an optimal system would adjust on a hospital-specific basis, and the amount of unbundling is difficult to estimate with any precision at the hospital level.³⁰ How the power of the payment system for post acute services might be lowered relative to that for inpatient care is an issue I take up in the concluding section.

A second reaction may be that supplier moral hazard in post acute services, or at least in home health services, is so large that the service should have greater demand-side cost sharing than other services.³¹ But exactly the opposite situation obtains; home health services are one of the few Medicare benefits that carry no cost sharing! Indeed, because of the popularity of the benefit with the elderly, the Congress has declined several times to add any copayment for home health services.³² Thus, this response does not seem to be in the feasible set, at least for now.

4. The Interrelationship among Different Payment Systems: Substitution among Providers

In the United States and in many other countries as well, reimbursement systems have tended to develop for each provider of care. Thus, in the Medicare program there are distinct reimbursement methods for hospitals, for skilled nursing facilities, and for home health agencies. In other countries there may be separate budgets for each of these entities. For any specific patient, however, these sites may be substitutes; in other words, a given patient can be treated in several post acute settings. As a result, separate reimbursement systems for each setting with one or more systems using an aggregated base seem unlikely to work well. In effect, there is an incentive for providers under any more aggregated system to unbundle or shift services to another provider.³³ Moreover, because the

30. The Medicare Payment Advisory Commission estimates that by 2002 about two-thirds of the gains from unbundling had been clawed back, but the taking back occurred for the most part by reducing annual increases uniformly across all hospitals rather than adjusting in a hospital-specific manner. At this point it is unlikely that further payment reductions because of unbundling will be made.

31. This would be consistent with the argument of (Pauly and Ramsey, 1999) in the case of health plan payment.

32. I have personally favored a \$5 per visit copayment, subject to an annual limit of \$250.

33. If all systems were based on cost reimbursement or another very disaggregated system, unbundling would not be possible.

same service can be provided in alternative settings, there is an incentive to shift patients to the setting with the highest level of reimbursement.³⁴

To illustrate this last point, consider a stroke patient who needs physical or speech therapy following a hospital stay. He or she can receive that therapy in a rehabilitation unit, in a skilled nursing facility, at home, or in a hospital outpatient department, among other places. Medicare pays different rates for this service depending on the site of service, an obvious incentive to shift patients toward the highest reimbursed site. Indeed, one can view last day in the hospital as an alternative setting for post acute care services and hence the unbundling that occurred after the adoption of the DRG system as a manifestation of the problem created by different payment rates among sites of care for the marginal day in the hospital. In effect, the payment to the hospital for the marginal day was zero, whereas it was positive in the post acute settings.

Because paying different rates for the same service at different sites invites use of the most highly reimbursed site rather than the most efficient site, one might ask why Medicare has proceeded in this fashion. The practice stems from basing the new post acute care payment systems on historically observed costs for patients at the given site. These costs differed because patients who were thought to have good chances of recovery received the most intense therapy, which in practice tended to be in a rehabilitation unit. Patients who were unlikely to recover were more likely to be placed in a skilled nursing facility; because they received less intense care, they were less costly. Home care and other outpatient care tended to be the cheapest, both because the insurer did not pay for hotel services and because these patients were the healthiest.³⁵ Historical costs were therefore highest at rehabilitation facilities and lowest for home care. Sorting by type of patient among these facilities, however, was imperfect, in part because not all localities had all types of facilities, and even if they did, any given type of facility might be at capacity when a particular patient was being discharged from the hospital and so the patient might go elsewhere.

When the various post acute facilities were reimbursed with a cost contract, the differences among them in patient characteristics did not create financial incentives to shift patients across sites. When prospective systems were introduced after 1997, however, the level of reimbursement for each site was set on the ob-

34. A further problem with more aggregate bases of payment is caused by persons who use multiple post acute providers, a rather frequent occurrence. In 1998 18 percent of users of post acute care used more than one site of care, for example, care at a rehabilitation unit followed by home health services (Medicare Payment Advisory Commission, 1998). How to adjust a per stay or a per episode payment for what are, in effect, two partial episodes at each site is not obvious.

