

Alternative Physician Payment Methods: Incentives, Efficiency, and National Health Insurance

JON R. GABEL AND MICHAEL A. REDISCH

*Health Care Financing Administration,
U.S. Department of Health, Education, and Welfare;
and U.S. General Accounting Office*

ONE REASON that the long and sometimes acrimonious debate concerning National Health Insurance (NHI) continues is that NHI means different things to different persons. While there is general agreement among proponents that NHI should provide financial protection against catastrophic medical expenses, there is a wide divergence of opinion as to broader objectives. Some view NHI's principal purpose as removing financial barriers to care, while others see NHI as the vehicle to reorganize our health care delivery system on a more efficient basis.

For those individuals concerned with reorganizing our health delivery system, few issues have greater importance or generate as much controversy as the method for paying physicians. Each payment method raises philosophical questions regarding the freedom and independence of the individual physician. Moreover, because the physician is the dominant individual in the health care system, physician payment methods will affect not only the quality, quantity, and intensity of services in the \$32 billion U.S. physician sector, but also those in the \$131 billion non-physician health sector (Gibson and Fischer, 1978).

This article's intended audience is not the well-published health economist, but the interested health professional who wishes to familiarize himself or herself with some of the implications of alternative methods of paying physicians. We are well aware that physicians are both social and economic beings, and that many non-economic factors are important in determining their behavior patterns and in defining the scope of health policy goals. We have chosen to confine ourselves, however, primarily to analyzing the reactions of physicians to changes in their economic environment.

In the first section, the three major physician payment methods (fee-for-service, capitation, and salary) will be described. The second section will review physician pricing behavior. In the third section, the implications of alternative payment methods will be explored with respect to five dimensions of medical practice: 1) utilization of physician and nonphysician services; 2) treatment setting; 3) location decision; 4) specialty choice; and 5) efficiency of an individual physician's practice. The concluding section will discuss the present and future role of physician reimbursement within the current Washington health policy environment.

Three Methods of Paying Physicians

Fee-for-service is the predominant physician payment method in the United States. We estimate that, with interns and residents included, 71% of the U.S. non-federal, patient-care physicians are paid by this method. The alternative payment systems, salary and capitation, account for an estimated 28% and 1%, respectively. Combination methods, utilized by certain health maintenance organizations (HMOs), encompass a very small proportion of the nation's physicians.

Under the fee-for-service method, the physician charges a fee for each rendered unit of service, such as an office visit, chest X-ray, appendectomy. Approximately 61% of the physician payments in fiscal year 1976 were financed by third-party payors, and 39% came directly from patients (Gibson and Fischer, 1978). With fee-for-service payment, the third-party payors reimburse the physician for each service provided using either one of two methods. Twenty-four state Medicaid agencies, a minority of U.S. private health insurance plans, and most of the other nations of the Western world use *fee*

schedules to determine the maximum level of reimbursement for each service (Burney and Gabel, 1979). Medicare, 26 state Medicaid agencies, and a majority of the private health insurance plans use a system unique to America, called "*customary, prevailing and reasonable* (CPR) reimbursement."

Fee schedules designate the maximum level of third-party reimbursement for a specific service, with the physician's actual payment level being the lesser of the billed charge or the fee schedule level. The fee schedule may be established prospectively through negotiations between insurance companies and medical societies, as it is done in most Western European nations, or on the basis of a survey of physician's billed charges (Glaser, 1977). State Medicaid agencies usually establish their schedules by applying a conversion factor to a relative value system. For example, if an initial office visit has a relative value of three units, and the conversion factor is \$10, then Medicaid would pay a physician a maximum of \$30.00 for an initial office visit.

The CPR method establishes a separate fee schedule for each individual physician and requires that the third-party payor maintain a "profile" on each physician for each unit of service he or she provides. The physician is then reimbursed for each of these units of service or procedures on the basis of the lowest of his *actual* charge, his *customary* charge, or the area's *prevailing* charge. Under Medicare, the customary charge for a procedure is the physician's median billed charge for that particular procedure during the previous calendar year. The area prevailing charge for each procedure is the 75th percentile of the distribution of all customary charges of "similar" physicians within a given "market area" during the previous calendar year weighted by the number of times each physician has billed for that given service or procedure. Definition of the terms "similar" and "market area" are left to the discretion of the Medicare carriers. Under Blue Shield, the equivalent of the Medicare prevailing charge is typically set at the 90th percentile of the distribution of physician charges. Commercial insurers generally set their prevailing rate at the 92nd percentile of the distribution of physician charges (Dyckman, 1978).

Salary and capitation are the two major alternatives to fee-for-service payment of physicians. The salaried approach pays the physician for a specified period of time, regardless of the number of units of service provided or the number of persons served. This arrange-

ment is usually associated with an organized institutional setting such as a hospital, clinic, medical school or health maintenance organization, rather than an individual practitioner's office. Salaries may be on a full- or part-time basis and vary in accordance with the physician's training, professional skills, seniority, scope of responsibility, and with the financial position of the institution.

