Future Research and Policy Directions in Physician Reimbursement

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Payments to physicians absorb the second largest share of the health care dollar in the United States. In 1979, the share was 19 percent of the total, or $40.6 billion (Gibson, 1980). The Health Care Financing Administration (HCFA) alone spent $8.6 billion for physician services, representing approximately 16 percent of all public funds disbursed under HCFA programs.

This paper presents an overview of various issues concerning physician reimbursement. Several major areas have been identified (access, cost, quality, and improving or refining the Office of Research, Demonstrations, and Statistics' [ORDS] research techniques for analyzing topics concerning physician reimbursement). Each area is introduced with a brief discussion of some of the problems associated with the physician reimbursement systems relating to that area. Selected results are then presented from the previous research in each area, along with descriptions of continuing studies currently underway. Each section concludes with a discussion of potential future directions for new research or data development.

Introduction

Payments to physicians absorb the second largest share of the health care dollar in the United States. In 1979, that share was 19 percent of the total, or $40.6 billion. (Gibson, 1980). The Health Care Financing Administration (HCFA) alone spent $8.6 billion for physician services, representing approximately 16 percent of all public funds disbursed under HCFA programs. This total also amounted to 22 percent of all payments to physicians in the United States. Hence, it is true that HCFA payments are a large part of physicians' budgets, and physician payments are a large part of the HCFA budget. (When one further considers physician influence on the use of other health services, physician reimbursement affects a considerably larger share of the HCFA budget.)

Accordingly, physician reimbursement issues are intertwined with HCFA's ability to accomplish its basic missions:

- To promote the timely, cost effective delivery of appropriate, quality health care services to its beneficiaries;
- To make beneficiaries aware of the services for which they are eligible, and to make those services accessible to them in the most effective manner; and
- To ensure that its policies and actions promote efficiency and quality within the total health delivery system which serves all Americans (*HCFA Administrators Report*, 1979).

Therefore, the Office of Research, Demonstrations, and Statistics (ORDS) has designated physician reimbursement as a priority area within its research and demonstrations programs. Both internal and external research are conducted in this area. Under the revised 1981 budget ORDS will spend $2.1 million on extramural research with respect to physician reimbursement.

This paper presents an overview of the various issues concerning physician reimbursement. Several major issue areas have been identified, and each area is introduced with a brief discussion of some of the problems associated with the physician reimbursement systems relating to that area. Selected results are then presented from the previous research in each area, along with descriptions of the continuing studies currently underway. Finally, each section concludes with a discussion of potential future directions for new research or data development.

Three major areas have been identified from the statements of HCFA's mission. These areas involve the issues of access, cost, and quality. In addition, since the ORDS research and demonstration program exists to support HCFA's objectives, a fourth issue area also merits attention. This area involves improving or refining ORDS research techniques to analyze various aspects of physician reimbursement.

It is common practice to separate access, cost, and quality in discussions of health care issues. (Holahan, 1980). However, all three issues are interrelated. For example, enhancing the quality of care rendered to HCFA beneficiaries is likely to lead to increasing costs; efforts to reduce costs may also result in reduced access to care for some beneficiaries. It is the purpose of

many of the previous and future studies noted in this paper to estimate the tradeoffs between accomplishing these objectives.

Enhancing Beneficiary Access to Physician Services

HCFA Physician Reimbursement Methods

The Medicare and Medicaid programs were established in 1965 and 1966, respectively, to subsidize the purchases of health care services by the aged and the poor. A "pure" financing approach was taken; no attempt was made to guarantee the direct provision of health care services through, for example, a national health service. The private market for health care services was assumed adequate to supply sufficient services for potential beneficiaries of the Medicare and Medicaid programs.

Because the private market is relied upon to supply physician services, beneficiaries' access to medical services is highly dependent on the willingness of providers to participate in the HCFA programs. Further, because the physician reimbursement systems used in HCFA programs establish the terms under which physicians participate, most of the external analyses have focused on the relations between reimbursement policies and physician participation. There also exists a considerable body of internal research on variations in use of physicians' services under Part B of Medicare, which provides a context for drawing inferences about the impact of reimbursement policy (Ferry, *et al.*, 1980; Gornick, *et al.*, 1980).

Although Medicare and Medicaid use different reimbursement systems (with corresponding differences in nomenclature) there are some basic similarities in their physician payment systems. Both have a system under which a maximum allowable reimbursement rate is determined. Also, in both programs the physician makes the decision whether or not he will formally participate on a case-by-case basis.

Reimbursement rates are usually determined through the use of one of two types of fee determination systems: fee schedules or the customary, prevailing, and reasonable (CPR) charge determination process. Approximately half the States under Medicaid use a fee schedule. Under this type of system, each service a physician may render has a set fee and, with few exceptions, this fee is identical for all physicians. Revisions of the fee schedules are made by the State Medicaid programs as is found warranted.

Medicare uses the CPR charge determination process. Approximately half the States under Medicaid, and most Blue Shield plans also use this type of system. Under the CPR system, a physician's reasonable charge is established by comparing his actual charge to the charges he and his peers submitted in a previous year.

Under the CPR system, reimbursement is limited to whichever is lowest: the actual charge, the physician's customary charge, or the prevailing charge. A physician's customary charge for a particular procedure is defined as his median charge for that procedure in the previous year. The prevailing charge is a measure of the charges of all "peer" physicians in a particular "locality." (The responsibility for defining "peer" and "locality" has been delegated to the Medicare Part B carriers, the private organizations that receive, process, and reimburse physician claims. Some carriers develop different prevailing charges for each specialty; others define all physicians as peers for developing charge screens. Localities have been identified as single counties, groups of counties, or an entire State). The "unadjusted" prevailing charge is defined as the lowest customary charge which is greater than 75 percent of all customary charges weighted by their volume—"the seventyfifth percentile." The "adjusted" prevailing charge is defined as the lower of the unadjusted prevailing, or the product of the unadjusted prevailing in effect from July 1972—June 1973, multiplied by the Medicare Economic Index (MEI). The MEI is an index which reflects changes in the costs of physicians' practices and changes in general earnings levels. The MEI limitation was added to the reasonable charge process in 1972 by Public Law 92-603 to assure that physician reimbursement under Medicare would follow rather than lead inflation.

Physician Participation

For Medicaid, a physician's participation depends on whether the physician accepts a Medicaid eligible as a patient for billing purposes. If he does accept the patient, he must also accept the Medicaid determined reasonable charge as payment in full. (Alternatively, the physician may provide "free" health care and not bill Medicaid.) Again, the decision is made on a case-by-case basis. The physician may accept all Medicaid eligibles who come to him as patients or he may accept only some, (for example, previous patients). He may also accept a Medicaid eligible as a patient on one occasion, and not accept him as a patient at some later date.

Under Medicare, physician participation is a somewhat more involved concept. A Medicare enrollee who receives a covered physician service is entitled to a reimbursement benefit. That benefit is equal to 80 percent of the reasonable charge for that service once the enrollee has exceeded his deductible. Instead of being reimbursed directly, the beneficiary may elect to assign the benefit to the physician who provided the service. If the physician accepts assignment, he must accept the reasonable charge as payment in full (and he must bill the beneficiary for the 20 percent coinsurance and any remaining deductible.) If he does not accept assignment, the physician is not bound by the reasonable charge process when he bills the beneficiary, and the beneficiary is liable for any difference between the physician's actual charge and the reasonable charge, in addition to the coinsurance and deductibles. The Medicare determined reasonable charge is independent of assignment. (In cases where a physician elects to treat a patient who is eligible for both Medicare and Medicaid, accepting assignment is mandatory.)

Physician Participation and Beneficiary Access

Beneficiary access to services depends on physician participation in HCFA programs. For Medicare beneficiaries the lower the assignment rates, the greater the beneficiary's expected financial liability. This higher cost can act as a financial barrier to care. For Medicaid beneficiaries, only physicians who participate in the pro-

gram are viable sources of care. For both programs a low participation rate for a particular specialty may erode beneficiary access to specific kinds of health care services.

This section will present some general statistics on physician participation in HCFA programs. In the succeeding sections current research on physician participation will be described, and potential new areas for research on participation will be enumerated.

In 1977 46.0 percent of physician services provided under Medicare Part B were billed on claims where the physician accepted assignment (McMillan, 1980). For the same year 47.3 percent of charges were accepted on assignment. These assignment rates are lower than the rates observed in the late 1960's and early 1970's, but are somewhat higher than those observed in the mid-1970's.

Considerable variation in these rates exists across beneficiaries, States, and physician specialties (Ferry, *et al.*, 1980). In 1975 almost 70 percent of all Medicare eligibles had at least one unassigned claim. This statistic ranged from a low of 48.5 percent in Mississippi to a high of 93.3 percent in Oregon. The average assignment rate for the aged in 1975 was 45.8 percent for services and 47.2 percent for charges. Assignment rates for the Medicare disabled populations are consistently higher than those for the aged. The assignment rate for the aged for services varied by State, from 18.0 to 80.6 percent; for charges the range was 19.8 to 81.6 percent. Nationally, general surgeons had the highest assignment rates among office-based physicians: 49.9 percent for services and 55.3 percent of charges. Among the medical specialties, otolaryngologists had the lowest assignment rates—35.4 percent and 43.2 percent for services and charges, respectively.