35. In some cases, however, the amount of therapy increases over time as the patient recovers from an acute event and can tolerate more therapy. Thus, a healthier patient mix is not always associated with lower post acute care costs.

served historical costs for the average patient at that site. Payment was thus highest for rehabilitation facilities and lowest for home health care. Because the changes in reimbursement have been recent, there are no data on the degree to which the site of care has changed for similar patients.³⁶ These comments, however, bring us to the issue of the level of reimbursement for each payment system.

5. Updating the Level of Reimbursement, Technological Change, Information and Accountability

Economic theory suggests that for contractible services that reimbursement be set at marginal cost, with lump sum transfers if marginal cost is less than average cost (Pauly, 1980; Shleifer, 1985). Although unexceptional in theory, I have found this criterion impossible to apply in practice. The fundamental problems are two. First, timely information about both cost and quality or other non-financial dimensions of the product is not available. Secondly, the lagged information that is available is average accounting cost rather than marginal economic cost.

Despite these difficulties, one might suppose that trial and error pricing would be somewhat effective because both entry and exit, and to some degree the quantity of services provided, can be observed. But technological change, including learning-by-doing, means trial and error pricing does not necessarily converge to an optimal price. Moreover, in some cases, most notably for some devices and many pharmaceuticals, marginal production cost may be well below average cost. Given agency problems, how to mark up marginal costs so that average costs are covered is problematic and is again affected by technological change.³⁷

Rapid technological change in medical care complicates all pricing and budgeting methods.³⁸ It even complicates cost reimbursement contracts since such

36. Regulation reduces the magnitude of this problem in the case of rehabilitation facilities, the most highly reimbursed facility. The regulation stipulates that patients in such facilities must receive at least three hours of active therapy per day. This is more therapy than most frail patients can tolerate. Further, at least 75 percent of patients in rehabilitation facilities must come from one of ten DRGs. The welfare consequences of this regulation are unexplored.

37. Conceptually one can imagine a supply-side equivalent of Ramsey pricing, in which one marks up more the good or service which is least responsive to supply prices, but in practice there are not nearly enough data to implement such a scheme. See (Newhouse, 1991), (Wedig, 1993).

38. Change is also surely one contributor to the observed variation in care described above, and

contracts almost always have some limits or other method of bounding the price if the patient pays nothing at the margin, as is often the case, but setting such limits for new technologies is problematic. Cost data are often simply unavailable, and even if available may well be misleading as a guide to the future because of learning-by-doing or future realization of economies of scale. If the new technology involves a patented drug or device, the manufacturer is legally entitled to rents, and issues of dynamic efficiency arise. Any efficiency calculation, of course, must account for the deadweight loss from financing those rents. That loss could be especially large if the drug or device represents a large clinical improvement, if there is no close substitute, and if the price to the patient is invariant to the supply price of the drug or device. As a result, actual situations of this type that I am familiar with involve price setting.

Information might be thought to be reasonably good about cost; even here, however, information used to set prices is typically well out of date. In the United States audited reports on individual hospital cost are generally available with a two- to three-year lag. This creates a problem both for setting the level of cost (the so-called conversion factor) as well as for the relative weights among DRGs or other payment units, because technological advance can be highly differential across DRGs. Moreover, even the out-of-date information at best yields average accounting costs. Obtaining marginal economic cost would entail further delay, which would make the estimates even more obsolete.

These considerations apply outside medical care, of course; the unit production cost of most new goods tends to fall after their introduction. And the regulatory lag problem if “cost” contracts are set on the basis of past costs is well known.³⁹ If costs are falling, the supply price will be above marginal cost. This poses a principal-agent problem in medical care because of the resulting incentive to deliver more services (McGuire and Pauly, 1991), (McGuire, 2000).