Under the capitation payment method, the physician's level of remuneration is determined by the number of persons enrolled, rather than the number of services performed as under the fee-for-service system. Capitation is usually associated with physician groups, including those that resemble health maintenance organizations (HMOs) or their hybrid forms, e.g., "HMOs without walls," such as the Madison Blue Shield Health Maintenance Plan. Under a capitation system, physicians, acting individually or as part of a group, agree to provide a specified level of medical benefits to enrollees for a certain period of time for a predetermined amount.¹

Physician Pricing—Income vs Utility Maximization

Two alternative models explaining physician pricing behavior appear in the health economics literature. Both models are usually applied to a fee-for-service payment method.

The first, the profit-maximizing model, hypothesizes that physicians set their fees so that they may maximize their absolute incomes. The profit maximization model is compatible with either a competitive or a monopolistic market structure.

The second, the utility maximization model, hypothesizes that physicians price their services at a level different from the one necessary to attain the maximum profit level, but in a manner that will allow them to achieve other goals.² A popular variant of this model is the target income hypothesis whereby physicians price their

¹The reader should not confuse lump-sum prepayment for HMO membership by a patient with capitation payment to the individual physician. In the U.S., the majority of physicians employed in HMOs are salaried. Throughout the remainder of the article, capitation payment refers to individual physicians, not organizations.

²Feldstein has suggested that physicians set prices to create a situation of permanent excess demand so that they can more easily choose "interesting cases" and pluck them from their long queues. See Feldstein, 1970.

services in an attempt to obtain a predetermined income level.³ Left unspecified is how the desired level is determined, although presumably it is set by comparison with the local income distribution in general and the local physician modal income, in particular.

Physician pricing models have profound policy implications because they yield conflicting predictions concerning the likely change in physicians' fees should the supply of physicians increase—and approximately one of every five physicians in the U.S. is currently in residency or internship. The income maximization model suggests lower fees in most situations where new physicians pour into the system, whereas the utility maximization model can easily coexist with higher fees.

The physician pricing controversy often centers upon the issue of whether and to what extent physicians can generate or induce demand for their services. A number of structural characteristics in the market for physician services appears to make this possible. Foremost among these is that the fee-for-service practitioner is a for-profit entrepreneur who acts as an agent for the patient, providing information that will influence the patient's future purchases of medical care. The physician's conflict of interest arises from the fact that the agent also provides a part of the medical services.

Second, the medical profession—like its legal, accounting, optometric, and mortician counterparts—has historically limited competition through a code of ethics and through direct restrictions on supply. Among the practices physicians have in the past specified as unethical are the publishing of fee information or the tendering of patient care information to a patient for whom the physician is not the designated attending physician. Violation of the code may result in a loss of referrals from peers or expulsion from the local medical society, with possible loss of hospital privileges (Kessel, 1958; Hsaio, 1975).⁴

These factors render the demand for physicians' already heterogeneous services relatively more inelastic by lowering the

³For a more complete discussion of physician pricing models, see Reinhardt, 1975; Sloan and Feldman, 1978; Redisch, Gabel, and Blaxall, 1979.

⁴Since 1958 when Kessel wrote his article, there have been a number of court rulings that suggest that local medical society membership is no longer a necessary condition for local hospital staff privileges.

cross-price elasticity of demand for the services of other physicians. That is, a physician's patients become less responsive to changes in fees or other practice characteristics of similar physicians in the community. The greater this inelasticity of demand, the greater is the individual physician's discretion over price, quantity, and quality, and the greater is the physician's potential to behave as a price setter. Economists use the term "monopolist" to describe an individual or firm that can set a price for a product, rather than accept a price determined by an outside market.

While there is growing consensus that physicians are price setters, there is still controversy over the degree to which physicians can influence demand for their products. The extent that physicians can generate or induce demand for their services centers upon three interrelated empirical questions:

1. Does an increase in the number of physicians lead to an increase in the utilization of physician services, on a per capita basis?
2. Does an increase in the number of physicians result in higher or lower fees?
3. Does an increase in physicians result in lower or higher physician incomes?

Evidence to date on the first question indicates that greater numbers of physicians per capita are associated with greater utilization of physician services per capita. This is particularly true for elective surgery involving non-functional tissues. Fuchs (1978) estimated that a 1% increase in the density of surgeons will lead to a 0.33% increase in surgery per capita. Another noteworthy study on the ability of physicians to control utilization was that of Wennberg and Gittelsohn (1973), who found that the probability of tonsils removed by a specific age ranged from 8% to 62% across 13 Vermont areas, and the probability of uterus loss by age 75 ranged from 24% to 52%. The 1975 *Study of Surgical Services for the United States* (SOSSUS) examined surgery rates in four metropolitan areas and found the surgery rate per population positively related to surgeon density (American College of Surgeons, 1975). Mathematica Policy Research (1978) estimated that for males ages 5 to 8 in Quebec, a 1% increase in physician density led to both a 0.61% increase in visits per

capita and a 1.54% increase in lower priority surgical payments per capita.

Research results on the second question, how an increase in physicians affects fees, are not as definitive. An increasing body of evidence indicates, however, that physician density and fee levels are positively related. Earlier studies suffered from a number of methodological problems, including small samples of procedures and geographic areas, incomplete data on physicians' incomes and hours, and use of cross-sectional as opposed to time-series data bases. Recent work by the authors using a national census of Medicare prevailing charges and a national sample of physicians' actual charges, hours, incomes, and practice costs validate these earlier studies (Redisch, Gabel, and Blaxall, 1979).

