

Achieving cost control in the hospital outpatient department

by Margaret B. Sulvetta

The rapid growth in outpatient expenditures and the congressional mandate for development of a prospective payment system (PPS) for these expenditures are discussed. Extension of diagnosis-related groups to outpatient care is shown to be infeasible. Alternative patient classification schemes and options for defining the unit of payment and establishing weights and rates are

discussed. A PPS primarily controls price and can only address volume by defining a broad unit of payment, such as an episode of care. Therefore, adoption of a volume performance standard approach could be effective. Outpatient payment policies must be integrated with those of other ambulatory care providers.

Outpatient utilization and expenditure trends

Perhaps the most significant trend in hospital care over the past decade has been the decline in inpatient care and the concurrent increase in hospital services. From 1979 through 1989, community hospital admissions and inpatient days declined by 11 and 15 percent, respectively, while the number of outpatient visits grew by 43.7 percent (American Hospital Association, 1990). Almost one-third of all surveyed hospitals reported that at least 30 percent of net 1990 patient-based revenues were from outpatient services (Sabatino, 1991).

Many factors have contributed to this rapid growth. Outpatient departments (OPDs) have proliferated. In 1984, 49 percent of all hospitals had an organized OPD; by 1988, more than three-quarters of all hospitals had an OPD, and by 1989, the proportion had risen still further to 81 percent (American Hospital Association, 1990). Technological advances in surgery and anesthesia have enabled greater numbers of procedures to be performed safely on an ambulatory basis. From 1979 to 1989, the number of outpatient surgeries increased by 304 percent, while inpatient surgeries declined by 30 percent. Only 18 percent of all surgeries were performed on a hospital outpatient basis in 1979; by 1989, 49 percent of all surgeries were performed in an OPD (American Hospital Association, 1990). As payers concentrated on constraining cost growth for inpatient services, financial incentives were created to shift care to the outpatient setting whenever possible. Peer review organizations (PROs) have encouraged the shift to ambulatory care where appropriate. Finally, OPD use has grown as a result of increased hospital, physician, and patient acceptance of ambulatory care.

The trend in Medicare utilization of OPD services has paralleled this general trend. From 1980 to 1987, Medicare payments for OPD services grew by roughly 19 percent per year, rising from \$1.4 billion to \$5.6 billion. In contrast, Medicare expenditures exclusive of OPD care grew by 11.1 percent (Helbing, Latta, and Keene, 1990). The consistently high annual growth rates in outpatient expenditures and the relative success of Medicare's prospective payment system (PPS) in controlling expenditures prompted Congress to mandate the implementation of a PPS for outpatient care. Under this

mandate, the Health Care Financing Administration (HCFA) was required to submit a PPS strategy by September 1, 1991.

This raises two central questions. The first is whether an outpatient PPS can be as effective in controlling costs as the PPS for inpatient care has been. The second is, given that an outpatient PPS has been mandated, what features should it incorporate to ensure success in controlling costs?

Lessons from inpatient cost control

The PPS based on diagnosis-related groups (DRGs) is probably the most familiar paradigm of prospective payment, and the rapid, continuous increase in hospital outpatient expenditures closely parallels the pattern observed for inpatient expenditures during the decade preceding implementation of the inpatient PPS. In fact, as noted earlier, some portion of the increase in outpatient expenditures is attributable to the relative success of cost controls on the inpatient side. It is possible then that some lessons could be gleaned from a brief historical review of inpatient hospital cost containment. The first important lesson is that inpatient cost containment did not begin with the DRG-based PPS.¹

Section 223 limits

Historically, hospitals were paid under a per diem cost-based reimbursement system. During the mid-1970s, these costs rose at very rapid, uncontrolled rates and were widely variable across hospitals. Congress addressed this issue through section 223 of the 1972 Social Security Act Amendments. Section 223 permitted the disallowance of costs that appeared to be unreasonable relative to those in other facilities. It also established reimbursement ceilings by setting maximum cost limits. Hospitals were thus reimbursed at reasonable cost, subject to a cost ceiling. This approach attempted to constrain the variability in costs across hospitals, as well as to define the composition of allowable costs.

Despite the adoption and subsequent tightening of section 223 limits, hospital costs continued to rise. In the Omnibus Budget Reconciliation Act of 1981 (OBRA), Congress mandated the development of a new payment

Reprint requests: Margaret Sulvetta, The Urban Institute, 2100 M Street, NW, Washington, D.C. 20037.

¹The following discussion of inpatient payment systems draws heavily upon Davis et al., 1990.

system for Medicare and Medicaid, which was then incorporated in the Tax Equity and Fiscal Responsibility Act of 1982 (TEFRA).

Payment limit provisions

TEFRA provisions limited both the increase in Medicare payments and the level of payments. The increase in payments was restricted to an amount equal to the increase in the hospital market basket plus 1 percent. TEFRA also modified section 223 limits so that payment levels to individual hospitals were limited to 112 percent of the average payment for similar hospitals.

TEFRA provisions included two important innovations. First, payment limits were set on a per discharge basis rather than a per diem basis. This was made possible by the introduction of a case-mix system that classified patients into 1 of roughly 457 DRGs on the basis of diagnosis, surgery procedure, patient age, and presence of complicating conditions. The development of the DRG classification system provided a means of measuring hospital costs relative to standardized outputs.

The second important feature introduced under TEFRA was the provision of financial rewards for cost control. Hospitals with costs below both limits (rate of increase in payments and level of payment) received one-half the difference between the lower of the two limits and actual costs. If a hospital's actual costs exceeded either or both of the two limits, payment was set equal to the lower of the two limits. However, these incentives were relatively weak.

TEFRA provisions were successful in controlling overall Medicare expenditures; it is estimated that TEFRA saved Medicare \$6 billion in fiscal years 1983-85. However, TEFRA did little to remove the variability in payment rates across hospitals. This was, therefore, one of the major objectives of PPS.

Prospective payment

Three fundamental policy changes were realized through the implementation of PPS. First, the link to facility-specific costs was broken. Second, facilities were provided with much stronger incentives to control costs. Third, the continued use of the per discharge (rather than per diem) unit of payment adopted under TEFRA, combined with the standardized payment rates, made expenditures and payments more predictable for Medicare and for providers.