No comparable national participation statistics are available for the Medicaid program. However, a 1975 survey of physicians (Sloan, *et al.*, 1977, p. 16) provided some initial estimates of physician participation in Medicaid. Just over 70 percent of those responding to the survey reported that they saw some Medicaid patients. The distribution of responses, however, was quite skewed. While Medicaid patients accounted for 10 percent of all physicians' visits on the average, 5 percent of the physicians reported that over 50 percent of their patients were Medicaid recipients, and nearly 30 percent of the physicians reported that less than 1 percent of their practice consisted of Medicaid patients.

This kind of participation pattern may create a real personal and economic burden on the poor. Many beneficiaries may have to bear substantial transportation costs in getting to and from the offices of physicians who do accept a significant number of Medicaid patients. Alternatively, Medicaid patients who perceive reduced access to private physicians' offices may elect to use hospital outpatient departments and emergency rooms as their regular source of care. Unfortunately, this may result in the lack of continuity of their care and higher costs to the Medicaid program.

Previous and Current Research on Beneficiary Access

Virtually all of the HCFA sponsored external research in this area has focused on what factors influence physician participation in HCFA programs. Physician characteristics such as medical school and specialty have been examined; aspects of the reimbursement system, such as payment lags and perceived red tape burdens, have been considered; and, of course, the role of price has been investigated.

HCFA sponsored research has developed the most commonly used economic model of physician participation in public programs. The physician is modeled as a price discriminating monopolist who can participate in each of the following markets: the private market, a Medicare nonassigned market, the Medicare assigned market, and the market for Medicaid. The relative reimbursement level declines in each succeeding market: the private market is the highest and the Medicaid market is the lowest. Physician participation in each market will depend on the relationship between the cost of producing medical services and the relative reimbursement level.

A study by Abt Associates (Sloan, *et al.*, 1977, pp. 18-20) examined physician participation in Medicaid. Relative price was found to be important: a 10 percent increase in Medicaid fees, holding private fees constant, would increase physician participation in Medicaid by 7 percent. In addition, Abt Associates found administrative problems such as "the red tape burden" and payment delays to be negatively related to physician participation in Medicaid. The study reported that physician participation was more responsive to price than to these administrative features. However, the report suggested that administrative changes might be more efficient than raising fees as a means to increase participation, because the administrative changes would require a one-time investment while fee increases would probably remain forever.

Abt Associates also found that participation in Medicaid was quite sensitive to physicians' costs of practice. In particular, the wage elasticity of Medicaid participation was estimated at -1.88. (A 10 percent increase in staff wages would lead to an 18.8 percent decline in Medicaid participation). Hence, Federal policies which constrained hospital costs and wages—and, by extension, wages of physician office personnel—might have the unintended side-effect of stabilizing Medicaid participation rates.

Finally, foreign medical graduates (FMGs) were found to have higher Medicaid participation rates than American medical graduates, and General Practitioners (GPs) had higher rates than internists. (A follow-up study discussed below, (Mitchell, 1980) also found that medical practices with a high proportion of patients eligible for Medicaid were more likely to have FMGs as staff members than were practices with relatively smaller Medicaid volumes.) As FMGs become a smaller proportion of the number of physicians in the United States, Medicaid beneficiaries' access to medical services may be diminished, but this situation may be improved if newer physicians continue to elect the specialties of family practice and general practice.

Economists at the Urban Institute have examined both physician participation in Medicaid (Hadley, 1978) and physician assignment acceptance under Medicare (Paringer, 1980) using California data from a sample of 3,000 GP's, general surgeons, and internists. Their Medicaid results are consistent with those found from the national survey. For example, the California results indicated that, other things being equal, a 10 percent increase in Medicaid fees would increase physician participation in Medicaid by 7 percent, the same result found in the national study. In addition, a 10 percent

increase in Medicaid fees would increase the number of Medicaid patients per participating physician by 18 percent. However, a 10 percent increase in the private market price would lead to a 9 percent decline in participation and a 22 percent decline in average Medicaid case load. These results indicate that equal percentage increases in both the Medicaid and private market prices would lead to net reductions in Medicaid participation.

Analyses of Medicare assignment rates are somewhat more complicated because physicians who participate in both Medicare and Medicaid can be expected to behave differently from those who participate in Medicare alone (Paringer, 1980). Empirical estimates suggest that a 10 percent increase in Medicare reasonable fees would increase assignment rates by 14 percent for those doctors who do not participate in Medicaid. The same increase would not significantly increase the total assignment rates of physicians who participated in both Medicare and Medicaid. Similarly a 10 percent increase in private market fees would reduce assignment rates by 20 percent for doctors participating in Medicare only, and 6 percent for doctors participating in both Medicare and Medicaid.

An inference from these results is that anything that results in lower average Medicare reasonable charges relative to private fees should tend to reduce assignment rates. The Medicare Economic Index (MEI), designed to restrain the growth of Medicare prevailing charges, is of particular concern in this regard. Studies of the MEI, including its impact on assignment rates, will be discussed in the next section.

The results obtained from the analyses of factors affecting Medicare assignment rates are consistent with the results from the studies of Medicaid participation rates. For example, GPs were found to be more likely to accept assignment than were internists or surgeons. FMGs were also found to be more likely to accept assignment than were American graduates, although this result was statistically significant only for physicians who also participated in Medicaid.

A consistent result from all of the economic studies is that attempts to increase fees under HCFA programs will also lead to spillover fee increases in the private market. The Urban Institute studies (Hadley and Lee, 1978) examined this question from both a theoretical and an empirical perspective. In theory, an increase in Medicare reasonable charges would be interpreted by physicians as an increase in the marginal revenue available in the Medicare market. Their optimal response would be to seek an equal increase in marginal revenue in the private market, hence there would be an increase in private fees. Since Medicaid reimbursement levels are lower than Medicare levels, the impact of increasing Medicaid fees is less clear, although it was presumed to also act to increase private fees. These theoretical results were confirmed in the estimations of private fee equations. The Medicare reasonable charge coefficients were positive and significant. The Medicaid fee coefficients were smaller in value, but still positive and significant. The specifications used may have yielded estimates that were biased upward, but the authors still concluded that the evidence supported the notion of a positive spillover impact on private fees. To the extent that this is correct, it will tend to reduce the positive impact on participation rates that might be caused by increased HCFA fees.

Several studies currently under development are examining other factors that may influence physician participation in HCFA programs. For example, SRI, International is conducting a study (HCFA Grant 95-P-97516/9) which will examine whether physicians are more reluctant to accept assignment for a beneficiary who has a Medigap policy. A study conducted by the American Academy of Pediatrics (HCFA Grant 18-P-97159/2) is examining some noneconomic factors that may influence pediatricians' participation in Medicaid. In addition to practice cost and fee information, data on attitudes and knowledge of the provisions of their State's Medicaid program have been collected from a sample of 814 pediatricians. This sample data will be compared to the actual Medicaid provisions to examine the role of better information in determining physician participation in Medicaid. Results from this type of analysis may aid the HCFA in assisting the States in their efforts to improve Medicaid participation rates.

A solicitation for demonstrations to improve Medicare assignment rates was recently issued (Maletz, 1980). Four types of demonstrations were requested: Health Credit Card, Prospective Interim Payments, Negotiated Fee Schedules, and "Other" Innovations. A Health Credit Card demonstration would involve a simplification of billing for physicians who elect to participate. Under the current system, a physician must bill his patient for the coinsurance and any deductibles owed by the patient, regardless of whether the services were provided on assignment. Under the Health Credit Card demonstration, a physician would accept assignment for all services, but he would bill the carrier for 100% of his reasonable charges, and he would be relieved of the responsibility of billing his patient for coinsurance or deductibles. The carrier will be responsible for collecting the cost sharing amounts from the beneficiary. The premise of this demonstration is that the simplification in billing will be attractive enough to physicians that they will agree to accept assignment on all of their claims, thus reducing potential beneficiary burden. The demonstration will also assess the feasibility of various mechanisms the carriers will develop to collect beneficiary cost sharing amounts. The evaluations of such demonstrations will include a focus on any negative impacts caused by carrier collection practices.

A Prospective Interim Payments (PIP) demonstration would also involve a change in billing. Under this type of demonstration, participating physicians, again, would agree to accept assignment on all claims. In return, such a physician would receive a quarterly advance based on his anticipated Medicare volume. At the end of the quarter, the actual accrued claims would be compared with the amount prospectively advanced, and any differences would be carried over to the succeeding quarter as an adjustment to the prospective payment. The PIP approach would benefit the supplier by ensuring a more regular cash flow in addition to potential interest on advanced monies. These benefits could be of particular advantage to those physicians with a high proportion of Medicare patients.