Most research on the third question, how an increase in physicians affects physician income, has concluded that increases in physician density results in decreases in real physician income (i.e., adjusting for cost-of-living). The income decrease, however, is not nearly in proportion to the change in physician density. Higher real incomes in lower density areas reflect longer hours and higher levels of patient visits per hour, both of which compensate for lower physician fees (Sloan and Feldman, 1978). Based upon a national sample of 1014 physicians, recent work by the authors tends to support this relationship. Physicians in counties with more than 200 physicians per 100,000 population had incomes nearly 5% greater (unadjusted for cost-of-living) than those in similar specialties from physician-scarce counties. Proper adjusting for living differentials would have reversed the relationship. Physicians in physician-rich areas were able to compensate for the fact that their weekly patient load was nearly 40% lower than their peers from physician-scarce areas. They achieved this near parity in incomes by charging higher fees and by providing and billing for a more intense and complex set of services (Redisch et al., 1979).

Paying the Physician—Implications for Selected Policy Issues

Within each particular payment method, dramatically different incentives are possible according to the specific set of administrative practices employed. For example, fee-for-service in combination with fee schedules could encourage physicians to select surgery as a

specialty or primary care, depending upon the relative value system employed. Capitation could encourage or discourage hospitalization of patients depending on the extent to which primary-care physicians bear the financial risk for hospital and specialty care.

The potential effectiveness of any "economic" market strategy for achieving a particular objective, such as remedying geographic maldistribution of physicians or containing rising costs, may be determined by two overriding principles.

The first principle concerns risk-sharing between the individual physician and the remainder of the health sector. Because the physician is the key individual who makes patient-care decisions, guarding access to the system, admitting and releasing the patient from the hospital, ordering diagnostic tests, prescribing drugs, and suggesting and performing surgery, the physician affects not only the \$32 billion physician sector, but also the \$131 billion non-physician sector. With risk-sharing, the multiplier effect of any physician reimbursement policy is increased, since the cost of the non-physician health sector will be partially borne by the physician. With this approach, hospital services can no longer be regarded as free to the physician, since overbedding, unnecessary hospitalization and excessive availability or use of technology become explicit costs to the physician (Redisch, 1978).

The second principle is that public policy makers may wield greater power to constrain physician expenditures and services under a salary or capitation arrangement than a fee-for-service one. Organized medicine seems well aware of this possibility. With pressure from state medical societies, 46 states have passed legislation outlawing the "corporate practice of medicine." Many states have interpreted this legislation as outlawing the salary arrangement for compensating physicians for patient care activities.

The greater the extent that physicians can induce demand under fee-for-service, the less effective will be the price incentives that policy makers might develop to remedy perceived problems. In Canada, the physician fee index increased only 6.3% per year from 1965-1972, but physicians' net incomes increased by 10.1% per year and per capita expenditures for physicians' services by 12.4% (Lewin and Associates, 1976). West Germany limited fee increases to an average of 2.3% in 1974, but higher utilization of diagnostic procedures resulted in an increase in expenditures of approximately 14% (Reinhardt, 1976). Based upon a sample of 5000 solo-practice

physicians in California, the Urban Institute reports that wage-price controls “were successful in controlling the rise in physician fees . . .” but not “the rate of increase in Medicare expenditures for physician services” (Holahan, Hadley, Scanlon et al., 1978). Physicians increased the quantity of services to Medicare patients by approximately 10% per year during the control years. Following the expiration of controls, Medicare reimbursements increased by nearly 11% per procedure, but the volume of services declined slightly (Holahan et al., 1978).

In the next sections, the effect of the three major physician reimbursement methods upon five selected dimensions of medical practice will be discussed: 1) utilization of physician and non-physician services; 2) treatment setting; 3) location decision; 4) specialty choice; and 5) efficiency of an individual physician’s practice. For each physician payment method, implicit incentives will be discussed in terms of achieving selected policy objectives.

Utilization of Physician and Non-Physician Services

We noted previously that fee-for-service incentives encourage the physician to provide a larger quantity and more intense mix of services. The financial incentive associated with capitation leads to maximization of patient enrollments while providing the minimal necessary level of services required to the individual enrollee. Under the salary arrangement, the quantity of services provided by an individual physician is unrelated to the level of the physician’s remuneration.