Under PPS, hospitals are paid a prospectively determined rate that varies by patient DRG. PPS was phased in over a lengthy transition period. During the first year of the transition period, 75 percent of the payment rate was based on the facility-specific cost, with the remaining 25 percent based on national payment rates. In the 3 subsequent years, the facility-specific portion was scheduled to decrease to 50 percent, 25 percent, and zero, so that, by the fourth year, a standardized national payment rate system was to be in effect. The national payment rate was designed to reflect the cost per case in an average, non-teaching hospital. Payment rates were adjusted for differences in the wage index and urban or rural location. Special adjustments

were later made to recognize cost differences for teaching hospitals, rural referral centers, sole community providers, and those hospitals treating a disproportionate share of low-income patients. Hospitals can receive additional payment under an outlier policy for extreme cases, i.e., those with unusually high costs or lengthy stays. Total payments under the outlier adjustments are restricted by law to 5-6 percent of total DRG outlays. Original DRG weights and payment rates were based on 1981 Medicare costs, inflated to 1984 levels. Subsequently, the weights were rebased using hospital charge data (Price, 1989). Payment-rate increases were constrained each year.

Unlike previous systems, under PPS, hospitals were not paid the lower of actual cost or a set rate. Any hospital that provides services at a cost below the relevant standardized national payment rate makes a profit on that case. Any discharges provided at costs above the national rate result in a loss. Initially, high profit rates led to constraints on subsequent rate increases (Russell, 1989).

The use of a per case unit of payment (begun under TEFRA) rather than a per diem rate meant that hospitals had a disincentive to provide unnecessary services or unnecessary days of care. Prior to the implementation of PPS, the anticipated hospital response was an increase in Medicare admissions, because this was the only volume response that could net increased payments. PROs were directed to screen for unnecessary admissions and to conduct preadmission review for certain surgical procedures. In actuality, the declines in hospital admissions that preceded PPS implementation continued. Admissions of elderly patients declined from 1984 through 1986. Although admission rates began to increase again in 1987, that increase remains below the rate of increase in the elderly population (Prospective Payment Assessment Commission, 1989). Rather than increasing admissions, the apparent response of hospitals, encouraged by PROs, was to shift care to the outpatient setting.

The policy changes brought about by PPS have been generally successful in controlling inpatient costs. Medicare expenditures for inpatient care in 1990 were \$18 billion less than predicted in the early 1980s, prior to adoption of PPS (Averill et al., 1990).

Comparison with the outpatient setting

How does this history of cost control compare with the OPD experience? In many critical areas, the experience in the hospital outpatient setting parallels that of the inpatient setting prior to the implementation of PPS. The growth rates in outpatient expenditures since the mid-1980s are reminiscent of observed pre-PPS growth rates in inpatient expenditures. Like the inpatient setting of the 1970s, outpatient services have, until very recently, been paid under a retrospective, facility-specific, cost-based system. These costs were permitted to escalate, uncontrolled. There was thus no incentive to control costs or to deliver care in a cost-efficient manner. As a result, costs in OPDs vary dramatically. The retrospective nature of the system required year-end adjustments that left both providers and HCFA uncertain as to aggregate payment levels. Also, the absence of a

standardized measure of output made it nearly impossible to determine what health care services were being purchased by Medicare.

Dissatisfaction with this approach led to various piecemeal changes to the system. As a result, Medicare currently uses 11 different payment systems for outpatient care (Wilensky, 1990). These various systems have moved payment away from the reasonable-cost approach. By 1987, less than 40 percent of outpatient charges were paid on a reasonable-cost basis (ProPAC, 1991). Retrospective reasonable-cost payment has been largely replaced by fee schedules, flat-rate prospective payment, and blended rates (Table 1). The Omnibus Budget Reconciliation Act of 1990 (OBRA 1990) legislated additional outpatient cost controls, still tinkering at the margins. These changes included a 15-percent reduction

in payments for capital-related costs, a 5.8-percent reduction in reasonable-cost payments, reduction of the facility-specific portion of the blended rates for ambulatory surgical center (ASC) procedures, reduction of payments for radiology procedures from 50 percent to 42 percent, and establishment of a \$200 payment level for intraocular lens implants subsequent to cataract surgery. Thus, on the hospital outpatient side, there is a briefer, less cohesive history of cost-containment efforts. An additional consideration is that, unlike other Medicare services, beneficiary copayment amounts in the OPD are set at 20 percent of charges, rather than costs. Thus, as costs are constrained and charges continue to rise, beneficiary out-of-pocket payments increase, and beneficiaries actually pay more than 20 percent of total payments. If OPD copayment policies are modified, beneficiary out-of-pocket payments will decline, and the difference will be either increased program payments or reduced payments to providers.

Table 1
Summary of existing payment mechanisms for hospital outpatient department services

Type of service	Payment policy
ASC-approved surgical procedure	Lesser of hospital-specific reasonable charges, hospital-specific reasonable cost, and blended rate. Blended rate set at 50 percent hospital-specific reasonable cost, 50 percent ASC flat rate. There are currently 8 flat-rate groups.
Non-ASC-approved surgical procedure	Lesser of hospital-specific charges and hospital-specific reasonable cost.
Intraocular lenses	80 percent of prospective payment rate.
Radiology procedures	Blended rate set at 50 percent hospital-specific cost, 50 percent radiology physician fee schedule. Fee schedule amounts are set at the carrier-locality level. Fee schedule portion of the blend set at 50 percent of 62 percent of 80 percent of the physician fee schedule.
Laboratory procedures	Fee schedule set at 60 percent of the applicable prevailing charge; 62 percent for sole community hospitals.
High-volume automated laboratory procedures	Fee schedule for laboratory procedures, reduced by an additional 8.3 percent.
End stage renal disease	Prospective payment rate.
Durable medical equipment	80 percent of fee schedule if the hospital is a certified durable medical equipment supplier. Otherwise, payment is based on hospital-specific reasonable cost.
Clinic visits	Hospital-specific reasonable cost.
Physical therapy	Hospital-specific reasonable cost.
Drugs	Hospital-specific reasonable cost.
Diagnostic services (e.g., electrocardiogram, electroencephalogram)	Blended rate set at 50 percent hospital-specific reasonable cost, 50 percent physician prevailing charge. Prevailing charge amounts are set at 42 percent of the applicable carrier-locality prevailing charge.

NOTE: ASC is ambulatory surgical center.

SOURCE: (Sulvetta, 1991).

Goals of prospective payment

The cost-containment strategies employed in the inpatient setting have attempted to meet several objectives: reduction in Medicare expenditures and payment-rate variations; predictability in Medicare budgetary obligations and payment rates; implementation of incentives for efficient delivery of care; and development of a simpler payment system. It is evident that many of the goals attained on the inpatient side through PPS are yet to be realized in the outpatient sector. It is the congressional intent that these goals be attained through implementation of an outpatient PPS. These congressional objectives were outlined in OBRA 1990, which directed that the proposed PPS:

- Provide for appropriate limits on increases in expenditures.
- Adjust prospectively determined rates for changes in case mix, severity of illness, volume of cases, and introduction of new technologies and standards of medical practice.
- Provide hospitals with incentives to control costs.
- Investigate the feasibility of incorporating those services not currently paid for on a cost-related basis (such as dialysis and laboratory services).
- Adjust payments for teaching hospitals, those located in high-wage areas, and those providing care to a disproportionate share of low-income patients.
- Investigate the appropriateness of bundling services into larger payment units, such as visits or episodes.
- Investigate the feasibility of varying payments for freestanding and hospital-based facilities.