Fee schedules have certain advantages over the reasonable charge process because there would be no need to maintain and apply charge profiles for individual physicians, and there would be less uncertainty to both physician and beneficiary about the allowed charge for

any service. The particular demonstrations solicited would have several specific objectives. The first objective is to develop a method of *negotiating* fee schedules with representatives of the professional sector without violating conflict of interest principles or price fixing prohibitions. The second objective is to achieve fee schedules, at least for certain procedures, that will not generate an increase in the aggregate level of benefit payouts. This type of experiment is expected to generate physician interest and provide some initial information about the impact of a fee schedule on assignment rates.

Finally, an "Other Innovations" category has been included in the solicitation to allow the carriers to use their own ingenuity and experience to suggest other means to improve assignment rates. Suggested possibilities include physician directories, expedited handling of assigned claims, and enhanced carrier public relations and professional relations.

One other more direct access problem may be more fundamental than the participation question. This problem involves access to physician services in areas where there are few or no physicians. These are primarily rural areas although there are also inner-city areas which are underserved. HCFA has no direct influence on physician placements in underserved areas, although the pattern of allowed charges developed through the Medicare and Medicaid programs can create location incentives. In fact, previous internal research on fee variations has found that there are location incentives in HCFA reimbursements which favor urban areas (Burney and Gabel, 1980). In metropolitan areas, Medicare prevailing charges during 1975 were 23 percent higher than in non-metropolitan areas. (Medicaid fee levels did not show a marked difference between metropolitan and non-metropolitan areas, probably because of the extensive use of uniform Statewide fee schedules.) In addition to the location incentives, the effective increase in aggregate demand for physicians due to the existence of Medicare and Medicaid may also have aggravated access problems in rural areas (Cantwell, 1979). Without these programs the potential excess supply of physicians might have led to a more even distribution of physicians across geographic areas. Unfortunately, however, there exist no estimates of the responsiveness of physician supply at either the micro level of relative prices or the macro level with respect to aggregate demand.

Access: Future Research

Four issues in this area warrant consideration in the next few years. These issues involve the general question of potential oversupply of physician services, and more specific questions about access to particular kinds of health services, particular kinds of health care institutions, and particular kinds of health care practitioners.

Because of the vast expansion of medical school classes in recent years, a very significant increase in the supply of physicians will occur in the next decade. The coming tide of new physicians heightens the need to understand more thoroughly the nature of competition for patients in the market for physician's services. The increased supply of physicians might lead to improved patient access or enhanced patient amenities or it might lead only to more doctoring. Teknekron, Inc. (HCFA Contract 500-78-0052) has initiated some preliminary projections about this question, but a whole host of studies could be carried out to monitor these events.

In addition, the relation between physician participation in HCFA programs and beneficiary access to services needs to be more thoroughly explored. The theory linking participation and access is a plausible one, but a more fundamental examination of the question is needed. A potential data development effort in this regard will be discussed in the last section of this paper (Future Data and Research Needs).

The effects of physician reimbursement on access to primary care services and preventive health care services is another important potential focus of future research. If HCFA beneficiaries' access to these services can be enhanced, both improvements in beneficiary well-being and decreases in costs to both beneficiaries and HCFA should result. Current HCFA reimbursement levels, however, create long run incentives which would tend to reduce access to these services. Relative reimbursements are higher for specialists than for general or family practitioners (Burney and Gabel, 1980); and relative reimbursements are higher for "high technology" procedures than for more primary services (Hsiao and Stason, 1979).

ORDS has begun to solicit grant applications in the area of child health for specific demonstrations of methods to improve access to primary health care services. An alternative focus of research would be to examine the responsiveness of physicians to changes in the relative price of primary care or preventive health care services, or both. The Institute of Medicine (1978), for example, has recommended that the relative fees of primary care services be increased to give additional incentives to physicians to provide such services. One Urban Institute study (HCFA Grant 95-P-97516/3) now in the development stage should yield some initial results on the effects of reimbursement policy on access to ambulatory care. This study will analyze three years of California Medicaid data, covering periods both before and after a change in the California reimbursement system, that changed relative fees in favor of primary care services. Other potential examinations of the impacts of relative prices on physicians' treatment choices also will be discussed later in this paper.

Several relatively new types of institutions—organized ambulatory care centers—will change beneficiary options for obtaining health care services. These institutions include former hospital facilities which have been sold, leased, or operated under contract by physicians as well as freestanding surgicenters, dialysis facilities, and satellite clinics. Very little is known about the placement, operation, or impact of these facilities, although the American Hospital Association has noted that they have already had a significant effect on the measurement of hospital outpatient visits.

A multifaceted approach should be used to anticipate the impacts of these developments. First, surveys should be conducted to identify and enumerate these new sources of care. The American Hospital Association was awarded a grant in 1981 to develop and implement an initial survey of hospital outpatient departments (HCFA Grant #18-P-97880). Second, research might examine the reasons for the development and growth of these new centers. Third, the impact of these centers on beneficiary access to care should be measured. Ultimately, studies could also be initiated to examine the effects of

these centers on the performance of competing office-based physicians and remaining hospital outpatient departments.

In spite of the increases in the number of physicians over the next several years, certain communities or populations could still be relatively underserved by physicians. Hence, non-physician alternatives for providing health care services may still be needed to assure beneficiary access to services. Another vehicle for increasing the provision of such health care services might be direct payments to physician extenders such as nurse-practitioners, physician assistants, midwives, and so forth. It is generally accepted that appropriately trained physician extenders can perform many tasks that were formerly performed solely by physicians. For the most part, these extenders can work only under the direction of a physician, but if they could establish their own practices they might prove to be another option for improving beneficiary access to health care services in areas which are currently underserved.

The recent Rural Health Act does allow direct reimbursement to physician extenders for Medicare and Medicaid. However, to investigate this option, research should be conducted to determine if States' regulatory environments might restrict the development of these practices. Further, one would need to study whether beneficiaries and the general public would accept and patronize these practices so they might remain financially viable. Finally, the issue of appropriate payment levels would need to be addressed as well as the question of the appropriateness of retaining the existing payment levels for services which can be performed by an extender but which might still be provided by a physician.

Restraining the Rate of Growth of Expenditures for Physician Services

Background

Between 1976 and 1979, HCFA expenditures for physician services increased at a rate of 15.5 percent per year (Gibson, 1980). During the same period, total expenditures for physician services in the United States increased 13.6 percent per year. Not only have HCFA physician payments been growing faster than the nation's physician expenditures as a whole, they have been growing at a faster rate than the HCFA budget as a whole. Although one must be aware of the inverse relation between payment levels and physician participation in HCFA programs, it seems appropriate to examine these increases in costs to identify potential means for reducing the growth rates of expenditures.

Several different factors are involved in the growth of expenditures. Changes in prices, changes in the use of services, and changes in the number of beneficiaries all contribute to the increase in expenditures. For example, although the growth of Medicare expenditures for physician services exceeded total expenditure growth of the United States by 5 percent, the Part B enrollee population growth exceeded the total U.S. population growth by almost 3 percent. As a result of these many sources of change, research studies on rising costs become more complicated, because all of these factors are changing simultaneously.

Another set of problems makes studies of rising costs more difficult. Only a small amount of useful disaggregated information is available on variations in cost increases that might be used to analyze why costs are increasing for one service faster than another. For example, the national Medicaid program has been "successful" in holding the rate of growth of physician expenditures to less than the rate of growth of physician prices (8.1 percent vs. 9.0 percent from 1976-1979). Yet no single national Medicaid data base exists that would allow the comprehensive examination of changes in physician expenditures (and the likely changes in participation and beneficiary access). The differing channels of payments sometimes tend to frustrate attempts to understand cost differences. Pathology services for Medicare beneficiaries may be billed fee-for-service under Part B or they may result in hospital charges under Part A. A similar situation can occur for payments to teaching hospital physicians. As a result, simple data collection and data display efforts—Uwe Reinhardt's "bean counting"—will continue to play a significant role in the development of research on physician costs.

Finally, achievement of HCFA's objectives will require that physicians be remunerated appropriately for the services they provide to Medicare and Medicaid beneficiaries. This means that the levels of payment should approximate the costs of efficiently providing any given service, as well as the value to the beneficiary. Physicians should not be paid at arbitrarily low rates nor at levels which are beyond some standard of reasonableness.

Previous and Current Research on Costs

Five sub-issues have been identified in the cost area. Each relates to either an avenue or an obstacle to cost control. The first sub-issue involves the appropriateness of the fee being charged to identify whether it is too high (or too low). The next sub-issue is an obvious and probably noncontroversial means of reducing cost: improving productivity and efficiency. Third is a most problematic issue and a real potential obstacle. This sub-issue involves the role of physician demand for income. To the extent that physicians can control demand for their services they may be able to frustrate attempts to control medical expenditures. The fourth sub-issue involves regulation as a means to cost control. The final sub-issue deals with alternative reimbursement arrangements that might either directly lead to lower costs or provide incentives that indirectly result in lower costs.