This hypothesized behavior is supported by results from a number of studies. The evidence is particularly strong in the area of surgery and hospitalization. In the late 1950s, New York’s Group Health Insurance (GHI) and the New York Health Insurance Plan (HIP) both provided a wide range of services to a similar patient population at a marginal out-of-pocket cost of nearly zero. HIP contracted with groups of physicians on a capitation basis while GHI physicians were paid on a fee-for-service basis. The surgery and hospitalization rates for HIP enrollees were almost one-half the rate for GHI enrollees (Anderson and Sheatsley, 1959). Gaus, Cooper, and Hirschman (1976) compared various aspects of HMO performance with that of the non-prepaid, fee-for-service system for the Medicaid population. It was found that Medicaid beneficiaries

enrolled in two medical foundations exhibited no statistically significant differences in hospital use when compared with a matched sample of Medicaid beneficiaries utilizing the fee-for-service system. These foundations accepted capitation payment for their Medicaid enrollees, but reimbursed affiliated physicians on a fee-for-service system. In contrast, Medicaid beneficiaries enrolled in a group of HMOs with non-fee-for-service physicians were observed to have 356 days of hospital care per 1000 persons per year. This was a remarkable 62% lower than the 934 days per person per year measured for the fee-for-service Medicaid control group (Gaus et al., 1976). On a macro level, the British capitation-salary system observes a per capita surgery rate about one-half that of the U.S. fee-for-service oriented system (Bunker, 1970). Similarly, Adelstein found that the number of X-rays per capita is substantially greater in the U.S. than in other countries where radiologists (and other physicians practicing in hospitals) are reimbursed on a salaried basis (Adelstein, 1973).

Although it may be easier to support empirically the hypothesis that fee-for-service physician payment leads to higher utilization levels than salary or capitation, it is more difficult to determine if there are too many operations, X-rays, and laboratory tests under fee-for-service, or too few under capitation or salary. As support for the former notion, we note that many prestigious, high-quality medical centers—such as the Mayo Clinic—are staffed by salaried physicians.

Treatment Setting

Glaser (1978b) notes a concern throughout the Western world over the increasing costs of hospitalization. In the United States, four aspects of our present fee-for-service physician reimbursement approach can be identified as contributing to the hospitalization rate.

1. More Comprehensive Insurance. Public and private insurance coverage (but particularly private) tends to be more comprehensive the more institutionalized the care. Most private insurance companies insure physician services in the hospital, but offer more limited coverage in ambulatory settings. Within the hospital, physician and other services in the intensive care unit are covered at higher rates than in non-intensive hospital areas and services provided in

both of these areas are covered more extensively than home health or nursing home care. For example, when a patient is placed in an intensive care unit, he may receive the equivalent of private duty nursing, at near zero out-of-pocket cost to the patient.

Thus, a perverse set of incentives is developed, whereby the lower the cost at the margin to the patient, the higher are the costs to society, and the higher are the marginal revenues to the physician. This encourages the physician to suggest higher utilization of services in expensive treatment settings.

2. Free Hospital Services to Physicians. Hospital inputs, such as equipment, personnel, supplies, are essentially free to the physician. Most third-party payors reimburse hospitals on a cost or full charge basis with no patient cost-sharing after the deductible is met. Of all hospital revenues, 92% is paid by third-party payors, compared to 20% for ambulatory visits (Gibson and Fischer, 1978). Therefore, the mutual economic interests of the patient and physician lie with expensive inpatient care covered by third-party reimbursement.

3. Relative Value Schedules Used by Insurers. Contributing to the strong technological and institutionalized orientation in the U.S. has been the set of values embodied in present relative value schedules (RVS) used by insurers. As noted previously, fee schedules may use RVSs to define the maximum amount of third-party reimbursement for a particular procedure. The CPR systems use relative value schedules to determine payment when an individual physician has performed a specific procedure an inadequate number of times to calculate the customary charge. Traditionally, RVSs used by U.S. insurers have tended to value services provided in institutional settings and technology-related services such as laboratory and radiological services more generously than ambulatory services. For example, the 1964 California Relative Value System, employed by more than one-half of the Medicare carriers, assigns a relative value unit of 1 to a routine office and hospital follow-up visit, 80 relative units to a reduction of a fracture, and 1.2 units for a complete blood count (California Medical Association, 1964). An ordinary office follow-up visit requires 13 minutes of a physician's time, whereas a reduction of fracture requires 120 physician minutes. A complete blood count may require less than 1 minute of a physician's time. Moreover, since the average cost of operating primary care office

practices is approximately 60% of the gross revenues (American Medical Association, 1976), and hospital resources are free to the physician, \$10 for a follow-up hospital visit provides over twice the net income to the physician as \$10 for a follow-up office visit.

4. Fewer Ancillary Personnel in Office Practice. In addition to the rational substitution of “free” hospital resources for explicit and costly office resources, physicians are estimated to employ fewer than the optimal number of ancillary personnel, such as physician assistants, nurses, and technicians for their office practices. Reinhardt explains the failure to hire the profit maximizing number of employees as the physician’s aversion to managerial and entrepreneurial risk (Reinhardt, 1975). Since few physicians have any training in managerial skills, this aversion is not surprising.

Degree of Financial Risk for Physicians. Capitation can encourage or discourage physicians to treat patients in an office or hospital setting, depending upon the extent that physicians bear the financial risk for the use of non-office resources. In Britain, primary care physicians are paid on a capitation arrangement, but are not at risk for the hospital sector. If a patient requires extensive services, it is in the physician’s economic interest to refer the patient to the hospital where he or she will be cared for by salaried specialists. By doing so, the primary care physician will not have to bear the cost of treating the patient, while simultaneously sacrificing zero income from his predetermined capitated payment. The effect of Britain’s capitation of primary care services without institutional risk is to exacerbate the already-existing long waits for hospitalization that are attributable to the limited number of hospital beds per capita. This is countered somewhat by the use in hospitals only of salaried specialists, who do not have a financial interest in seeing patients hospitalized.