Furthermore, information about quality, whether about the process of care or the outcomes of care, is notoriously difficult to obtain. The issues are even more formidable for post acute services, especially home health care, because it can be hard even to verify what service was delivered. Inherent in the nature of home health services is that a nurse or a nurse’s aide may be alone in a patient’s home. The patient may, and often does, have cognitive deficits. Verifying exactly what was done for the patient seems almost impossible.⁴⁰ Here, as in much of medicine,

it obviously complicates the writing of clinical guidelines. For further discussion of the amount of change and the difficulties it causes for reaching the production frontier for quality of care see (Newhouse, 2002c)

39. Medicare technically uses past charges rather than past costs, but the principle still applies.

40. The cutting edge of accountability seems to be that the nurse calls in from the patient’s telephone when she arrives and when she leaves, so that a third party can verify that a certain amount of time was spent in the patient’s home. Accountability problems are less if there is a spouse or other relative

one must rely on ethics or norms to assure that proper service is given. Payment methods that vary by type of service provided and hence better approximate the cost of specific services may well undermine the truthfulness of reporting. All of this suggests low-powered payment systems, although that is not how American policy has evolved.

6. Conclusion: So What Would I Do?

I have described three related issues in setting administered prices for medical care and illustrated them in the context of paying for inpatient and post acute care when bidding and negotiation are not used. The first issue is the power of the payment system, including both the proportion of cost reimbursement, the traditional focus of the economics literature, and the level of aggregation of the service being reimbursed. The second issue, which can be thought of as a subset of the first, is how to manage different payment systems for different sites of care. The third issue concerns the level of payment and its rate of increase. I have shown that the power of the contract affects the quantity of services provided to a given patient as well as the unbundling of services and resulting shifts to a different site of care. Higher powered contracts can therefore potentially reduce static and perhaps dynamic inefficiency, but the lack of information and the rate of technological change tend to argue for lower powered contracts.

I began by noting that I have wrestled with these problems for the past several years in the context of the American Medicare program, so it is fair to ask how I would address the specific payment problem discussed here. I believe the least bad (second best?) method is to combine, or bundle, payment for all post acute services with the hospital payment and also have some payment at the margin for most or all post acute services past after a deductible. In effect, this would make the base of payment be per episode, where the hospital stay defines the beginning of the episode.⁴¹ Specifically in the context of the Medicare program, I would increase the current DRG payment to the hospital to include payment for post acute services. I would thus give the hospital responsibility for both inpatient and post acute services.⁴²

present during the visit, but this is not always the case. One might imagine some kind of remote video monitoring, which, even apart from its Orwellian connotations, seems likely to be costly.

41. This proposal does not deal with the half of home health visits that do not follow a hospital stay. How to pay for these services is part of a larger question of how to pay for chronic long term care services rather than the acute care services that the remainder of the Medicare program covers. I suspect some combination of the current and prior Medicare methods are better than either corner solution, but do not go further than that here.

42. Some fear that by giving the monies to the hospital one will over medicalize post acute care.

Payment per episode follows the general principle of preferring a more aggregated base of payment when services are substitutes. It eliminates the incentives of the current methods to unbundle to other sites of care. Such incentives appear inevitable if some or all sites are paid on a separate but aggregated basis of payment, especially a per stay payment, as in the cases of the hospital and rehabilitation facilities, or a per post acute episode payment, as in the home health system. Payment per episode would give the hospital the incentive to combine inputs efficiently in producing treatment for the episode.

Since the deductible implies that the initial amount of post acute care would not be reimbursed, at discharge the hospital would face the full price of each type of post acute care, as well as the cost of the marginal day in the hospital. Furthermore, to the degree that the marginal cost of post acute care is below average cost, the shortfall can in principle be incorporated in the fixed DRG payment while leaving payment at the margin approximating marginal cost.