Empirical research related to the question of appropriateness of physician reimbursement levels has been conducted with respect to time and effort differences and differences in physician training levels. A Harvard University project (Hsiao and Stason, 1979) has examined the relation between differences in payment levels and differences in amounts of physician time per service. For half of the surgical procedures studied, the relation between relative physician resource time and relative reimbursement rates was quite close. (Both the California Relative Value Study and local Medicare prevailing charges were used to estimate relative reimbursements). However, there were significant disparities between relative effort and relative reimbursement for the other half of the surgical procedures. Also, very significant differences were found when surgeries were

compared to office visits. For example, specialist fees for an initial office visit yield estimates of reimbursement of $68 per hour. The minimum estimate for cataract lens extractions was $473 per hour.

The Institute for Demographic and Economic Studies (Dresch, 1980) compared returns (earnings) to investments in physician training (cost of schooling) in an initial assessment of the appropriateness of reimbursement levels. Earnings functions were estimated for physicians and 15 other professional occupation groups. The findings of the study suggest that medicine is an extremely profitable career and that it would remain profitable even if medical students were charged tuition at the full cost of medical training. Hence, a substantial element of pure economic rent is found in physicians' lifetime earnings.

In the productivity-efficiency area, several general results have become fairly well accepted. There are at least modest economies of scale to group practice (although dilution of cost consciousness occurs as practice size increases, vitiating the scale economies). Physician extenders can and do make a physician more productive. On the latter point new data suggest encouraging progress. It had been long accepted that physicians underemploy aids (Reinhardt, 1972). A recent HCFA study has concluded that physicians' employment of aids is at or near optimal efficiency levels (Brown, 1980).

A Northwestern University study has recently examined the effect of hospital resources on physician productivity (Pauly, 1980). By estimating the effects of the availability of hospital employees per bed in the hospitals that individual physicians identified as their primary hospital, the study concluded that those employees have a significant positive effect on physician productivity, and a possible negative effect on physician prices. The net impact on costs is uncertain, since the use of hospital resources will be reflected in hospital charges. However, it is plausible, for example, that diagnostic tests done in a hospital should be less costly than those done in a physician's office. Hence, a physician's efficient use of hospital services as complements to his own resources may result in reduced costs.

A major area of controversy in health economics involves the influence of physicians on prices paid and quantities of service demanded in the medical market. One school of thought contends that physicians behave as any other economic entity, that they respond to prices determined by the market. Another school of thought contends that physicians can induce demand for their own services, that physicians can set fees with little regard to market conditions, or that they make price and output decisions to achieve some target level of income. If the former school be correct, the coming increases in the number of physicians will be accompanied by relatively lower costs or improved access, or both. If the latter school be correct, there may be a significant increase in expenditures for physician services without necessarily an increase in health of equal value. Evidence supporting both sides is available from previous research. For example, several studies have identified significant inter- and intra-area differences in physician fees which could not be explained by cost of living differences.[1] Relatively high fees were found to occur in areas which had an abundance of physicians. These variations are not consistent with a perfectly competitive market for physicians. Recently, an examination of 1976 data from the HCFA Survey of Physician Practice Costs and Incomes could not refute the physician induced demand hypotheses (Woodward, 1980). Finally, a HCFA study at the Boston University School of Medicine (Mitchell and Cromwell, 1981) examined variations in the incidence of surgery using Health Interview Survey data from 1969—1976. Holding other factors constant, surgical supply was found to induce demand: a 10 percent increase in surgeons *per capita* resulted in a 1 percent increase in total surgery rates and a 1.3 percent increase in elective surgery rates.

On the other hand, researchers at City University of New York (CUNY) (Muller and Otelsberg) and at the Urban Institute (Lee and Holahan, 1978) have found some evidence of a negative correlation between fees and physician density, a result more consistent with competitive theory. In addition, a consistent result from several studies of paid claims is that physicians do not appear to discriminate between payors when *billing* for specific services.[2] Price discrimination behavior would be evidence that a market was not competitive. (A form of passive price discrimination does exist when the different payors use different rules to determine allowed charges, giving rise to different transaction prices.) Finally, a recent study conducted at the National Center for Health Services Research (Willensky and Rossiter, 1980) suggests that the effects of physician inducement on utilization are not large and may not be significant.

Research on this question continues. Economists at Vanderbilt University are developing new models that might lead to unambiguous tests of the competing hypotheses in this area (HCFA Contract 500-78-0018). A new study being conducted by Michigan Blue Shield (HCFA Grant 18-P-97619/5) will attempt to use a large paid claims file to provide more evidence on this question. Finally, a related study at the University of California, San Francisco (HCFA Grant #18-P-97556) is examining the competitive effects of HMOs. To the extent that such competitive effects exist, the opportunities for physician induced demand may be inhibited.

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[1]For more information, refer to the following studies: Institute of Medicine, *Medicare and Medicaid Reimbursement Policies* (Washington, D.C.: National Academy of Sciences), March 1976; Schieber, George, *et al.*, "Physician Fee Patterns under Medicare: A Descriptive Analysis," *New England Journal of Medicine* (May 13, 1976) 294: 1089-1093; Redisch, Michael, *et al.*, "Physician Pricing, Costs, and Income." Paper presented at the Western Economic Association Meetings, June 20, 1977; and Burney, Ira and Jon Gabel, "Reimbursement Patterns Under Medicare and Medicaid," in Jon Gabel, *et al.*, (eds), *Physicians and Financial Incentives*, 1980.

[2]The studies include: Urban Institute, Grant 95-P-97178/3, ORDS, HCFA, DHHS, 1976; Pennsylvania Blue Shield Contract 600-76-0146, ORDS, HCFA, DHHS, 1976; and University of Southern California, Contract 600-76-0160, ORDS, HCFA, DHHS, 1976.

The third research area directed toward cost control involves analyses of regulatory programs to control fees or expenditures, or both. For the most part these analyses have included examinations of the experiences under the Economic Stabilization Program (ESP, August 1971-April 1974). More recently, studies have been initiated to examine the rationale and impact of the Medicare Economic Index (MEI).

Urban Institute economists (Holahan and Scanlon, 1978) studied data on physician services in Northern California during the ESP. They found that even though fees for individual services were held to ESP guidelines, the average intensity and volume of services billed by physicians increased substantially. As a result there was a more rapid increase in Medicare expenditures during the ESP years than in non-ESP years. Additional evidence on the impact of ESP is also expected from paid claims studies being conducted by Pennsylvania Blue Shield (HCFA Grant 95-P-97156; Contract 600-76-0146) and the University of Southern California (HCFA Contract 600-76-0160).

The MEI is an additional limitation added to the reasonable charge determination process by the Social Security Act Amendments of 1972. The MEI places a cap on prevailing charges. (A prevailing charge is the maximum allowed charge for a particular procedure.) Although the MEI may result in program savings, to the extent that this constraint is binding, it may reduce Part B reasonable charges relative to private market fees, and hence reduce assignment rates. Several studies have begun to examine the various features of the MEI.

Price increases allowed through the use of the MEI have been shown to be consistent with the price increases which would be observed in a perfectly competitive market in the long run (McMenamin, 1980, pp. 21-23). Hence, the use of this kind of index to determine price increases may represent an improvement on the reasonable charge process. (This may not be an unambiguous improvement for the Medicare beneficiaries if the non-Medicare market is not competetive, and if private fees rise relative to Medicare reimbursements.) Empirical analysis, however, suggests that use of a single index for all specialties may not be equitable. Teknekron, Inc. (Berry, 1980) examined the average cost shares of various specialties in 1976. This single cross section of data suggests that surgeons' cost increases may be underestimated by a single index compared to the estimated cost increases of medical specialties (which, in turn, are low compared to general practitioners and family practitioners.) The magnitude of these differences, however, is quite small. Work done at Vanderbilt University (Steinwald, 1980) suggests that cost increases of hospital based physicians are overestimated by a single index because of their relatively low practice expenses compared to office based physicians.

A preliminary examination of the impact of the MEI on allowed charges was conducted by CUNY (Muller and Otelsberg). This report suggested that the MEI had its widest impact on reasonable charges for surgical procedures performed by specialists. Charges for laboratory services for specialists were the least affected by the MEI. Between 1976 and 1978, an increasing number of procedures were affected by the MEI, according to researchers.

Research on the MEI continues. Using their large California data base, an Urban Institute research project (HCFA Grant 95-P-97178/3) is examining the magnitude and incidence of the price constraints imposed by the MEI. An ongoing series of HCFA internal beneficiary studies (Ferry, *et al.*, 1980; Gornick, *et al.*, 1980) will examine changes in assignment rates that can be observed in data since the advent of the MEI. The Teknekron study will continue to investigate changes in cost shares over time. And HCFA may initiate a national data solicitation to get more direct measures of variations in MEI impact. Finally, estimates will also be calculated with respect to the reduction in general revenue contributions to the Part B Trust Fund as a result of the impact of the MEI.