Physicians who bear the financial risk for the use of hospital and other institutional resources face a different set of incentives. Since the primary pool of physicians must now pay the hospital and specialists for the care of the hospitalized patient, the primary care physicians’ economic interests are to substitute less costly ambulatory care for more costly hospital care and to limit the number of specialty referrals. We feel quality of care could replace cost containment as the dominant policy issue under a “capitation with risk” reimbursement system.

California Medicaid Scandal. The potential abuses of such a system were demonstrated by the recent scandals of the Medicaid program in California. In 1971, the State contracted with prepaid health plans (PHP) on a capitation basis, expecting to lower utilization of resources in general and hospitalization rates in particular. Hospitalization rates did fall to phenomenally low levels. (Some PHPs with enrollments in the thousands had as few as 7 hospitalization days per month!) Subsequent investigations and lawsuits discovered that this was achieved by contracting with proprietary hospitals 30 to 50 miles from the catchment areas, long waits to see primary care physicians (who were usually non-fluent foreign medical graduates), short operating hours, denial of emergency services, and almost total absence of referrals to specialists (Rowland, 1973).

The California PHP scandals may be the other side of the Medicaid mill phenomenon. Both demonstrate the vulnerability of fee-for-service and capitation-type public financing programs to abuse and fraud by medical entrepreneurs, who in these two instances responded to diametrically opposite incentives.

Under the salary method, whether or not physicians will be encouraged to treat patients in ambulatory settings may be dependent upon the criteria that are used to evaluate physicians' pay increases. If compensation is based upon years of service, there will be no incentive to the individual physician to use the most efficient combination of inputs, including the treatment setting.

In contrast to fee-for-service or capitation payment, under the salary method both ambulatory and hospital resources are free to the physician. So, while there is no reward for efficient use of resources, there is also no economic motivation to substitute hospital resources for physician resources. The former, while "free" to the physician, are very costly to society.

Location Decision

A national concern exists over the geographic distribution of physicians in the United States. Physicians tend to concentrate in high-income communities within metropolitan areas resulting in much lower physician-population ratios in the inner city and rural areas than elsewhere in the country. In the 354 counties where the physician-population ratio is lower than 25 physicians per 100,000

population, access to medical care may be limited by the absolute scarcity of physician manpower.

Voluminous research has identified many factors that influence the physician's location decision. Most of this research is in agreement that financial factors are of minor importance in the physician's location choice (Institute of Medicine, 1976). However, these studies usually assess the effect of small changes in financial incentives. The principal lesson from the literature may be that the present system is in equilibrium and that "fine tuning" of the physician reimbursement mechanism will not significantly change the existing physician distribution, unless financial inducements are extremely powerful and the physicians in oversupplied areas are threatened with their very economic survival.

Glaser (1977) has noted that, in Western industrial nations, fees in urban physician-rich areas historically tended to exceed those in rural physician-poor areas. This pattern is found in the United States today. A recent HEW study reports that Medicare prevailing fees in counties with more than 300 physicians per 100,000 population are 33% greater than those prevailings in counties with fewer than 25 physicians per 100,000 population (Burney and Gabel, 1978). Most physician surveys have found that the Medicare fee pattern is representative of the general physician fee pattern.

Under fee-for-service, to encourage physicians to practice in underserved areas, fee schedules (or prevailings) could potentially be set relatively lower in physician-rich areas than in physician-shortage areas. However, if physicians can create their own demand and compensate for lower prices with induced higher quantities of services, this policy will have little effect on total outlays.

Capitation payment has great potential for serving as a self-correcting market mechanism. If payment per patient is set at identical rates throughout the nation, the average physician's income will be directly proportional to the area population-physician ratio. Currently, physicians' incomes for underserved areas such as Benton County, Missouri, where one physician serves 9300 individuals, are slightly higher than in Manhattan, New York, where one physician serves 122 individuals (American Medical Association, 1974). Under the previously described capitation arrangement, Benton physicians' incomes would be approximately 80 times as great as Manhattan's. In contrast to fee-for-service payment, supply-induced demand will result in zero marginal revenue to the physician.

Like capitation, salary payment has the attribute that physician-induced demand will result in zero marginal revenue to the physician. The critical question for a health care system whose physicians are predominantly salaried is the mechanism that allocates the physician slots and salaries. If a central planning agency is responsible for distributing positions, the overall distribution will reflect the competency of the planning agency and the strength of interest groups. If hospitals, clinics, and HMOs retain the autonomy to hire, the physician distribution may approximate the distribution of the financial strength of these employer institutions. If salaries are higher in urban than rural areas, then salary incentives could prove to be as perverse as present fee-for-service ones.

Specialty Choice

Geographic disparities in physician manpower tend to be reinforced by post-war trends in the supply of subspecialty medicine. From 1940 to 1973, there was a decrease in the ratio of general and family practitioners to population from 90.6 per 100,000 to below 30 per 100,000 (Institute of Medicine, 1976). Subspecialists are much more likely than general or family practitioners to locate in urban areas, to be near a large population base and a high technology hospital. The effect has been not only to limit access to primary health care services, but also to increase health care costs through provision of services by higher cost specialists with greater use of technology and hospital services.