To these very specific objectives one could add a range of broader policy objectives that include:

- Payment groups should be equitable. Payment groups should categorize patients or services in a homogeneous manner.
- The system should be clinically neutral. It should provide neither financial disincentives for the provision of medically appropriate care nor incentives for the provision of unnecessary care.

- The payment should minimize incentives to shift the site of care with the sole intent of increasing payments. The plethora of systems currently in effect under the Medicare program provides ample incentives for the shifting of delivery site. Any system that could offer integration of delivery sites would improve this situation. Thus, a classification system that is easily adaptable to all ambulatory settings would be preferable.
- The payment system should limit the ability to affect payment rates through provider billing strategies or through procedure creep. Movement across groups should be relatively difficult unless justified by true differences in resource costs.
- The system should not incorporate incentives that restrict beneficiary access to high-quality care.
- The system should group procedures into clinically meaningful groups. This means that a system that classifies visits according to body system is preferable to a system that groups clinically heterogeneous procedures solely on the basis of similar resource costs.
- The system should include the smallest number of groups possible, to promote administrative simplicity and limit opportunities for group creep. Administrative simplicity is important for both the intermediaries and the providers.
- The system should permit providers to accurately predict revenues for care provided. Uncertainty leads to poor planning and disincentives for cost-effective and efficient delivery of care. In addition, unpredictability can lead to access problems for beneficiaries.
- To the fullest extent possible, the system should rely on existing data. This will enhance the administrative simplicity of the system and help to promote the reporting of accurate information.
- The payment rates should reflect justifiable differences in resource costs. Examples of these are included in the OBRA 1990 directives.
- The system should be budget-neutral. This means that payments made by the Medicare program under a new system should not exceed those that would have been made under the current system. This is less a function of a characteristic of any given payment system than a political decision as to where the payment rate will be set, or how the payments will be structured to ensure budget neutrality.

Prospective payment system components

It is difficult, at best, to devise a system that achieves each of these goals, and, in fact, many of these goals compete with each other. The basic features of the system determine the ability of any potential PPS to achieve these goals. Any prospective system first starts with a classification system, the purpose of which is to define the product of a health care encounter. In order to adequately define this product, various factors need to be considered, such as patient characteristics (e.g., sex, age); patient's specific health problem (usually categorized by diagnosis); purpose of the encounter

(e.g., routine annual exam, management of an ongoing condition); and procedures performed. These factors are combined to develop a classification scheme by which different patient types or encounter types are classified.

With all the similarities between the inpatient and outpatient sectors and the general success of the inpatient PPS, it might be expected that controlling outpatient expenditures could be achieved by simply extending the DRGs to the outpatient setting. There are, however, basic differences between the two settings that make this proposal unworkable. These differences also provide some useful insight into various factors that must be considered in designing an outpatient PPS.

Applicability of diagnosis-related groups

A central difference between the inpatient and outpatient sectors lies in the products they produce. This is perhaps the main reason why the extension of the inpatient DRG-based system to the outpatient setting is an untenable solution. As noted earlier, hospitals, encouraged by PROs, have already shifted to the outpatient setting those cases that are appropriately treated there. The result is that the outpatient and inpatient facilities treat a different mix of patients and provide different services.

Table 2 displays the top 10 procedures performed and conditions treated in the outpatient setting in 1987, compared with the top DRG categories treated on the inpatient side. As is evident from the table, there is a basic difference across the two settings in the nature of the illnesses treated and procedures performed. As a result, DRGs are simply inappropriate for the outpatient setting (Lion, 1990; Sulvetta, 1991).

The transferability of the DRG system to the outpatient setting was directly tested in an analysis of 1987 Medicare outpatient surgery claims (Sulvetta, 1991). Medicare surgery claims were passed through the DRG grouper software and were categorized by the DRG system as medical visits 42 percent of the time. Because the DRG system was designed for the inpatient setting, it recognizes only complex surgical procedures; many of the surgery procedures performed in the outpatient setting are of insufficient complexity to be recognized as such by the DRG system. In addition, because the surgery claims were not recognized as surgery; they were treated as medical services and grouped according to diagnosis, rather than procedure. This means that surgical procedures were not assigned to a unique DRG group. For example, the procedure coded 57.32 in the *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD-9-CM) (Public Health Service and Health Care Financing Administration, 1980), "other cystoscopy," was assigned to 106 different DRG categories.

Further evidence of the inappropriateness of the DRG system was found in the distribution of OPD claims across DRG categories. Outpatient surgery claims were classified into 349 different DRG categories. Yet one DRG (DRG 39—lens procedures) contained 24 percent of all claims, while at the other extreme, 317 DRGs combined contained only 24 percent of all claims. More than one-third of the assigned DRG categories had fewer

Table 2

Top 10 leading diagnoses and surgical procedures treated in outpatient departments compared with the top 10 leading medical and surgical inpatient diagnosis-related groups (DRGs): United States, 1987

Hospital outpatient		Hospital inpatient		
Classification	Number of bills	Classification	Number of discharges	
Leading diagnoses¹		DRG number	Medical DRGs²	
Diabetes mellitus	1,861,420	127	Heart failure and shock	500,931
Special investigations and examinations	1,607,340	140	Angina pectoris	366,458
Essential hypertension	1,516,720	14	Specific cerebrovascular disorders except TIA	315,112
Symptoms involving respiratory systems and other chest symptoms	1,282,560	89	Simple pneumonia and pleurisy, age > 17 with CC	258,566
Chronic renal failure	1,241,900	182	Esophagitis, gastroenteritis, and misc. digestive disorders, age > 17 with CC	216,101
General symptoms	1,092,900	96	Bronchitis and asthma, age > 17 with CC	182,286
Cataract	977,540	296	Nutritional and metabolic disorders age > 17 with CC	161,461
Other symptoms involving abdomen and pelvis	900,360	138	Cardiac arrhythmia and conduction disorders with CC	154,780
Other disorders of urethra and urinary tract	869,760	243	Medical back problems	138,344
Other forms of chronic ischemic heart disease	638,820	121	Circulatory disorders with AML and CV complications discharged alive	130,168
Leading surgical procedures¹			Surgical DRGs²	
Operations on lens	588,760	209	Major joint and limb reattachment procedures	181,360
Incision, excision and anastomosis of intestine	424,200	337	Transurethral prostatectomy without CC	116,367
Operations on skin and subcutaneous tissue	263,800	148	Major small and large bowel procedures with CC	101,332
Operations on urinary bladder	192,400	336	Transurethral prostatectomy with CC	87,557
Operations on the breast	70,320	112	Vascular procedures except major reconstruction without pump	80,142
Operations on retina choroid, vitreous and posterior chamber	55,780	210	Hip and femur procedures except major joint age > 17 with CC	77,631
Other operations on stomach	53,640	110	Major reconstructive vascular proc. w/o pump w/CC	59,893
Operations on iris, ciliary body, sclera and anterior chamber	45,620	162	Inguinal and femoral hernia procedures age > 17 with CC	54,597
Operations on cranial and peripheral nerves	45,160	197	Total cholecystectomy without common duct exploration, with CC	53,911
Operations on esophagus	41,360	106	Coronary bypass with cardiac catheterization	52,278

¹Data are for calendar year 1987.