A second section of the legislation mandating the MEI established a price limit program for laboratory tests and durable medical equipment. These "Lowest Charge Limitations" (LCL) were initiated by regulations issued in January 1979. To the extent possible, the LCL impact analyses will follow the types of analyses conducted on the MEI. The Urban Institute (HCFA Grant 95-P-97178/3) will begin an analysis of the impact of the LCL constraints in their MEI project, and the Bureau of Program Policy has solicited data from the Regional Offices (Newman, Howard, 1980) to support an evaluation.

A final vein of research involves examinations of alternative reimbursement systems. This research includes studies of both new systems and the current systems. With respect to the latter, several studies have examined the consequences of using a CPR approach to determining allowed charges. One of the primary disadvantages of this system is that physicians whose actual charges exceed their customary charge limits will be rewarded with higher customary limits in the next year. Hence, the CPR system encourages billing patterns that may aggravate any pre-existing inflation. In fact the inherent inflationary bias to the CPR approach has been demonstrated both theoretically (Frech and Ginsburg, 1975) and empirically (Hadley *et al.*, 1979).

The effects of relatively minor variations in (or modifications to) the reasonable charge process have also been studied. The CUNY project (Muller and Otelsberg) examined the effect of carrier discretionary practices on fee levels. Some of the practices for establishing a physician's allowed charges in the absence of previous claims experience had a slight downward effect on fees but, in general, no significant aggregate impact due to carrier practices was found.

Several studies are currently examining the impacts of changes that have occurred in locality designations.[3] In addition, a variety of simulations are being conducted to examine the effects of both locality consolidations and specialty screen consolidations (Health Care Financing Administration, 1980).

One other important change within the CPR framework involves the use of coding classifications for identifying medical procedures on claims forms. In the past, each carrier was allowed its own choice of a procedural terminology and coding (PTC) system for processing claims. To simplify present administrative arrangements and to encourage as much uniformity as possible in the

[3]One of these studies is being conducted by SRI, International, Grant 95-P-97156/9, ORDS, HCFA, DHHS, 1977. Evaluation projects have also been initiated to examine locality changes which occured in South Carolina and Arkansas.)

physician reimbursement systems for Medicare and Medicaid, a common PTC system is being sought. In the past, however, changes between systems were accompanied by increases in benefit payments. Internal research has found that the average intensity of services reimbursed under Medicare increased when the California carriers switched from using the 1964 California Relative Value Study (CRVS) coding system to the 1969 version (Sobaski, 1975). A similar result was found in a study of a change from a Blue Shield coding system to an American Medical Association coding system which occurred in Virginia in 1973 (Newman, A., 1980).

Related HCFA research by Moshman Associates, Inc. has shown that the evolution of coding systems has been accompanied by greater opportunities for increased itemization in billing (or "unpackaging") for services. This greatly enhances the potential for a "taxonomic inflation." (A taxonomic inflation is said to occur over time when health care billing claims show an increase in the number or complexity of services rendered, while the services actually provided remain the same.) A solicitation for further studies of the packaging issue was issued in February 1981.

Although most physicians participate in HCFA programs on a fee-for-service basis, a variety of other reimbursement arrangements are currently employed throughout the health care system. There are also variations in fee-for-service payments which might be introduced into HCFA programs. These alternatives include fee schedules, salary arrangements, and risk sharing arrangements (including modified capitation payments).

Due to the apparent success of many Health Maintenance Organizations (HMO) in reducing hospital use, a great deal of interest exists in the question of how physicians (singly or in groups) would perform under risk sharing agreements. One major focus of interest is on the United Healthcare (Safeco) system in Seattle (Moore, *et al.*, 1980). Under this system primary care physicians become the financial managers for their patients' costs of care. When such a physician achieves a case load of 200 or more patients in the plan he goes on a capitation reimbursement scheme in which his payment is based on the age and sex composition of his patient load. (For fewer than 200 patients he is paid on a fee-for-service basis.) He is also given charge of a capitation account which is used to pay for all services he himself does not provide. The physician gets a monthly listing of all charges against this account and must approve the payment before any reimbursements are made by the plan. Because the physician is required to share (with some limits) 50 percent of the deficit or surplus against his account at the end of a year, he has an incentive to be more efficient in ordering services.

HCFA has a grant with the University of Washington (Grant 18-P-97144/0) to conduct a large-scale evaluation of this system which will compare the Safeco experience with that of competing systems in the Seattle area—Blue Cross and Group Health Cooperative in Puget Sound. It will focus on the effectiveness of the Safeco model in controlling the use and costs of medical care, and will examine the following questions:

- What type of patients choose United Healthcare?
- Why do doctors participate or refuse to participate, and what are the impacts of the plan on their practices?
- What is the impact of risk-sharing by primary care physicians on cost containment within the Safeco system? and,
- How does the United Healthcare Plan in Washington compare to the United Healthcare Plan in California?

Solicitations for additional risk sharing demonstrations will be issued in fiscal years 1981 and 1982. One type of demonstration sought in FY 1982 will be Safeco replications involving Medicare and Medicaid populations in other geographic areas. A second type of demonstration will involve area-wide risk sharing. Under this type of proposal all participating physicians in a geographic area would share in the savings (or loss) due to aggregate, prospectively determined utilization goals. The solicitation for area-wide projects should be issued in fiscal year 1981 with the expectation of funding the proposed demonstrations to implement operational projects in 1982.

The HCFA has also sponsored seven capitation demonstrations which are examining a variety of systems for providing health services to Medicare and Medicaid beneficiaries through HMOs. Under most of these projects, risks are shared by an organization rather than a physician. However, in the Marshfield Medical Foundation Plan (HCFA Contract 500-78-0084) private physicians who treat patients from the Plan will be reimbursed at 85-90 percent of submitted charges. If physician reimbursements under the Plan are less than expected, additional incentive bonuses will be paid to physicians who participated, up to 100 per of their charges.

A modified capitation method is currently available as an option under the End Stage Renal Disease Program (ESRD.) Under this "Alternative Method" participating physicians agree to become the primary medical provider for an individual ESRD patient. That is, in return for a monthly reimbursement per patient they agree to provide all routine medical services occasioned by their patient's renal disease. The other alternative, "the Initial Method," is fee-for-service.

The Center for Health Services and Policy Research at Northwestern (Held and Pauly, 1979) has examined the incentives created by these two reimbursement schemes. Their analyses suggested that the two methods should be compared in terms of their impact on total patient costs (for a given level of quality) rather than simply in terms of the total physician costs under each of the options.

A follow-up study (Held and Pauly, 1980) of production and costs of in-center maintenance dialysis treatments found that facilities where physicians were reimbursed on the alternate method appeared to be more efficient than initial method facilities. A direct comparison of program costs under the two systems is anticipated in 1981 with the procurement of a data base on ESRD patients, characteristics of their facilities, and Medicare reimbursements on their behalf.

Several reimbursement arrangements exist for physicians who are considered primarily hospital based: radiologists, anesthesiologists, and pathologists. Arthur Anderson and Company conducted a preliminary study of these reimbursement arrangements (HCFA Contract 600-76-0055). This study found that radiology, anesthesiology, and pathology practices were very remunerative; considerable economic rents accrued to physicians

in these specialties under certain reimbursement arrangements. Physicians in these specialties who were paid on a percentage of gross billings from their departments received the highest full time equivalent earnings. Salaried physicians earned the least amounts (Anesthesiologists' average earnings were the lowest of the three specialties, since most anesthesiologists were in salaried positions). The Vanderbilt University project (Steinwald, 1980) will follow up this study with a more detailed examination of alternative reimbursement arrangements currently available to hospital based physicians. These alternate arrangements include percentage of gross and net billings, salaried, and mixed reimbursement arrangements. Initial findings to date suggest that percentage of gross arrangements are becoming less common. However, on the average, physicians in these specialties still earn higher net incomes than office based specialists.

As was indicated previously, there is interest in fee schedules, as opposed to the CPR system, because of their administrative simplicity. There is also some empirical evidence (Holahan, 1974) that those State Medicaid programs which use fee schedules have had lower cost increases than those on CPR systems. (There is no clear evidence about the resulting—presumably negative—impacts on physician participation and beneficiary access.) As a result, considerable interest exists in the development and implementation of fee schedules. One of the Urban Institute projects (HCFA Grant 95-P-97178/3) is examining the initial reimbursement consequences of switching Medicare payments to a fee schedule system.

Cost Control: Future Research

Several areas are targeted for new or expanded research efforts. These areas include: examination of the potential to improve competition in the health care market to reduce medical care expenditures; identification of strategies for rational development of fee schedules or relative value studies; investigations of the impact of new technologies and newly available capital equipment on physician costs and total health care expenditures; and an examination of the impacts of cost containment curricula in medical education programs.

The study of health economics has long been a challenge to economists because of the absence of many of the features associated with competitive markets. Recently, however, a great deal of interest has been expressed in trying to improve competition in health care markets to achieve the economies that result from perfect competition.