With respect to specialty choice, different sets of incentives are possible for each payment method. Under fee-for-service systems, for example, relative value schedules can be designed to reward primary care physicians financially relative to surgeons. As noted previously, present systems favor surgeons and other specialists (radiologists, pathologists) who provide discrete, easily itemizable services.

Glaser observes that throughout the Western industrial world, urban specialists tend to dominate the committees that create relative value systems. Although recently general practitioners have tended to assume a greater role, the committees predictably produce systems favorable to urban specialists (Glaser, 1978a). Previously, it was noted that U.S. relative value systems set physically distinct procedures such as laboratory tests, X-rays, and tonsillectomies

higher than non-distinct services such as office visits. Physically distinct tasks are not only more likely to be performed by specialists in their rent-free workshop, the hospital, but are more likely to be covered by insurance. Sloan and Steinwald (1975) estimate that 80% of the surgical services are paid for by third-party payors, whereas only 20% of office visits are so paid. The cumulative effect of these factors is reflected in the specialty income distribution where, according to a 1973 AMA survey, specialists' net incomes averaged 33% higher than incomes of primary care physicians (American Medical Association, 1976).

The income and hour figures for individual specialties emphasize this point. The *Study of Surgical Services for the United States* (American College of Surgeons, 1975) revealed that the average work week for surgeons was 40.2 hours a week, and that surgeons perform an average of 3.5 operations per week. An Arthur Andersen study (1977) of hospital-based physicians' incomes disclosed that in 1975 the average full-time equivalent net compensation for pathologists, radiologists, and anesthesiologists paid a percentage of net or gross department billings, was \$138,200, \$124,000, and \$87,400, respectively. This is in contrast with the average self-reported pediatrician's income of \$50,000 and general practitioner's of \$44,800 (Sloan, Cromwell, and Mitchell, 1977).

There are no inherent reasons why relative value units should be tilted toward physically distinct tasks. Should policy makers attempt to reverse the existing set of incentives in our RVS systems, however, the result may be a number of distasteful repercussions. The volume of physically distinct procedures, such as laboratory and X-ray tests, and elective surgery, can easily be determined by the physician. If physicians set income targets, the reduced compensation per unit of service may result in significant increases in the volume of diagnostic procedures and elective surgery. With increased volume offsetting decreased price per service, expenditures may remain essentially unchanged, and human suffering from unnecessary surgery and from continued treatment related to diagnostic false positives may increase substantially.

Incentives under a salary system will be strongly influenced by the institutions that retain control over hiring. One possibility is that power to distribute speciality positions and salary levels will rest with a quasi-governmental planning body. Another option is for hospitals, clinics, and HMOs to retain autonomy. The resulting

specialty distribution may reflect the financial strength of the employing institutions.

Capitation payment is a payment method for individual physicians and appears to be feasible for primary care services only.⁶ Specialty incentives under a capitation system will be contingent on how non-primary care physicians are reimbursed, the extent and nature of primary care physician risk-sharing, and referral patterns in a community. Suppose specialists are reimbursed on a fee-for-service basis, with generous relative values for physically distinct procedures, and no risk-sharing by capitated primary care physicians for specialist services. This system would not encourage primary care as a specialty choice. An alternative system would be salaried specialists, with capitated primary care physicians sharing the financial risk of hospitalization and specialists' services. This arrangement could provide more professional control and entrepreneurial opportunity, and possibly greater net income to the primary care physicians.

Internal Efficiency of Physician's Practice

Few aspects of the market for physician services have been researched more extensively, received more federal support, and generated more inconclusive and contradictory empirical findings than the subject of the internal efficiency of a physician's practice. This research was initiated in the late 1960s and early 1970s, when there was a general consensus that a physician shortage existed and that more physician services were socially desirable. Improving physician efficiency "in the small," e.g., combining inputs in an optimal manner, would be a non-controversial method for introducing change in a sector where direct government intervention was viewed with great hostility. It was thought that improved efficiency would result in a movement toward a new equilibrium with something for everyone: improved access to care at a lower cost for consumers, and higher provider productivity and incomes.

Alternative physician reimbursement methods may have a less direct relationship to physician practice efficiency than to previously

⁶One interesting alternative may be to capitate groups of specialists, with individual physicians within the group sharing the net income.

discussed dimensions, such as geographic distribution. One reason for this is the lack of agreement as to the factors that limit costs and enhance productivity of physician practice. We shall concentrate the discussion of alternative payment incentives to three determinants of practice efficiency.

1. How does the payment affect the entrepreneurial function of the physician?
2. Does the payment method provide incentives or disincentives for physicians to join group practices?
3. Does the payment method provide incentives to use paraprofessionals in an efficient manner?

With respect to the first question, the physician is more likely to retain his entrepreneurial role under fee-for-service and capitation arrangements and yield it to a manager under salary. Physicians receive limited formal training in how to manage their practice and conduct their fiscal affairs. Reinhardt (1975) notes they may try to avoid managerial responsibility, even at the expense of reduced practice income. Their aversion to non-physician control is also well-known, however, as many hospital and clinic administrators will attest. So it is difficult to ascertain whether the loss of the entrepreneurial function will raise or lower practice efficiency.