²Data are for fiscal year 1987.

NOTES: CC is complications or comorbidities. TIA is transient ischemic attack. AML is acute myocardial infarction. CV is cardiovascular.

SOURCE: (Helbing, Latta, and Keene, 1990).

than 10 claims assigned; 60 percent (211 DRG groups) had fewer than 50 claims assigned, and 48 DRGs contained only 1 procedure. Thus, the products defined by the DRG categories do not reflect the products produced in the outpatient setting. DRGs would violate most of the goals set forth for an inpatient PPS.

Outpatient classification systems

Given that the DRG system is not a viable option for the outpatient setting, what classification systems are appropriate for the ambulatory setting? Several options have been developed, the most relevant of which are the ambulatory patient group (APG) system and the products of ambulatory care and surgery (PACS) system.²

The APG system, developed at 3M/Health Information Systems, incorporates the basic concepts of the DRG system. It also draws on the concepts of the ambulatory

visit group (AVG) system developed by researchers at Yale University (Fetter et al., undated). Basically, the APG system classifies OPD visits into clinically meaningful groups. Each service provided during a visit is classified into an APG; thus, a single visit may consist of multiple APGs. As currently structured, there are 297 APGs, divided into 145 significant procedure APGs, 80 medical APGs, and 72 ancillary APGs. Medical APGs are assigned on the basis of diagnosis code; remaining APGs are assigned on the basis of CPT-4 code³ (American Medical Association, 1991).

The PACS system was developed by researchers in the New York State Department of Health. The system consists of two components: medical visits that are categorized by the products of ambulatory care (PAC) component; and surgical visits that are categorized by the products of ambulatory surgery (PAS) component.⁴ The PAC component is operating on a demonstration basis under Federal waiver as the Medicaid payment system in

²The feasibility of Medicare adoption of the PAC system is evaluated in Moon, Sulvetta, and Miller (1991). The PAS system is evaluated in Sulvetta (1991). The appropriateness of the APG system to the Medicare outpatient setting is the subject of an ongoing Urban Institute evaluation.

³A complete description of the APG system is contained in Averill et al. (1990).

⁴For a detailed description of the two components see Tenan et al. (1988) and Kelly et al. (1990).

17 New York hospital OPDs and community health centers. Under legislation passed in 1989, the PAS system was adopted as the payment methodology for ambulatory surgery services provided to Medicaid patients.

PACs bundle all medical services relevant to a clinic or health center visit, incorporating the physician's services, ancillary services, and facility fees. These bundles are assigned to 1 of 24 payment groups, based on diagnosis, patient characteristics, and level of services received. The PAS system is a 44-group classification system that categorizes patients into 1 of 18 major surgical categories. These categories are further subdivided, where appropriate, by type of surgical procedure according to whether the procedure is therapeutic, diagnostic, or reconstructive in nature. As implemented in New York State, PAS payment includes the total resources for the ambulatory surgery procedure with the exception of the surgeon and anesthesiologist fees.

One difference between these two systems (APG and PACS) and the DRG system is evident in the number of groups. The DRG system currently includes more than 470 groups; APGs have 297 and PACS, 68. This smaller number of classification groups is entirely appropriate. The types of diseases treated and procedures performed in the inpatient setting are diverse and wide ranging. However, outpatient care is dominated by a much smaller number of services. In 1987, roughly 90 percent of all outpatient claims and charges were attributable to the top 379 procedures. Sixty-one surgical procedures accounted for 75 percent of surgery claims and 80 percent of total surgery costs; 94 medical procedures accounted for 93 percent of medical claims and 91 percent of costs (Miller and Sulvetta, 1991). This more concentrated mix of services means that fewer groups are necessary to effectively categorize the range of services delivered in an OPD.

From classification to payment

The key to transforming a classification scheme into a payment scheme lies in the use of classification variables that define health care encounters accurately with regard to resource use and, hence, costs. Indeed, development of a classification scheme is merely the first step in the design of a PPS. There are three components necessary to convert a classification system into a payment system: a unit of payment, payment weight, and payment rate.

Unit of payment

The unit defines the health care encounter. The choices for defining the unit range along a continuum from an a la carte, per service approach to capitation. Within that continuum are the visit and the episode. A visit encompasses a single health care encounter, but an episode can be considered a series of related visits. The choice of the unit of payment is limited to some degree by the classification system. For example, the PACS system is designed to be visit-based. However, it presumably could be used in an episode-based system by combining a series of visits. However, given that it

assigns one PACS group per visit, it could not be used to establish payment levels on a per service basis.

Within the inpatient PPS, the product is well defined—PPS pays on a per stay basis. Inpatient stays have a clearly discernible admission date and discharge date. The inpatient PPS includes in one flat payment rate any facility services delivered during a given stay. No attempt is made to proscribe the level or mix of services delivered within the stay.

The product delivered in the outpatient setting is less easily defined. Medicare Part B-covered outpatient care includes services delivered in an outpatient clinic or emergency room, surgery and anesthesiology services, laboratory tests, X-ray and other radiology services, renal dialysis, medical supplies, drugs and biologicals (when not self-administered), blood transfusions, therapy services, and hospice care (Helbing, Latta, and Keene, 1990). Any of these services may be delivered singly or in combination, within a single visit or across numerous visits. Given the lack of a clearly defined beginning and end point, then, how should the product of the OPD be defined? The common reference point is the visit, which reflects a single encounter in the OPD. However, OPD visits can vary widely in their content. Analysis of 1987 Medicare outpatient claims data reveals that 40 percent of all visits to the OPD involve the provision of only a radiology or laboratory procedure (Dubay and Sulvetta, 1990). In this sense, the OPD is merely operating as a reference lab or imaging center for a referring physician. Do such services constitute an outpatient visit in the same manner as clinic treatment for diabetes or surgical treatment for cataract removal? And what are the implications for payment policy? Is it equitable to place outpatient facilities at financial risk for services they did not order and over which they have no control?