As noted earlier, the focus on the supply side of the market has involved the question of physician induced demand. However, potential increased competition among physicians and between physicians and alternative sources of ambulatory care has also been noted given the coming increases in the numbers of physicians and in the emergence of new institutions providing ambulatory care. Future research in this area should identify the circumstances under which providers do compete with one another and whether the competition occurs (1) on prices; (2) in increased availability (such as weekend or evening office hours), or (3) in increases in quality or other amenities.

On the demand side of the market there is interest in enhancing the competitive position of consumers. For example, as a result of recent court decisions and actions by the Federal Trade Commission, considerable attention has been devoted to methods to improve consumer information about health care prices. These methods include advertising in general and physician directories, in particular. Unfortunately, health insurance and health subsidy programs such as Medicare and Medicaid tend to weaken the monetary incentives of beneficiaries to search for low prices. For example, ESRD beneficiaries who are on home dialysis have the option of purchasing a new dialyzer for each maintenance treatment or they can reuse their dialyzer two or more times. The total cost of a dialyzer is $25, of which the beneficiary pays $5. Hence, dialyzer reuse saves the beneficiary only $5 while it costs time, and attention, and perhaps some anxiety in assuring that the used dialyzer is properly sterilized for its next use. Since the beneficiary does not partake of the potential $20 savings to Medicare, he may elect not to reuse dialyzers. Similarly, since Medicare and Medicaid beneficiaries share little or no part of the savings that might result from "shopping" for relatively inexpensive physicians, they have little incentive to change their health care purchasing habits, even if they do become informed through physician advertising.

Future research and demonstrations in this area might focus on ways to enhance these incentives without increasing beneficiary burden. These methods might include reducing the costs of obtaining price and assignment information, such as through the use of physician directories. Demonstrations might also be undertaken to assess the impact of beneficiary bonuses for reduced health care expenditures. One possibility would be modifying a physician risk sharing experiment to allow beneficiaries to share the rewards of better than average claims experience.

Some initial work has already begun on the mechanics of negotiations to establish fee schedules. An effort at the University Health Policy Consortium (HCFA Grant 18-P-97138/1) is examining basic U.S. labor law principles to identify representative groups that might participate in the process of fee schedule negotiations. This work will continue, and will address such issues as: the best frameworks for negotiations; which parties should participate; and whether negotiations should attempt to develop entire schedules or focus on specific fees.

Princeton University (HCFA Grant 95-P-97309/2) will examine various aspects of the role of fee schedules in physician reimbursement under third party systems. This study will include a review of fee schedules and relative value systems that have been developed in West Germany, France, and Canada. A second survey of a sample of general practitioners in Quebec, and an analysis of their responses to fee schedules will also be conducted. A descriptive analysis of fee screens and relative price structures in the United States will then be performed. Finally, the researchers will develop a framework for assessing changes in fee schedules.

A new solicitation for a study of relative value systems was issued in FY 1981. This study will examine the conceptual bases for establishing relative value studies such as: existing fee distributions; time and motion studies; societal and individual benefits from various procedures; how to set a value for new procedures; and whether to revalue the old.

Another relatively new focus of attention involves the role of rapidly changing medical technology and its impact on the costs of health care. For the most part new technology involving capital has remained in hospi-

tals, but two forces exist which may tend to bring new capital investment opportunities for physicians in their offices. The first stems from technological innovations involving miniaturization and computerization. These innovations will reduce both the size of diagnostic testing equipment and the time needed to develop and interpret results. These improvements will make such equipment more practical, hence more attractive for physicians' offices. At the same time, Certificate of Need regulations and other hospital capital acquisition review requirements may shift innovation and demand for new technology out of the hospital sector and into the physician sector.

Research in this area would identify the determinants of physicians' investments in office capital. This research could include estimation of expenditure functions for practice inputs. (An expenditure function would relate optimal purchases of particular kinds of inputs to changes in the level of outputs.) Another question involves the impact of investments in physicians' office capital on total expenditures for physicians' services. A related capital investment issue involves both new and not-so-new technology. This involves the investment decisions of physicians who are establishing their practices for the first time. If the new physicians entering the market are not judicious in their purchases of equipment, considerable upward pressure on health care costs could arise. Hence, research in the near future should examine the patterns of practice development by new physicians to identify efficient modes of organization, and to discourage the inefficient ones.

Finally, a new slant on cost control is emerging in terms of raising the cost consciousness of physicians. While once a doctor could say "Cost is not a professional concern of physicians,"[4] in recent years both former HEW Secretary Califano[5] and the AMA sponsored National Commission on the Cost of Health Care have referred to the need to bring cost consciousness into medical school curricula. The number and variety of these medical economics courses keep expanding and may form a virtual "Physicians' Voluntary Effort" of the future. But as yet there exists no comprehensive assessment of the scope or prevalence of such courses and no strategy for evaluating their impact on the cost of care. This evaluation would require a survey of the spectrum of educational activities from undergraduate medical education to continuing medical education, and from modules on health care costs in, for example, community medicine courses to practice cost seminars to full blown courses on health economics. An evaluation of the impact of these endeavors might require a very long frame of follow up surveys to compare the cost experience of physicians who receive this kind of training to those who do no not receive formal cost training or consciousness-raising.

[4]Comments made by Robert B. Hunter, M.D. at the PSRO Evaluation Subcommittee Meeting, Bethesda, Md. August 26, 1973. Dr. Hunter became President of the American Medical Association in 1980.

[5]Comments made by Joseph Califano in an address presented to the Association of American Medical Colleges, October 1978.

Assuring Quality and Appropriateness

Background

The Medicare and Medicaid programs attempt not merely to facilitate beneficiary access to health care but to facilitate access to "mainstream" health care. In particular, there is a desire that a two class system of health care should not develop (in which Medicare and Medicaid beneficiaries would receive lower class health care). The quality of health care services provided to these beneficiaries should equal that available to private market patients.

Quality of care has been addressed in previous research and regulatory programs, but it usually has been treated as a topic completely separate from costs or compensation methods. Similarly, most previous reimbursement research has not included any well developed consideration of quality. Treatment of the issues of quality and appropriateness consisted solely of ritual allusions to "other things being equal." However, in the evaluation (or design) of a physician *reimbursement* system the quality of service and the appropriateness of the service are important considerations.

In particular, the reimbursement system should contain incentives which encourage the appropriate type or level of care (for example, primary care versus subspeciality care, and inpatient care versus outpatient care). These incentives should discourage physicians from performing unnecessary surgery, ordering inappropriate or unnecessary diagnostic tests, hospitalizing patients who can be treated as effectively on an ambulatory basis, or providing medical care of low quality.

The interest in the interaction between physician reimbursement and health care quality is a relatively new focus of the research program. However, studies have been done which are related to this issue. Results from these studies will be cited in the next section (Research on Physician Reimbursement and Quality). A discussion of potential future studies on quality and physician reimbursement will conclude the section on quality. (As a prefatory note, any discussion of quality and appropriateness will include the topics of quality assurance regulations and enforcement of regulations designed to prevent fraud and abuse. Although both kinds of regulations establish a setting in which physicians' decisions are constrained, for the purpose of this discussion that setting is taken as a given. The question at hand involves the relation between physician reimbursement and quality or appropriateness within those constraints.)

Research on Physician Reimbursement and Quality

Some of the problems in this area have already been referred to with respect to access to primary care services and costs of physician induced demand. Regarding access to primary care services, the value of relatively high technology services is increasing compared to more physician intensive services such as history taking (Hsiao and Stason, 1979). As a result, the process of determining a diagnosis may become more skewed toward highly technological ancillary services, even though this may not necessarily improve the quality of the diagnosis. Concerning physician induced demand,

studies have shown extraordinary variations in surgical rates *per capita* (Wennberg, 1980) that raise questions about the appropriateness of some of the surgery being performed. However, Dr. Wennberg contends that the variations in surgery rates reflect physician uncertainty rather than physician-induced demand. Similarly, studies of Second Surgical Opinion programs have found significant numbers of proposed surgeries not confirmed by consulting physicians (McCarthy, 1980). (ORDS is funding a major evaluation of Second Opinion Demonstration Programs through Abt Associates, Inc., Contract 500-780047.)

For the most part, evidence about quality problems consists of anecdotes or horror stories. Most prominent, perhaps, are the reports from former Senator Frank Moss on Medicaid mills (1979). These mills featured low quality, high volumes, unnecessary testing, and high markups over costs. Although Medicaid mills may very well exist, a recent HCFA study has shown that not all large Medicaid practices are the mills of Senator Moss's horror stories. The research was conducted at Boston University (Mitchell, 1980) and examined data from the HCFA Survey of Physician Practice Costs and Incomes. The Large Medicaid Practices (LMPs) studied were those that reported that at least 30 percent of their patients were Medicaid eligibles. A comparison of quality of care, as measured by length of visit, showed little difference between LMPs and all other practices. In addition, there were few differences in markups for ancillary services. Physicians' incomes in the large Medicaid practices were often roughly equal to those in other practices, and, in some instances, they were less. In terms of the caliber of those physicians, however, LMP physicians tended to be older, to be trained in foreign medical schools, and to have fewer credentials such as board certification. Two additional studies have been initiated as a result of these findings. The initial analysis will be duplicated using more recent data to examine the stability of these results over time. The Center for Health Economics Research has received a grant (HCFA Grant 95-P-97723/1) to examine the characteristics of Large *Medicare* Practices to determine how they compare to all other practices.