Recent research has failed to demonstrate a strong association of scale economies with group practice. Bailey concluded from his analyses of Northern California internists that returns to scale for time-intensive physician services were constant and returns for capital-intensive services—such as X-ray and lab tests—were increasing (Bailey, 1970). The greater availability of ancillary services in group practices seemed to lead to higher utilization of these services. Today, with the widespread concern over the increasing use of diagnostic services, there is doubt if this efficiency “in the small” (producing ancillary services efficiently and profitably) is translated into efficiency “in the large” (producing the socially desirable number of diagnostic services). Newhouse found that the perverse incentives where physicians shared expenses, but not income, tended to increase unit costs (Newhouse, 1973).

Capitation, when combined with risk for referral and hospital services, implicitly encourages physicians to practice in groups. Salaried physicians by definition are paid by an institution—hospital, medical school, HMO, or clinic. Capitation in-

duces physicians to join groups as a method of spreading risks. Fee-for-service is neutral with regard to practice arrangement.

The answer to the third question is related to the previous two. Salary, directly, and capitation, indirectly, encourage group practice and relinquishment of the entrepreneurial function to non-physician managers who hypothetically are more inclined to hire and substitute paraprofessional labor for physician labor. There is some limited evidence to support this hypothesis. Boaz's study of the skill-mix of 19 family planning clinics revealed that these clinics are paraprofessional-intensive (Boaz, 1972). On the other hand, the National Advisory Committee on Health Manpower, in its study of Kaiser physicians, did not find any "unusual substitution" of paraprofessionals (Reinhardt, 1975).

Conclusions: Physician Payment and National Health Insurance

This paper has assessed the effect of alternative physician payment methods on the physician's specialty and practice location choice, on the utilization of services and treatment setting, and on the efficiency of the physician's practice. The analysis emphasized that incentives embodied within physician payment systems profoundly influence both the physician and non-physician sectors of our health system.

We have attempted to demonstrate the existence of perverse incentives under the fee-for-service system in existence in the U.S. We feel that physicians' demonstrated ability to impact on the demand for their services retards efforts to change specialty and geographic physician distributions and to control the growth in physician and hospital costs. The absence of risk-sharing encourages expensive and intensive institutional care.

National Health Insurance affords policy makers an opportunity not likely to recur for a generation for reorganizing our health delivery systems on a more efficient basis. Yet, a cursory glance at major NHI proposals reveals that the major differences with respect to physician reimbursement are whether to reimburse on a CPR or fee schedule basis. Such proposals are, therefore, more like simple extensions of health care financing to uncovered population groups than major structural reform of the health care system. The one exception is the Kennedy-Corman Bill. Under this proposal, a cap is set on aggregate physician expenditures, but not on those for in-

dividual physicians. No NHI proposal restructures the physician reimbursement system so as to make what is efficient and profitable to the physician, efficient and profitable to society. This omission is too costly and consequential to overlook.

References

- Adelstein, S. 1973. The Risk-Benefit Ratio in Nuclear Medicine. *Hospital Practice* 8 (January): 141-149.
- American College of Surgeons and American Surgical Association. 1975. Manpower Subcommittee. *Study of Surgical Services for the United States. Summary Report (SOSSUS)*. Tables III-VIII. Baltimore, Md.: American College of Surgeons.
- American Medical Association. 1974. *Physician Distribution and Medical Licensure in the United States, 1974*. Chicago, Ill.: Center for Health Services Research and Development.
- . 1976. *Profile of Medical Practice*. Chicago, Ill.: Center for Health Services Research and Development.
- Anderson, O., and Sheatsley, P. 1959. *Comprehensive Medical Insurance*. New York: Health Information Foundation.
- Arthur Andersen and InterStudy. 1977. *Study of Reimbursement and Practice Arrangements of Provider Based Physicians*. Report in fulfillment of Contract 600-76-0055. Washington, D.C.: U.S. Department of Health, Education, and Welfare.
- Bailey, R. 1970. Economies of Scale in Medical Practice. In Klarman, H. E., ed., *Studies in Health Economics*. pp. 255-273. Baltimore, Md.: The Johns Hopkins Press.
- Boaz, R. 1972. An Economic Criterion for Determining Skill Mix. *Journal of Human Resources* 7 (2): 66-81.
- Bunker, J. 1970. Surgical Manpower: A Comparison of Operations and Surgeons in the U.S., England and Wales. *The New England Journal of Medicine* 282 (3): 135-143.
- Burney, I., Schieber, G., Blaxall, M. et al. 1978. Geographic Variations in Physician Fees: Payments to Physicians Under Medicare and Medicaid. *Journal of the American Medical Association* 240 (13): 1368-1371.
- , and Gabel, J. 1979. Reimbursement Patterns under Medicare and Medicaid. In *Proceedings of the Conference on Research Results from Physician Reimbursement Studies*. Health Care Financing Administration. Washington, D.C.: U.S. Government Printing Office.