A positive payment at the margin for post acute services reflects the principle of using lower powered systems when the product can be less well specified. It addresses the incentive to underserve or stint that is present in the current relatively highly powered contracts. There is, of course, the question of how large any marginal payments should be. Ideally they would equal marginal cost for a given patient, but marginal cost will not be known in practice. Technological change may be somewhat less of a problem for post acute care than for acute care, so that trial and error pricing may be more effective, but care that used to be provided only in inpatient settings has over time shifted to various less acute settings, so care in these settings is not immune to change. Moreover, observed costs any given post acute setting will vary if the distribution of patient characteristics in those settings shifts, as it will likely do in unobservable ways as pricing changes. That said, in practice I would try to adapt the current classification systems so that marginal reimbursement would vary by patient characteristics.

Finally, the current Medicare system sets an administered price and reimburses all providers who accept that price.⁴³ Changing to a per episode system that includes post acute care would introduce an aspect of selective contracting; in theory, a hospital could exclude certain post acute care providers. Probably for this reason, post acute care providers have successfully opposed such a reform.

What are the drawbacks? An episode-based system is in principle a higher

I personally am not persuaded by this argument, in part because of the vertical integration that has occurred between hospitals and post acute facilities. One could, however, potentially address this issue by instead paying a third party entity that would contract with both the hospital and post acute providers.

43. There are also minimum quality standards, although it is highly unusual for a provider to be excluded on grounds of quality.

powered system than the current system. In principle the higher power offers a greater incentive to select, but I am skeptical that the incentive to select would be much greater than under the current system. First, I suspect that it is difficult to predict at the time of admission to the hospital the amount of post acute care that would be medically indicated in any given case. Second, the majority of the variation in per episode spending across patients is likely to arise from variation in inpatient care, because the inpatient setting accounts for the majority of the dollars. To the degree the inpatient setting accounts for the variation in per episode spending, the increase in the incentive to select from the current system is reduced.

In 1998 there was a tentative, but different step toward linking the Medicare hospital and post acute payment systems. Starting at that time, under certain limited conditions if the patient used any post acute care, the hospital did not receive the DRG payment but rather was reimbursed on a per diem basis. The effect was to lower the power of the DRG system and to make the hospital more nearly financially neutral with respect to keeping the patient another day. This policy, however, only applied to patients in ten DRGs and within those DRGs only to patients whose hospital stay was less than the geometric mean for the DRG. Because users of post acute care tend to have longer inpatient stays within DRG than non-users (they are sicker), this policy only applies to a minority of the patients, in fact to only 6 percent of all hospitalized patients and to 21 percent of those using any post acute care. The policy also does not address the issues of substitution among post acute sites nor stinting in the provision of post acute services. I think a more extensive change is needed.

References

Arrow, Kenneth J. 1963. "Uncertainty and the Welfare Economics of Medical Care," *American Economic Review*, 53(5): 941-973.

Board of Trustees of the Federal Hospital Insurance and Federal Supplementary Insurance Trust Funds. 2003. *2003 Annual Report*; Washington, D.C.: Government Printing Office.

Chalkley, Martin, and James M. Malcolmson. 1998. "Contracting for Health Services When Patient Demand Does Not Reflect Quality," *Journal of Health Economics*, 17(1): 1-19.

Chalkley, Martin, and James M. Malcolmson. 2000. "Government Purchasing of Health Services," *Handbook of Health Economics*. Anthony J. Culyer and Joseph P. Newhouse; Amsterdam: North-Holland. 1A: 847-890.

Chassin, Mark, Robert H. Brook, Rolla Edward Park, et al. 1986. "Variations in the Use of Medical and Surgical Services by the Medicare Population," *New England Journal of Medicine*, 314(5): 285-290.

Crippen, Daniel. 1999. March 18 Testimony before the Senate Finance Committee: Washington, DC, US Senate.

Dartmouth Medical School. 1999. *The Dartmouth Atlas of Health Care, 1999*; Chicago: AHA Press.

Dranove, David, and Mark A. Satterthwaite. 2000. "The Industrial Organization of Health Care Markets," *Handbook of Health Economics*. Anthony J. Culyer and Joseph P. Newhouse; Amsterdam: North-Holland. 1b: 1093-1139.