Quality: Future Research

Future research in this area should address three specific topics: identifying incentives which inappropriately influence treatment choices; assessing physicians' behavioral responses to differences in prices paid for medical services; and identifying the relationship between quality of care and the costs of health care services.

Within the current system of physician reimbursement there may be incentives which lead to inappropriate choices between competing forms of treatment. The system of fees currently in place should be examined to assess both the extent and magnitude of any potential inappropriate incentives. For example, do current reimbursements favor inpatient (or emergency room) care rather than office care? Does the system produce incentives which inappropriately influence physicians' decisions about the quality of care? Are there incentives which lead to unnecessary diagnostic testing or unnecessary surgery?

Although previous research has documented the existence of potential incentives in the reimbursement system, very little work has been performed to assess physicians' behavioral responses to these incentives. In fact, there exists a need for both (1) theoretical work establishing the basis (if any) for paying different prices for different services, and (2) empirical work identifying differences in physician performance (if any) with respect to such price differentials. The need for the theoretical research was discussed in the cost section. However, the empirical question remains: Do relative prices make a difference? The research to date has focused on identifying incentives without pulling together behavioral models that can test physician responsiveness to those incentives. This problem should begin to be remedied by a solicitation for a study of the impact of relative prices to be issued in FY 1982.

In fact, the initial studies of physician responsiveness will only begin to scratch at the surface of some very deep research questions. They will likely be able to examine only fee-for-service patterns among fairly well defined methods of care. The behaviors of salaried physicians, hospital-based physicians, teaching physicians and even interns and residents all have an impact on quality and cost. But here the reimbursement channels are ill-defined and a host of nonfinancial constraints and incentives also cloud the possibilities for obtaining unambiguous results.

The remaining issue is probably the most difficult—that of explicitly measuring the tradeoffs between quality and cost. Quality and cost are commonly believed to be inversely related, but there are no available estimates of this relation. This research area is the most speculative of any of those discussed, and planning for studies in this area is still in a formative stage. However, in conjunction with the PSRO Evaluation, ORDS has funded a benefit-cost analysis of medical care evaluation studies through the Rockburn Institute (Contract 500-78-0050). The methodologies developed in this study may lead to future work more directly focused on the cost-quality tradeoff.

Improving Data and Statistical Methods

Background

The final research area involves data development and meta-research, that is, research about research. This focus is specific to ORDS since it only indirectly relates to the accomplishment of the HCFA mission. However, since it is an ORDS mission to identify ways to improve the methods available to achieve HCFA's objectives, the ORDS must also consider these activities which can enhance the performance of the research and demonstrations programs.

Although activities in this area may arise from an examination of a particular problem about access, cost, or quality, often a new data set or research technique will have broad application. Current activities in the data area assist the ORDS staff in keeping abreast of trends and developments in all of the areas of physician reimbursement. Very often the acts of "bean counting" or "naming of parts" will lead to new research hypotheses

and future evaluations. On the meta-research side, very often a particular research technique yields an ambiguous result or no result. Sometimes a new technique or a new way to manipulate the data is required before the research can proceed.

Current Data and Research Studies

The ORDS has several paid claims data collection efforts currently being conducted through the external research program. The Urban Institute's California data bases have been frequently cited already in this report. Pennsylvania Blue Shield is assembling a 10 year data base of private and Medicare data from Pennsylvania, South Carolina, New Hampshire, Vermont, and Colorado. The University of Southern California contract (HCFA Contract 600-76-0160) was initiated to try to develop a nearly national data base with data from Blue Shield plans across the country. A relatively small data base from Maine has been assembled by the Codman Research Group, Inc. (HCFA Contract 600-77-0039). This data base has been merged from Medicare, Medicaid, and Blue Shield files.

These data on claims will be used to document trends in intensity of care, quantities of service, and physician pricing patterns and, where possible, to compare Medicare and Medicaid reimbursement levels to those in the private market. Pricing pattern data will also be contrasted with Bureau of Labor Statistics data to assess the accuracy of the physician component of the Consumer Price Index. In addition, the Codman Research Group program will examine whether physician-patient market areas are the same for Medicare, Medicaid and the private market. More refined analyses, such as the aforementioned Michigan Blue Shield project on induced demand, also will be conducted using these data sets.

Another data base derives from the HCFA Survey of Physician Practice Costs and Incomes. This survey was conducted by the National Opinion Research Center (HCFA Contract 600-77-0077). Telephone interviews were conducted with approximately 5,000 physicians each year to elicit data from calendar years 1976, 1977, and 1978. (Two smaller surveys were conducted for 1975.) These data have been used in several studies of variations in costs, practice arrangements, productivity and so forth.

Future Data and Research Needs

In the future, inhouse physician oriented data bases from Medicare and Medicaid would be useful. Neither Medicare nor Medicaid currently has this data, which hampers the ability to conduct physician reimbursement research with respect to HCFA's own programs. For example, a Medicare Part B physician oriented data base would significantly improve the possibility of directly evaluating the impacts of the Medicare Economic Index. (As indicated previously, several internal studies have examined variations in Part B assignment rates and reimbursements. The data for these studies came from a beneficiary oriented sample of records. In the future these records may also be sorted by provider number to allow additional studies of physician responses to reimbursement policy).

Under Medicaid, a physician oriented, patient ordered data base could allow the examination of physician performance across all health services for particular patients—physician provided and ordered services, hospital services, and prescriptions. This type of data base would be a much richer source for assessing the impact of relative prices on treatment choice because more of the treatment data would be available.

The discussion of future research on access indicated the need for another potential data development effort. This effort would involve a data set that would allow a more direct examination of the relation between physician participation in HCFA programs and beneficiary access to health care service. Previous research results suggest that increased physician reimbursement levels would increase physician participation. However, no clear inferences exist about whether such increases would result in (1) physician services being provided to more beneficiaries than at present or (2) simply more physicians providing services to current beneficiaries with few access problems, without affecting beneficiaries who currently have limited access to care. Such data might be developed from a survey of beneficiaries and their sources of care. This type of information might then be examined in terms of correlations between beneficiary access measures and the number or percent of physicians with significant participation in HCFA programs. (Data from such a survey might support analyses of beneficiary access to the complete spectrum of health care services.)

Another data need alluded to in the cost section involves reimbursement flows in and around the hospital. Because hospital claims and physician claims are often processed by different systems—for example, Medicare Parts A and B or Blue Cross versus Blue Shield—payments for services which may be billed under either system are very difficult to study. As a result, problems in such payments may be impossible to resolve and myths about problems may be impossible to refute. A large data collection effort might be useful in this regard if data could be collected from several hospitals in a specific area (or from several areas) to be merged with the corresponding physician payment data. This process could allow the examination of differences in either total costs or in the costs of specific kinds of services where such differences derive from accouting or billing differences rather than from differences in treatments. If the data set had abundant information, one might also examine the question of whether there were differences in treatment that might be due to the differences in billing method.

The potential for research using claims data leads to a future meta-research question. Claims data are potentially very detailed about patterns of physician performance, treatment decisions by diagnosis, billing behavior with respect to different reimbursement mechanisms, and so forth. In fact, the data are too detailed. They must be analytically reduced to be amenable even

for multivariate analyses. This type of reduction typically is performed on an *ad hoc* basis, involving calculations of means and standard deviations. Additional research will have to be conducted in the future to identify reduction techniques which do not suppress all of the details.[6] Failing that, further research should identify any unambiguous biases that might be introduced by using selected data elements to construct indices of physician performance.

Finally, another meta-research question arises from the lack of complete data sets for all of a physician's patients. Most often a claims based data set will derive from a specific patient population and will include data only from that population, such as Medicare only or Medicaid only. Since physicians can provide services to patients under a wide variety of payments options, use of a single "incomplete" data set may introduce bias into the results. Unfortunately, creation of complete data sets would be very costly and, as suggested, might be very difficult to manipulate. Therefore, it might be useful to construct a small number of such complete data sets to assess the robustness of estimates produced by the use of a single population subset. The existence of one or more complete data sets might allow the estimation of general equilibrium models of physician fees, which might take into account the effects of all the different markets in which a physician might participate.

[6]Factor analysis was used to reduce the HCFA Survey of Physician Practice Costs and Incomes to produce five medical practice "styles." Anthony Boardman, *et al.*, presented a paper "Physicians' Styles of Practices," on this subject at a research conference on Studies of Micro Survey Data on Physician Practice Costs and Incomes, Washington, D.C., February 27-28, 1980.