The existing Medicare payment system for outpatient services merely confounds this issue. Various definitions of the products of outpatient care are employed in the existing payment systems. Some services, such as non-ambulatory surgery center (ASC) approved procedures, are paid for on the basis of procedure performed. Others include a package of related services, such as renal dialysis. Still others, such as ASC-approved surgical procedures, are defined according to procedure group categories (ProPAC, 1991). Thus, the unit of payment is a more difficult issue for outpatient than for inpatient care.

The unit of payment is very important in terms of the provider incentives incorporated into a PPS and its ultimate success in controlling total expenditures. The primary way in which a PPS controls expenditures is in the control of price. By moving to a flat-rate payment system, cost variation is eliminated, limits are placed on the price per output, and increases in price can be controlled through constraining annual rate increases. However, it is not clear at this time what proportion of the growth in Medicare expenditures for OPD care is attributable to price—some unmeasured portion of the increase is the result of increased volume of services. The unit of payment is the only means, within a PPS, that volume can be addressed, and it is at best a weak tool.

The volume response observed when the inpatient system was implemented involved the shifting of large numbers of services to the outpatient setting.

Implementation of a PPS in the OPD could result in any of several different responses, depending on the selected unit of payment. The potential for volume control is inversely related to the specificity of the unit of payment. In other words, if the unit of payment is the individual service, then the potential for volume control is limited; volume control is increased with movement toward a visit-based system, increased still further in an episode-based system, and maximized with a capitated system.

Most ambulatory PPS systems, including the APG and PACS systems, are visit-based. This means that there is little control over the incentive to increase volume. The relative degree of volume control will depend entirely on the definition of the visit. As noted earlier, the concept of "visit" is rather amorphous, and the content of any given set of visits may vary dramatically.

The need for volume control dictates that the definition of a visit should be comprehensive. The visit can be defined as a bundle of services. More broadly defined bundles provide greater volume control because the provider is at financial risk for a broader range of services. The PACS system includes such a comprehensive approach. Only one PACS group is assigned per visit, and each PAC payment includes all services provided or ordered in connection with that visit. This payment includes a flat-rate payment for the treatment or procedure, supplies, and any ancillary services provided (as well as physician services). Visits are classified into one of two levels of ancillary use (based on use of key technologies),⁵ but beyond that, the payment rate is constant regardless of whether, for example, 1 or 10 laboratory procedures are performed. Furthermore, any ancillary tests that are ordered during the visit but provided on a subsequent date are included in the original visit. Thus, under the PACS system, the number of services provided per visit does not affect the payment rate.

The APG system adopts a less comprehensive approach. Multiple APGs can be assigned per visit, with each service assigned to an APG. In order to provide a financial incentive for controlling service volume, three approaches are employed, including significant procedure consolidation, uniform ancillary packaging, and multiple APG discounting. The purpose of each of these approaches is to place the provider at financial risk for the number and mix of services ordered. In this way, each service is assigned an APG, but not all APGs are used in the payment computation.

Significant procedure consolidation occurs when more than one significant procedure APG is provided in a single visit. If these procedures are clinically related, then the second procedure may involve only minimal time and resources. In those instances, the multiple procedure APGs would be consolidated into one. Uniform ancillary packaging refers to a specified list of simple laboratory and radiology APGs that are always consolidated when they occur in a visit with a significant procedure or medical visit APG. The APG system does not bundle

very expensive ancillary services. Therefore, such services as MRI are excluded from the list of packaged procedures. (Similarly, under the PAC system, use of a key technology such as an MRI places the visits in a higher paid PAC category.) If such services were paid for at less than the full rate, hospitals would have an incentive to avoid treating patients requiring such services, resulting in diminished beneficiary access. Multiple APG discounting occurs when multiple unrelated significant procedures are performed, or when an ancillary service is provided several times. In such instances, a discounted payment would be made, reflecting the fact that the marginal cost of providing the second service is lower than the cost of the first service.

Although both PACS and APGs offer an improvement over the payment-for-each-service approach that Medicare currently uses, these systems may still provide an insufficient incentive to control volume and deliver care in the most cost-effective manner possible. This implies that a PPS may be only partially successful in controlling Medicare outpatient expenditures.

If the incentives to control volume incorporated into the PPS are relatively weak, Medicare will be forced to rely even more heavily on peer review to control the provision of unnecessary or inappropriate care. Furthermore, if the unit of payment is defined as a visit, it will be necessary to enforce regulations that prohibit unbundling and define the composition of a visit to ensure that all related services are included in the visit payment rate.

Two alternative approaches seem viable. The first is to define the unit of payment more broadly. This could involve the development of episodes of care and adoption of a per episode unit of payment. This expands the bundling approach beyond the bundling of services into a visit payment rate, to the bundling of related visits into an episode rate.

A potentially more promising approach, however, is the adoption of a volume performance standard (VPS) for outpatient facility services, similar to that established for Medicare physician services in OBRA 1989 (Physician Payment Review Commission, 1991). A VPS for outpatient services would set a target rate of growth for Medicare OPD outlays. Future increases in the PPS payment rates would be tied to compliance with the VPS target rates. Thus, OPDs would be provided with a more effective financial incentive for controlling volume growth. As with the physician VPS, analysis would be required to determine the most effective VPS approach. For example, is a national VPS sufficient and workable, or should subnational (regional, State, etc.) targets be set? Should there be separate targets for surgical and non-surgical procedures? Despite these unanswered questions, PPS, combined with a volume performance standard, would provide Medicare with a more comprehensive approach to controlling OPD expenditures.

The ability of a hospital OPD to influence the volume of services delivered by staff physicians and ordered by referring physicians would increase with improved educational tools. These include the results of effectiveness research and hospital or physician profiling information. The former would inform and help to standardize treatment protocols, potentially identifying unnecessary or ineffective procedures. The latter would

⁵An example of a key technology procedure is magnetic resonance imaging (MRI). Key technologies generally include more expensive ancillary procedures that are provided with less frequency than simpler, less expensive laboratory or radiology services.

identify the "average" treatment protocol for a given diagnosis or surgical procedure and permit the OPD to gauge whether staff physicians or referring physicians provide treatment that is within reasonable bounds of the norm.

Payment weight

Developing a method for classifying OPD services and defining the unit of payment are just the first steps. To put into effect such a payment system, weights and rates must be established. There are three common options for developing a payment weight. The first bases the weight on historical costs or charges. The second relies on "microcosting" techniques that actually measure the resource inputs used in the delivery of any given service or visit and assign a weight to those inputs. The third method relies on normative judgment rather than empirical data.

