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Volume Title: Essays in the Economics of Health and Medical Care

Volume Author/Editor: Victor R. Fuchs, ed.

Volume Publisher: NBER

Volume ISBN: 0-870-14236-4

Volume URL: <http://www.nber.org/books/fuch72-1>

Publication Date: 1972

Chapter Title: The Basic Forces Influencing Costs of Medical Care

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Chapter URL: <http://www.nber.org/chapters/c3449>

Chapter pages in book: (p. 39 - 50)

# The Basic Forces Influencing Costs of Medical Care

*Victor R. Fuchs*

## INTRODUCTION

Until quite recently, an economist was rarely to be found in the company of the nation's leading physicians, and on those few occasions, he was likely to be flat on his back with one or more of his vital organs exposed to public view. It is my intention here to provide exposure of a different sort. The question—The basic forces influencing costs of medical care—is one which almost every physician would be prepared to tackle. My aim is to indicate how an economist goes about answering it. Economics is, above all else, a way of looking at questions. In Lord Keynes's words, "The Theory of Economics does not furnish a body of settled conclusions immediately applicable to policy. It is a method rather than a doctrine, an apparatus of the mind, a technique of thinking, which helps its possessor to draw correct conclusions."

To be sure, even among economists there is not always just one way of looking at things. Winston Churchill used to complain that whenever he asked Britain's three leading economists a question, he received four different answers—two from John Maynard Keynes. Nevertheless, there is a common fund of concepts, a common core of analysis, that nearly all economists use.

The basic analytical approach is a consideration of the factors affecting the demand for medical care and those affecting the supply—demand and supply, the two magic words. Some of us, when visiting hospitals, have discovered that by putting on a white coat and talking

NOTE: This material was presented in an address at the National Conference on Medical Care Costs, Washington, D.C., June 27, 1967.

rudely to nurses it is easy to pass as a physician. To be mistaken for an economist is often even simpler. All one need do is nod gravely and say "demand and supply."

### ***Definition of Terms***

Demand for and supply of what? I shall assume that medical care refers to the services rendered by physicians, dentists, and other health professionals, plus all the goods and services consumed in connection with their work, or upon their direction. Thus, the costs of medical care include the costs of hospitals, drugs, and the like. This lumping of diverse health services is a concession to convention and to the limitations of time. Ideally one should apply the demand-supply analysis separately to hospitals, dentists, drugs, and so on because the forces that influence the cost of one type of health service are often different from those that influence another.

What is meant by costs? At least three possible meanings can be distinguished. It could mean price, or cost of production, or expenditures. When people speak of the rising costs of medical care, they frequently are referring to rising expenditures, and this is the way I shall use the term.

### ***Expenditure Trends***

We all know that these expenditures have been growing rapidly. In round numbers, expenditures for medical care have risen from under \$4 billion in 1929 to over \$40 billion in 1965 and probably close to \$50 billion in 1967. Even as recently as twenty years ago, expenditures were only \$10 billion. Of course, expenditures for most other goods and services have also risen; it is therefore more meaningful for some purposes to look at the share of total spending allocated to medical care. This, too, has risen, from under 4 per cent in 1929 to about 6 per cent in recent years. Nearly all of this relative increase has occurred since 1947.

Before examining the factors responsible for this trend, it is worth noting that there is nothing wrong a priori with changes in industry and sector shares of gross national product. Indeed, such changes seem to be a natural concomitant of economic growth. For instance, the relative importance of agriculture has declined precipitously in most western countries. During the last half of the nineteenth and the first half of the twentieth century there was a significant rise in the relative importance of manufacturing. Now we are witnessing in this country the growth of what I have described elsewhere as the "first

service economy."<sup>1</sup> If agriculture's share of GNP falls from over 9 per cent to under 4 per cent, as it did in the United States between 1947 and 1965, some other industries must show increases. There is no magic in the 4 per cent figure for medical care; it is now 6 and it could be 8 or 10.

### ***Reasons for Concern About Costs***

Why then should there be a national conference on the costs of medical care? Let me suggest three reasons for concern.

First, questions arise concerning the contribution that these increased expenditures make to health. Although we spend much more per person for medical care than any other country, we do not enjoy the highest health levels. On the contrary, many European countries have age-specific death rates considerably below our own. The relatively high infant mortality rate in this country is disturbing, and difficult to explain. The disparity in death rates for middle-aged males is even more shocking, and has more serious economic implications. In the United States, of every hundred males who reach the age of forty-five, only ninety will reach fifty-five. In Sweden the comparable figure is ninety-five. During this critical decade when most men are at the peak of their earning power, the U.S. death rate is double the Swedish rate, and higher than that of almost every western nation. It certainly seems legitimate to ask why. This is not necessarily with a view to spending less for medical care—I doubt if anyone can foresee a decline—but with a view to developing more effective use of the resources that we are now devoting to health.

A second reason why we should be concerned about medical care costs is the peculiar structure of the medical care industry. Most industries in the United States consist of profit-seeking firms actively engaged in competition with one another. The fundamental rationale of the American economic system is that the hope of profit (and the fear of loss) under conditions of open competition are the best guarantees of efficiency, appropriate price and rate of output, and fair returns to the various factors of production. By contrast, the medical care industry is organized along radically different lines. Nonprofit operations are the rule in the hospital field; there are severe restrictions on entry and competition in medical practice; and advertising and patent control dominate the market for drugs. Thus, there is no a priori basis

<sup>1</sup> Victor R. Fuchs, *The Growing Importance of the Service Industries*, Occasional Paper 96, New York, NBER, 1965.

for believing that the prices and quantities of medical care approach those that would result from perfectly competitive market conditions.