- California Medical Association. 1964. *1964 Relative Value Studies*. San Francisco, Calif.: California Medical Association.
- Dyckman, Z. 1978. *A Study of Physician Fees: Staff Report of the Council on Wages and Price Stability*. Washington, D.C.: U.S. Government Printing Office.
- Feldstein, M. 1970. The Rising Price of Physician Services. *The Review of Economics and Statistics* 52 (2): 121-133.
- Fuchs, V. 1978. The Supply of Surgeons and the Demand for Operations. *Journal of Human Resources* 13 (Suppl.): 35-56.
- Gaus, C., Cooper, B., and Hirschman, C. 1976. Contrast in HMO and Fee-For-Service Performance. *Social Security Bulletin* 39 (May): 3-14.
- Gibson, R., and Fischer, C. 1978. National Health Expenditures, Fiscal Year 1977. *Social Security Bulletin* 41 (7): 3-19.
- Glaser, W. 1977. *The Doctor Under National Health Insurance: Foreign Lessons for the United States*. New York: Bureau of Applied Social Research, Columbia University.
- . 1978a. *Health Insurance Bargaining: Foreign Lessons for Americans*. New York: Gardner Press and John Wiley.
- . 1978b. *Paying the Hospital: Foreign Lessons for the United States*. New York: Bureau of Applied Social Research, Columbia University.
- Holahan, J., Hadley, J., Scanlon, W. et al. 1978. *Physician Pricing in California: Executive Summary*. Urban Institute. Report in fulfillment of Contract 600-76-0054. Washington, D.C.: U.S. Department of Health, Education, and Welfare.
- Hsiao, W. 1975. A Model of Physician Group Pricing Behavior. Unpublished discussion paper. Cambridge, Mass.: Harvard University.
- Institute of Medicine. 1976. *Medicare-Medicaid Reimbursement Policies*. Washington, D.C.: National Academy of Sciences.
- Kessel, R. 1958. Pricing Discrimination in America. *Journal of Law and Economics* 1 (October): 20-53.
- Lewin and Associates, Inc. 1976. *Government Controls on the Health Care System: The Canadian System*. Report in fulfillment of Contract 05-74-177. Washington, D.C.: U.S. Department of Health, Education and Welfare.
- Newhouse, J. 1973. The Economies of Group Practice. *Journal of Human Resources* 8 (1): 37-54.
- Mathematica Policy Research. 1978. *A Study of the Responses of Canadian Physicians to the Introduction of Universal Medical Care Insurances: The First Five Years in Quebec*. Report in fulfillment of Contract 230-75-0166. Washington, D.C.: U.S. Department of Health, Education and Welfare.

- Redisch, M. 1978. Physician Involvement in Hospital Decision Making. In Zubkoff, M., Raskin, E., and Hanft, R., eds., *Hospital Cost Containment: Selected Notes for Future Policy*. pp 217-243. New York: Milbank Memorial Fund.
- _____, Gabel, J., and Blaxall, M. 1979. Physician Pricing, Costs and Incomes. In Scheffler, R., ed., *Annual Series in Health Economics*. Greenwich, Conn.: J.A.I. Press.
- Reinhardt, U. E. 1975. *Physician Productivity and Demand for Health Manpower. An Economic Analysis*. Cambridge, Mass.: Ballinger Publishing Company.
- _____. 1976. Health Manpower in the United States: Issues for Inquiry in the Next Decade. Unpublished paper presented to the Bicentennial Conference on Health Policy, Philadelphia, Pennsylvania, November, 1976.
- Roemer, M. 1962. On Paying the Doctor and the Implications of Different Methods. *Journal of Health and Human Behavior* 3(1): 10.
- Rowland, D. 1973. Testimony before Assembly Health Committee of the California State Legislature, Los Angeles, December 13, 1973.
- Sloan, F., and Feldman, R. 1978. Competition Among Physicians. In Greenberg, W., ed., *Competition in the Health Sector: Past, Present and Future*. Federal Trade Commission. pp. 57-131. Washington, D.C.: U.S. Government Printing Office.
- _____, and Steinwald, B. 1975. The Role of Health Insurance in the Physicians Services Market. *Inquiry* 12(4): 275-299.
- _____, Cromwell, J., and Mitchell, J. 1977. *A Study of Administrative Costs in Physician Offices and Medicaid Participation*. Report by Abt Associates in fulfillment of Contract 600-75-0212, U.S. Department of Health, Education, and Welfare. Washington, D.C.: U.S. Government Printing Office.
- Wennberg, J. E., and Gittelsohn, A. 1973. Small Area Variations in Health Care Delivery. *Science* 182 (Dec. 14): 1102-1108.

An earlier version of this paper was presented at the Eastern Economic Association Meetings, Hartford, Connecticut, on April 14, 1977.

The discussion and conclusion expressed in this paper represent solely the views and opinions of the authors, and not those of the Department of Health, Education, and Welfare, or the U.S. General Accounting Office.

Acknowledgments: The authors wish to thank Diane Rowland and Linda Magno for their helpful comments.

Address correspondence to: Jon R. Gabel, Health Care Financing Administration, Department of Health, Education, and Welfare, 330 C Street, S.W., Washington, D.C. 20024.