The first approach, use of historical charges or costs, is the method used by Medicare in the inpatient PPS. Under this type of system, a weight for a given category is calculated by dividing the average historical cost or charge for a given payment category by the average charge for all categories. These weights can be calculated at the facility level, for groups of facilities (e.g., all urban versus rural facilities), at the national level, etc.

The second approach, microcosting, attempts to objectively measure the resource inputs clinically required to provide a given service. Using industrial engineering techniques, it calculates the value of the provider time, supplies, drugs, equipment, etc., used in the delivery of a service. It then calculates the value of that service's inputs relative to other services and establishes a weight in that manner. (This approach was used by New York State in the development of weights of PACS.)

The third method relies on normative clinical judgment. A consensus approach is generally used under this type of weighting scheme. Physicians or other clinicians make judgments concerning the work involved in one procedure relative to another, and an attempt is made to reach a consensus on the relative weights. The resource-based relative value scale (RBRVS), developed by Hsiao et al. (1988), can be considered such a system.

It is also possible to combine these approaches in various ways. For example, it is widely held that historical charge and cost data have inherent distortions reflecting incentives present in historic payment systems, rather than actual resource costs. One possible means of addressing that problem would be to calculate procedure weights based on historic costs and to microcost the procedures that are most important (in terms of percentage of dollar expenditures). The weights derived from historic costs could then be compared with the weights derived through microcosting, and appropriate adjustments to the historic cost weights could be derived. Another possible combination might be to derive weights based on historic costs and then subject those weights to a physician consensus panel. Normative clinical judgment could be used to modify the weights obtained with historical data.

Payment rates

After weights have been set, the payment rate is established and applied to those weights. The payment rate is basically determined outside of the classification system and is driven largely by external policy decisions, such as the need to achieve budget neutrality. Obviously, the perceived equity of the payment rate will affect provider behavior.

The payment rate is frequently based on historical costs or charges projected forward and paid prospectively. Alternatively, the rate can be based on the actual costs of the resource inputs identified as necessary through microcosting techniques. When a payment system does not use a facility-specific weight, adjustments are often made to reflect factors that affect costs but are beyond the facility's control, such as the adjustments made to the DRG payment rates for teaching hospitals, rural referral centers, and disproportionate-share hospitals. Preliminary analysis of the need for such adjustments on the outpatient side has been undertaken (Miller and Sulvetta, 1991). However, additional research is required.

The adjustments for teaching hospitals, rural referral centers, etc., attempt to recognize legitimate systematic differences in providers' cost structures. In this manner, cost differences across entire classes of facilities are recognized. However, adjustments do not address the issue of legitimate cost extremes, which are unavoidable and should be at least partially compensated. Such cases are called "outliers," and they receive additional payments from the outlier pool discussed earlier. The need for a similar policy within an outpatient PPS must be considered. Here again, the amorphous nature of the outpatient visit may complicate the development of such a policy. For example, reliance on excessive length of stay as an indicator of an outlier case is obviously not an option in the outpatient setting. Nevertheless, development of an outlier policy may prove essential, if providers are to be equitably compensated for complex cases and if beneficiary access to care is to remain uncompromised.

Additional implementation issues

Two remaining differences between the inpatient and outpatient sectors highlight additional issues to be considered in implementing an outpatient PPS. The first deals with the role of the OPD within the health care sector.

The hospital inpatient facility is a unique type of provider, with few, if any, competitors. Those services that could be provided by a different type of provider have for the most part already been moved outside the hospital. Therefore, the inpatient facility performs a unique role in the delivery of health care for which there is no substitute. This is not the case for the outpatient facility, for which there are several close substitutes. Thus, the role of the OPD in the general delivery of health care is very different. In keeping with this, it is also true that the relationship between the facility and the physician is also very different.

Role of outpatient departments

While the use of outpatient services has grown significantly during the past decade, it still constitutes a minor share of total Medicare ambulatory care. Payments to hospital OPDs represented 19 percent of total Part B payments in 1986 (U.S. House of Representatives, 1991). Many of the surgical procedures performed in an OPD can also be performed in freestanding ASCs. Medical procedures can be provided in the physician's office. Laboratory and radiology services can be provided in physicians' offices, independent laboratories, or freestanding diagnostic imaging centers.

Furthermore, the role of these other providers is generally increasing. In 1985, there were about 500 Medicare-certified freestanding ASCs; by March 1990, that number had increased to 1,175. Over time, HCFA has substantially increased the number of procedures that ASCs are permitted to perform. In 1982, the first year of Medicare certification of ASCs, HCFA recognized roughly 75 procedures as covered when performed in an ASC. Currently, more than 1,200 procedures are covered in the ASC setting. Diagnostic imaging centers are also increasing and appear to be prospering. More than 72 percent of surveyed freestanding imaging centers reported profits in 1990 (Sabatino, 1991).

The substitutability of various settings in the delivery of ambulatory care means that an integrated approach to payment is preferred. As previously noted, an outpatient PPS should not incorporate incentives to shift care to other sites. Such incentives might be effective in controlling outpatient expenditure growth but would have no impact on overall Part B expenditure growth. The current, non-integrated system results in widely varying payment rates for the same procedure when performed in different settings. Table 3 displays the 1987 average payment rate for 40 common ambulatory surgical procedures when performed in a physician's office, an OPD, and an ASC (Flynn and Sulvetta, 1991). The payment rate variations and resulting financial incentives to shift sites of care are evident. Any system that could integrate payment in ambulatory sites of care would be an improvement over the existing mix of payment approaches. The issues of how to integrate the sites of care and calculate payment rates that recognize legitimate differences across settings remain to be resolved.

The substitutability across ambulatory sites of care also highlights another difference between the inpatient and outpatient settings. Hospital inpatient facilities and physicians have a symbiotic relationship. Hospitals do not directly admit patients, but rather rely on physicians to generate inpatient admissions. On the other hand, physicians need hospitals in order to have a source of inpatient care for their patients. On the outpatient side, however, hospitals and physicians are frequently competitors for the production of the same service. This competitive relationship has been increasing as physician financial investment in alternative forms of care increases (e.g., physician ownership of ASCs or diagnostic imaging centers). Thus, although the congressional mandate for development of an outpatient PPS specifically excludes the physician component of that care, the relationship of facility payments and physician payments should be

explored. Studies should include a comparison of the new RBRVS physician fee schedule with payment rates derived for the OPD facility component. For example, the overhead component of the RBRVS could be compared with OPD facility costs to test that system's applicability to the OPD setting and to determine the incentives inherent in different payment systems for physician and facility services. The basic point, however, is that policymakers need to consider outpatient care in the context of the full range of ambulatory care providers. A policy that limits outpatient expenditures but results in increased expenditures to other Part B providers would be shortsighted.