Conclusion

The research conducted to date has had significant impacts on the operating reimbursement programs and has provided useful insights for future work. For example, in light of the analyses of the impacts of changing coding systems, a regulation has been issued prohibiting Medicare carriers from changing procedural coding and terminology systems used for Medicare processing unless a net advantage can be demonstrated. The results of the Arthur Anderson study were reflected in HCFAs FY 1980 budget, which contained a proposal to change the way hospital-based physicians are reimbursed. Regulations to support these changes are now pending due to litigation by the groups that would be affected. The Medicare Economic Index has been refined through the use of data collected in the HCFA Survey of Physician Practice Costs and Incomes.

No single result in and of itself is likely to lead to a vast improvement in HCFA's ability to accomplish its mission. But to the extent that this research plan anticipates the challenges created by an increasing number of physicians, an increasing beneficiary population, and increased opportunities for providing more sophisticated health services, HCFA's operations have that much better a chance at success.

References

Berry, Robert, "Development of an Equitable Medicare Economic Index: An Analysis of Variation in Practice Costs Among Specialties." Paper presented at a research conference on Studies of Micro Survey Data on Physician Practice Costs and Incomes, Washington, D.C., Feburary 27-28, 1980.

Brown, Douglas, "Are Auxillary Inputs Underutilized?" Paper presented at a research conference on Studies of Micro Survey Data on Physician Practice Costs and Incomes, Washington, D.C., February 27-28, 1980.

Burney, Ira and Jon Gabel, "Reimbursement Patterns Under Medicare and Medicaid," in Jon Gabel, *et al.* (eds.), *Physicians and Financial Incentives*, 1980.

Cantwell, James R., "Implications of Reimbursement Policies for the Locations of Physicians," *Agricultural Economics Research* (April 1979), 31(2): pp. 25-35.

Dresch, Stephen, "Physician Earnings and Returns to Medical Training and Specialization," Paper presented at a research conference on Studies of Micro Survey Data on Physician Practice Costs and Incomes, Washington, D.C., February 27-28, 1980.

Ferry, Thomas P., *et al.*, "Physicians' Charges Under Medicare: Assignment Rates and Beneficiary Liability," *Health Care Financing Review*, Winter 1980, 1(3) pp. 49-74.

Frech, H.E., and Paul B. Ginsburg, "Imposed Health Insurance in Monopolistic Markets: A Theoretical Analysis," *Economic Inquiry* (March 1975) 13: pp. 55-70.

Gibson, Robert M., "National Health Expenditures, 1979," *Health Care Financing Review*, Summer 1980, pp. 1-36.

Gornick, Marian, *et al.*, "Factors Affecting Differences in Medicare Reimbursements for Physicians' Services," *Health Care Financing Review*, Spring 1980, pp. 15-38.

Hadley, Jack, "An Econometric Analysis of Physician Participation in the Medicaid Program," Urban Institute Working Paper No. 998-9, April 1978.

Hadley, Jack, and Robert Lee, "Physicians' Price and Output Decisions: Theory and Evidence," Urban Institute Working Paper No. 998-8, April 1978.

Hadley, Jack, *et al.*, "Can Fee-for-Service Reimbursement Coexist with Demand Creation?" *Inquiry* (Fall 1979) 16: pp. 247.

HCFA Administrator's Report, No. 17, August 27, 1979.

Health Care Financing Administration, *Research and Demonstrations in Health Care Financing, 1978-1979*, 1980, p. 59.

Held, Philip J., and Mark V. Pauly, "An Economic Analysis of the Production and Cost of Renal Dialysis Treatments," Center for Health Services and Policy Research, Northwestern University, June 19, 1980.

Held, Philip J., and Mark V. Pauly, "Compensation of Physicians in the End Stage Renal Disease Program," Working Paper #25, Center for Health Services and Policy Research, Northwestern University, March 10, 1979.

Holahan, John, "An Economic Analysis of the Medicaid Program," Urban Institute Working Paper 976-05, December, 1974.

Holahan, John, "Physician Reimbursement," in Judith Feder, *et al.* (eds), *National Health Insurance, Conflicting Goals and Policy Choices,* (Washington, D.C.: The Urban Institute), 1980, p. 73.

Holahan, John and William Scanlon, "Price Controls, Physician Fees, and Physician Income from Medicare and Medicaid," Urban Institute Working Paper No. 998-5, January 1978.

Hsiao, William C., and William B. Stason, "Toward Developing a Relative Value Scale for Medical and Surgical Services," *Health Care Financing Review,* Fall 1979, 1(2): pp. 23-38.

Institute of Medicine, *A Manpower Policy for Primary Health Care* (Washington, D.C.: National Academy of Sciences), May 1978.

Institute of Medicine, *Medicare and Medicaid Reimbursement Policies* (Washington, D.C.: National Academy of Sciences), March 1976.

Lee, Robert, and John Holahan, "Variations Among Urban and Rural Areas in Levels and Rates of Changes in Fees: A Descriptive Analysis," Urban Institute Working Paper No. 998-7, January 1978.

McMillan, Alma, Preliminary estimates of 1977 assignment rates, Division of Beneficiary Studies, ORDS, 1980, (Unpublished).

Maletz, David, Overview of assignment rate improvement demonstrations, Division of Health Systems and Special Studies, ORDS, 1980.

McCarthy, Eugene, "Second Surgical Opinion: Solution or Sham?" in Jon Gabel, *et al.*, (eds.), *Physicians and Financial Incentives,* 1980.

McMenamin, Peter, "On the Welfare Economics of Government Subsidized Demand for Health Care," ORDS Internal Working Paper #OR-1, July 1980, pp. 21-23.

Mitchell, Janet B., "Large Medicaid Practices: Are They Medicaid Mills?" *Health Care Financing Grants and Contracts Report,* DHHS, HCFA, ORDS, March 1980.

Moore, Stephen H., *et al.*, "Cost Containment Through Risk-Sharing by Primary Care Physicians: A History of the Development of United Healthcare," *Health Care Financing Review,* Spring 1980, 1(4), pp. 1-14.

Moshman Associates, Inc., "Medical Procedural Terminology Systems: Development and Characteristics of Three Major Systems for Third Party Payment," *Health Care Financing Research and Development Series,* Report No. 4, DHEW, HCFA, OPPR, no date.

Moss, Frank E., "Through the Medicaid Mills," in Allan D. Spiegel, (ed.), *The Medicaid Experience* (Germantown, Md.: Aspen Systems) 1979.

Muller, Charlotte F., and Johah Otelsberg, "Study of Physician Reimbursement under Medicare and Medicaid," *Health Care Financing Grants and Contracts Report,* USDHHS, HCFA, ORDS (Washington, D.C.: no date).

National Commission on the Cost of Medical Care, *Summary Report* (Chicago, Ill.: American Medical Association) December 1977.

Newman, A., "Virginia Physician Responses to Changes in Coding Terminology," in Jon Gabel, *et al.,* (eds.), *Physicians and Financial Incentives,* 1980.

Newman, Howard, *Regional Letter: Medicare,* Transmittal No. 80-36, HCFA, DHHS, August 1980.

Paringer, Lynn, "Medicare Assignment Rates of Physicians: Their Responses to Changes in Reimbursement Policy," *Health Care Financing Review,* Winter 1980, 1(3): pp. 75-90.

Pauly, Mark, "The Relationship Between Hospitals and Physician Costs, Outputs, Prices, and Incomes," Paper presented at a research conference on Studies of Micro Survey Data on Physician Practice Costs and Incomes, Washington, D.C., February 27-28, 1980.

Redisch, Michael *et al.*, "Physician Pricing, Costs, and Income," Paper presented at the Western Economic Association Meetings, June 20, 1977.

Reinhardt, Uwe, "A Production Function for Physicians Services," *Review of Economics and Statistics* (February 1972) 15: pp. 55-66.

Schieber, George, *et al.*, "Physician Fee Patterns Under Medicare: A Descriptive Analysis," *New England Journal of Medicine* (May 13, 1976) 294: 1089-1093.

Sloan, Frank, *et al., A Study of Administrative Costs in Physicians' Offices* (Cambridge, Mass.: Abt Associates, Inc.), 1977.

Sobaski, William J., "Effects of the 1969 California Relative Value Studies on Costs of Physician Services Under SMI," *Health Insurance Statistics,* HI-69, ORS, SSA, DHEW, June 20, 1975.

Steinwald, Bruce, "Hospital-Based Physicians: Current Issues and Descriptive Evidence," *Health Care Financing Review,* Summer 1980.

Wennberg, John, "Small Area Analysis of Surgery Rates," in Jon Gabel, *et al.,* (eds.), *Physicians and Financial Incentives,* 1980.

Wilensky, G.R., and L.F. Rossiter, "The Magnitude and Determinants of Physician Induced Demand," 1980.

Woodward, Robert, "Physician Productivity, Remuneration Method, and Supplier-Induced Demand," Paper presented at a research conference on Studies of Micro Survey Data on Physician Practice Costs and Incomes, Washington, D.C., February 27-28, 1980.