Ellis, Randall P., and Thomas G. McGuire. 1986. "Provider Behavior under Prospective Reimbursement," *Journal of Health Economics*, 5(2): 129-151.

Laffont, Jean-Jacques, and Jean Tirole. 1993. *A Theory of Incentives in Procurement and Regulation*; Cambridge: MIT Press.

McClellan, Mark B. 1997. "Hospital Reimbursement Incentives: An Empirical Analysis," *Journal of Economics and Management Strategy*, 6(1): 91-128.

McGuire, Thomas G.. 2000. "Physician Agency," *Handbook of Health Economics*. Anthony J. Culyer and Joseph P. Newhouse; Amsterdam: North-Holland. 1A: 461-536.

McGuire, Thomas G., and Mark V. Pauly. 1991. "Physician Response to Fee Changes with Multiple Payers," *Journal of Health Economics*, 10(4): 385-410.

McPherson, Klim, John E. Wennberg, O.B. Hovind, et al. 1982. "Small-Area Variations in the Use of Common Surgical Procedures: An International Comparison of New England, England, and Norway," *New England Journal of Medicine*, 307(21): 1310-14.

Medicare Payment Advisory Commission. 1998. *Report to the Congress: Medicare Payment Policy, March 1998*; Washington, DC: Medicare Payment Advisory Commission.

Medicare Payment Advisory Commission. 2003. *Report to the Congress: Medicare Payment Policy, March 2003*; Washington, D.C.: Medicare Payment Advisory Commission.

Newhouse, Joseph P. 1991. "Criteria for Judging the Recommendations: A Commentary by Joseph P. Newhouse," *Regulating Doctors' Fees: Competition, Benefits and Controls under Medicare*. H.E. Frech; Washington: American Enterprise Institute: 365-373.

Newhouse, Joseph P. 1996. "Reimbursing Health Plans and Health Providers: Selection versus Efficiency in Production," *Journal of Economic Literature*, 34(3): 1236-1263.

Newhouse, Joseph P. 2002a. "Medicare," *American Economic Policy in the 1990s*. Jeffrey Frankel and Peter Orszag; Cambridge, MA: MIT Press.

Newhouse, Joseph P. 2002b. *Pricing the Priceless: A Health Care Conundrum*; Cambridge: MIT Press.

Newhouse, Joseph P. 2002c. "Why the Quality Chasm?," *Health Affairs*, 21(4): 13-25.

Pauly, Mark V. 1980. *Doctors and Their Workshops*; Chicago.

Pauly, Mark V., and Scott Ramsey. 1999. "Would You Like Suspenders to Go with that Belt? An Analysis of Optimal Combinations of Cost Sharing and Managed Care," *Journal of Health Economics*, 18(4): 443-458.

Phelps, Charles E. 2000. "Information Diffusion and Best Practice Adoption," *Handbook of Health Economics*. Anthony J. Culyer and Joseph P. Newhouse; Amsterdam: Elsevier. 1a: 223-264.

Remler, Dahlia K., Karen Donelan, Robert J. Blendon, et al. 1997. "What Do Managed Care Plans Do to Affect Care?," *Inquiry*, 34(3): 196-204.

Rogers, William H., David Draper, Katherine L. Kahn, et al. 1990. "Quality of Care Before and After Implementation of the DRG-Based Prospective Payment System: A Summary of Effects," *Journal of the American Medical Association*, 264(15): 1989-1997.

Shleifer, Andrei. 1985. "Yardstick Competition," *RAND Journal of Economics*, 16(3): 319-327.

Wedig, Gerard J. 1993. "Ramsey Pricing and Supply-Side Incentives in Physician Markets," *Journal of Health Economics*, 12(4): 365-384.

Wennberg, John E., and Alan M. Gittelsohn. 1973. "Small Area Variations in Health Care Delivery," *Science*, 182(117): 1102-1108.