History of cost control

As noted earlier, cost containment on the inpatient side did not begin with the implementation of a PPS. The implementation of section 223 and TEFRA attempted to constrain both the level of costs and rate of increase in costs. The hospital outpatient setting has a much more limited history of cost-containment efforts.

Given the relatively short history of attempts to control OPD costs, there has been minimal incentive for providers to control outpatient costs. As a result, Medicare sometimes pays more for an OPD procedure than it does for the same procedure performed on an inpatient basis. In addition, within the OPD setting, variation in costs and charges is remarkable (Table 4) (Miller and Sulvetta, 1990). Furthermore, there is some evidence that hospitals under PPS shifted costs from the inpatient to the outpatient setting (Miller, 1989). Therefore, an outpatient PPS based on historical costs or charges would be based on levels and distributions of costs that are more reflective of historical inefficiencies and revenue maximization strategies than of true input costs.

There are several approaches to address this problem. First, the implementation of a PPS could be delayed, allowing for a transition period during which OPDs are given an incentive to control costs (such as those implemented in OBRA 1990). This is analogous to the approach taken on the inpatient side under TEFRA and the gradual transition to the inpatient PPS. Second, the outpatient system could be implemented immediately, based on historical costs, but with frequent rebasing of weight and payment rates after hospitals have had an incentive to constrain costs, and cost variation has decreased. Third, the outpatient PPS could choose to ignore historical costs and charges altogether and rely on other measures of cost. One approach would be to adopt a portion of the physician RBRVS or measure actual resource costs through microcosting. An alternative might be to adopt an overpriced-procedure approach, in which historical cost-based payment weights are compared with those obtained from the physician RBRVS or microcosting techniques, and the historical cost-based weights are adjusted accordingly. Alternatively, an overpriced-provider approach could be adopted, in which the costs of care provided by an efficient provider could be used to adjust the recognized costs of other providers. In the absence of any of these approaches, an outpatient PPS would be locked into the effects of historically ineffective cost control.

Table 3
Mean Medicare procedure payments for 40 common ambulatory surgical procedures: 1987

Code ¹	Office physician	Outpatient departments			Ambulatory surgical centers		
		Total	Facility	Physician	Total	Facility	Physician
11000	\$29.97	\$68.75	\$37.66	\$31.09	\$28.05	—	² \$28.05
11100	42.77	123.92	79.29	44.63	35.02	—	35.02
11401	50.71	100.21	42.61	57.60	225.05	\$194.92	30.13
11402	65.21	201.17	125.56	75.61	347.08	247.04	100.04
11403	86.58	186.46	86.16	100.30	349.50	260.65	88.85
11422	69.58	166.91	² 83.43	83.48	298.64	224.64	74.00
11440	51.01	244.71	183.00	61.71	420.48	370.39	50.09
11441	63.51	165.75	85.78	79.97	298.58	230.14	68.44
11442	81.21	211.31	106.73	104.58	310.79	220.52	90.27
11640	125.81	204.50	² 87.32	117.18	326.21	203.39	122.82
11641	158.71	364.32	211.54	152.78	393.84	234.12	159.72
11642	201.59	328.49	131.95	196.54	469.18	245.22	223.96
11643	235.01	352.65	² 128.87	223.78	466.73	258.59	208.14
11700	20.13	67.27	46.64	20.36	22.21	—	22.21
11701	16.32	47.05	29.28	17.77	18.40	—	18.40
11710	22.07	64.69	43.94	20.75	26.68	—	26.68
11750	134.05	182.76	76.16	106.60	366.02	222.45	143.57
17000	33.32	99.54	65.14	34.40	146.95	² 127.20	19.75
17001	20.45	36.42	² 16.55	19.87	149.59	² 134.20	15.39
17100	27.19	64.84	36.00	28.84	22.10	—	22.10
20550	26.25	73.73	45.22	28.51	217.11	² 195.09	22.02
20610	31.46	80.21	44.72	35.49	24.12	—	24.12
28285	287.27	557.68	366.97	190.71	511.72	296.89	214.83
43235	318.58	459.02	155.02	304.00	574.53	239.90	334.63
43239	365.28	519.87	173.01	346.86	634.62	256.54	378.08
45300	42.71	103.38	57.66	45.72	282.97	² 240.56	42.41
45330	119.85	271.05	143.88	127.17	367.34	223.84	143.50
45378	416.48	582.08	162.92	419.16	700.83	264.70	436.13
45385	670.02	817.03	202.14	614.89	918.24	273.16	645.08
52000	101.11	293.81	177.24	116.57	372.02	249.16	122.86
52281	177.07	422.19	222.84	199.35	442.20	266.12	176.08
64721	495.41	794.60	341.24	453.36	807.14	322.82	484.32
65855	885.62	926.41	136.45	789.96	1,076.31	321.10	755.21
66821	490.31	702.42	209.43	492.99	742.21	274.64	467.57
66983	1,398.35	2,242.30	742.41	1,499.89	2,097.00	529.10	1,567.90
66984	1,325.15	2,409.04	887.86	1,521.18	2,096.06	515.42	1,580.64
66985	890.78	1,810.11	810.27	999.84	1,396.97	402.22	994.75
67210	767.87	845.82	140.74	704.88	839.31	² 188.90	650.41
67228	791.23	861.85	134.13	727.72	918.77	247.32	671.45
69210	15.29	44.91	29.55	15.36	22.68	—	22.68

¹Codes are from the Health Care Financing Administration's Common Procedure Coding System.

²Based on less than 10 claims.

SOURCE: (Flynn and Sulvetta, 1991).

Table 4
Descriptive statistics for outpatient facility charges and costs, by HCPCS category

HCPCS group	Charges			Costs		
	Average	Standard deviation	Coefficient of variation	Average	Standard deviation	Coefficient of variation
Total	\$161.72	\$293.31	181	\$95.46	\$177.93	186
Surgery	408.63	581.41	142	241.13	343.11	142
Radiology	185.40	236.85	128	107.99	141.31	131
Pathology/laboratory	97.31	222.01	228	57.29	137.68	240
Medicine	101.60	184.25	181	61.69	124.77	202

NOTE: HCPCS stands for Health Care Financing Administration's Common Procedure Coding System.

SOURCE: (Miller and Sulvetta, 1990).

Conclusion

Although the inpatient PPS experience may offer some valuable lessons for outpatient care, achieving cost control in the OPD is, in many ways, a more complex undertaking. The health care product delivered in the OPD is less easily defined and, unlike the inpatient setting, there are many alternative providers for the kinds of services delivered.

Designing a PPS for outpatient services will require the development of a classification system, definition of the unit of payment, and construction of payment weights and rates. A host of issues must be considered in addressing each of these system components. Although a broad range of services is provided in the hospital OPD, a much smaller number accounts for the majority of services and charges. This suggests that a relatively simple classification system could successfully categorize outpatient services.

The price control achieved by a PPS cannot address the growth in expenditures resulting from increased volume. In fact, effective price control may even provide greater incentives for the provision of an increased volume of services. It is only through the unit of payment definition that PPS can exert any control over expenditure growth due to volume. The more comprehensive the unit, the greater the control over volume growth. Thus, episode-based or capitated systems would provide more control over volume increases than systems based on per service or per visit payment. If a per visit approach is used, bundling mechanisms may be necessary to control incentives for increased numbers of visits. In addition, other forms of control, such as volume performance standards, may be useful policy tools to consider in the outpatient setting.

Several alternative bases for payment weights and rates are available, and the main objective should be to measure true costs as accurately as possible. Concern over distortions in weights and rates based on historical charges and costs can be addressed by developing charge- or cost-based weights and adjusting them by resource cost data.

One inpatient policy lesson relevant to the overall process is that payment systems become more complex over time as they are changed to accommodate issues that surface. For example, the inpatient system has increased in complexity as special adjustments to payment rates have been added. It may therefore be advisable to start with an outpatient PPS that is relatively simple, with the expectation that it will become more complex over time.

Finally, as already noted, there are many close substitutes among ambulatory providers of care. Thus, an OPD cost-control policy that can be integrated across ambulatory sites of care is preferable.

References

- American Hospital Association: *Hospital Statistics*, 1990-91 Edition. Chicago. 1990.
- American Medical Association: *Current Procedural Terminology*, 4th Edition. Chicago. 1991.
- American Medical Association, Group on Legislative Activities: Summary of Medicare and Selected Medicaid and Other Provisions of the Omnibus Reconciliation Act of 1990, Public Law 101-598. Nov. 1990.
- Averill, R., Goldffield, N., McGuire, T., et al.: Design and Evaluation of a Prospective Payment System for Ambulatory Care. Wallingford, CT. 3M/Health Information Systems, Dec. 1990.
- Davis, K., Anderson, G., Rowland, D., and Steinberg, E.: *Health Care Cost Containment*. Baltimore. The Johns Hopkins University Press, 1990.
- Dubay, L., and Sulvetta, M.: Should Ancillary Services Be Bundled into Payments for Outpatient Surgery? Working Paper 3725-01-02. Washington, D.C. The Urban Institute, Jan. 1990.
- Ermann, D.: Surgery and the Changing System of Health Care Delivery. In Finkel, M.L., ed. *Surgical Care in the United States: A Policy Perspective*. Baltimore. The Johns Hopkins University Press, 1988.
- Fetter, R., Schneider, K., Lichtenstein, J., et al.: Development of an Ambulatory Patient Classification System: Final Report. New Haven, CT. Yale University, undated.
- Flynn, C., and Sulvetta, M.B.: Medicare Payment for High Volume Surgical Procedures. Working Paper 6089-02. Washington, D.C. The Urban Institute, May 1991.
- Hsiao, W., Braun, P., Durn, D., and Becker, E.: Resource-based relative values. *Journal of the American Medical Association* 260(16):2347-2353, Oct. 28, 1988.
- Helbing, C., Latta, V., and Keene, R.: Hospital outpatient services under Medicare, 1987. *Health Care Financing Review* 11(4):147-158. HCFA Pub. No. 03298. Office of Research and Demonstrations, Health Care Financing Administration. Washington. U.S. Government Printing Office, Summer 1990.
- Kelly, W., Fillmore, H., Tenan, P., and Miller, H.: The classification of resource use in ambulatory surgery: The products of ambulatory surgery. *Journal of Ambulatory Care Management* 13(1):55-63 Feb. 1990.
- Lion, J., Vertrees, J., Malbon, A., et al.: Toward a prospective payment for outpatient surgery. *Health Care Financing Review* 11(3):79-86. HCFA Pub. No. 03295. Office of Research and Demonstrations, Health Care Financing Administration. Washington. U.S. Government Printing Office, Spring 1990.
- Miller, H., Balicki, B., and Nuschke, M.: Replication of the 1982 Study of Resource Costs in 25 Hospitals. Columbia, MD. Center for Health Policy Studies, 1989.
- Miller, M., and Sulvetta, M.: Medicare Hospital Outpatient Department Services: An Econometric Analysis. Working Paper 3725-01-05. Washington, D.C. The Urban Institute, May 1991.
- Miller, M., and Sulvetta, M.: Medicare Hospital Outpatient Department Services: A Descriptive Analysis. Working Paper 3725-01-03. Washington, D.C. The Urban Institute, Dec. 1990.
- Moon, M., Sulvetta, M., and Miller, M.: Applying PACs to Medicare: Final Report. Working Paper 3855-02. Washington, D.C. The Urban Institute, June 1991.
- Physician Payment Review Commission: Fee Update and Medicare Volume Performance Standards for 1992. Report No. 91-3. Washington, D.C. 1991.
- Price, K.F.: Pricing Medicare's diagnosis-related groups: Charges versus estimated costs. *Health Care Financing Review* 11(1):79-90. HCFA Pub. No. 03286. Office of Research and Demonstrations, Health Care Financing Administration. Washington. U.S. Government Printing Office, Fall 1989.

Prospective Payment Assessment Commission: Report and Recommendations to the Congress. Washington, D.C. Mar. 1, 1991.

Prospective Payment Assessment Commission: Medicare Prospective Payment and the American Health Care System: Report to Congress. Washington, D.C. June 1989.

Public Health Service and Health Care Financing Administration: *International Classification of Diseases, 9th Revision, Clinical Modification*. DHHS Pub. No. 80-1260. Public Health Service. Washington. U.S. Government Printing Office, Sept. 1980.

Russell, L.: *Medicare's New Hospital Payment System: Is It Working?* Washington, D.C. The Brookings Institution, 1989.

Sabatino, F.: Home health diagnostic centers were financial winners in 1990. *Hospitals* 65(1):27-29, Jan. 5, 1991.

Sulvetta, M.B.: Evaluating Prospective Payment Options for Outpatient Surgery: A Seven System Analysis. Working Paper 3725-01-04. Washington, D.C. The Urban Institute, Feb. 1991.

Tenan, P., Fillmore, H., Caress, B., et al.: PACS: Classifying ambulatory care patients and services for clinical and financial management. *Journal of Ambulatory Care Management* 11(3):36-53, Aug. 1988.

U.S. House of Representatives, Committee on Ways and Means: *Overview of Entitlement Programs: 1991 Green Book*. Washington, D.C. U.S. Government Printing Office, May 1991.

Wilensky, G.: Testimony to U.S. House Of Representatives, Committee on Ways and Means, Subcommittee on Health. Washington, D.C. May 10, 1990.