A third reason is that a large and still increasing portion of the cost of medical care is paid by third parties. In particular, the taxpayer is being called upon to pick up a substantial share of the bill. Because payment for medical care is increasingly regarded as a collective responsibility, it is natural and appropriate that there should be collective expressions of concern, such as this conference reflects, about the quantity and quality of medical care, and about its price.

These quantities and prices are determined by demand and supply. Let us consider each side of the equation in turn.

### DEMAND FOR MEDICAL CARE

Economists say that the demand for any good or service depends upon relative prices, income, and tastes.

#### *Price*

How does price affect expenditures? Perhaps the most firmly established proposition about the demand for medical care is that it is relatively inelastic with respect to price. If the price rises relative to other prices, the decline in the quantity demanded will be proportionately less than the increase in price. The result is an increase in medical care expenditures. If, other things remaining unchanged, price rises by 10 per cent and quantity demanded falls by only 5 per cent, expenditures will rise by approximately 5 per cent. Some studies suggest that the price elasticity of demand for medical care may be as low as 0.2, i.e., quantity demanded declines by only 2 per cent when price rises by 10 per cent. But present knowledge does not permit fixing a specific value beyond saying that the elasticity is surely below unity.

An aspect of the price of medical care that is not widely recognized is that it really has two components. One is the nominal price charged by the physician or hospital; the other is the value of the patient's time.<sup>2</sup> For instance, the nominal price of a visit to a physician might be ten dollars, but the trip to and from his office, the wait, and the actual examination will probably take an hour or more. This time might be worth more or less than ten dollars depending upon the alternatives available to the patient.

Once it is understood that the price of medical care includes both

<sup>2</sup> Gary S. Becker, "A Theory of the Allocation of Time," *Economic Journal*, 75, September 1965, pp. 493-517.

components, a number of interesting implications become apparent. Even if no sliding fee scale is used, the total price of medical care tends to vary with earning power. The price is lower for retired people and the unemployed than for those with jobs, generally lower for women than for men, and so on. Also, even when the nominal price is reduced to zero, as under prepayment plans or socialized medicine, the true price is not zero.

### **Income**

One of the factors to be considered in any demand study is real per capita income. During the past twenty years this has risen by over 50 per cent, and there is no doubt that the demand for medical care increases with income. What is less clear is whether the demand for medical care is elastic or inelastic with respect to income, i.e., whether a given percentage increase in income leads to more, or less, than the same percentage increase in medical care expenditures, other things remaining the same. This question is only gradually yielding to attack as more and better data become available and analytical techniques are sharpened. Some recent studies suggest that the elasticity may be significantly below unity, and few investigators believe that it is greater than unity. At most, the demand for medical care seems to increase approximately in proportion to income. If this is true, we cannot attribute any of the increase in medical care's *share* of total expenditures to rising income.

### **Insurance**

A special factor that complicates the analysis of the demand for medical care is the growth of insurance and prepayment plans. Once a person is covered by such a plan, the effective price to him of additional units of medical care depends only upon the value of his time. This may explain a large part of the increase in the quantity of medical care demanded, and may also help explain the apparent insensitivity of insured consumers to increases in the nominal price of medical care. It is worth noting that hospital care has shown the most rapid rate of increase in expenditures, and it is hospital care that has been most thoroughly covered by insurance and prepayment.

The curious behavior of dental expenditures also offers support for this hypothesis. All the available evidence suggests that at any point in time the demand for dental care is more elastic with respect to income than is the demand for physicians' services.<sup>3</sup> Nevertheless, dur-

<sup>3</sup> See Morris Silver's essay "An Economic Analysis of Variations in Medical Expenses and Work-Loss Rates" below.

ing these recent decades of sharply rising income, expenditures for dental care have increased less than have expenditures for physicians' services. One possible explanation is the very small role played by insurance and prepayment plans in the dental field. Expenditures for eyeglasses and appliances and for drugs, two other components of medical care that are typically paid for directly by the consumer, have also risen much less rapidly than have expenditures for hospitals or physicians.

This should not come as a surprise. The advocates of insurance and prepayment had something like this in mind. They wanted to remove any financial barriers to obtaining medical care. But it is a basic law of economics that if you lower the price, the quantity demanded will increase. A critic of the British National Health Service put the matter cogently, albeit a bit strongly, in a recent issue of *The Lancet*: "If taxi fares and meters were abolished, and a free National Taxi Service were financed by taxation, who would go by car, or bus, or walk . . . the shortage of taxis would be endemic, rationing by rushing would go to the physically strong, and be more arbitrary than price, and 'the taxi crisis' a subject of periodic public agitation and political debate."<sup>4</sup>

This does not mean that insurance and prepayment should be abandoned. But it does suggest a need to discover techniques—possibly coinsurance, deductibles, or experience rating—to check prices and expenditures without interfering with essential health services.

### ***Tastes***

All factors other than income or price that affect demand are put by economists in a catchall category called taste. In the case of medical care, this would include the factors that affect the health levels of the population and the attitudes toward seeking medical care at any given level of health. Taste for medical care, therefore, would be related to: (1) demographic variables, (2) education, (3) environment, (4) ways of living, and (5) the genetic stock of the population.

Research on these matters is only in its infancy, and there are few reliable findings to report. We know that an increase in the proportion of elderly people in the population tends to increase the demand for medical care, other things remaining the same. The effect of increased education is unclear. It probably leads to improved health levels, and thus less need for medical care, but may also lead to greater demand for medical care at any given level of health.

<sup>4</sup> Arthur Seldon, "National or Personal Health Service," *The Lancet*, 1, March 25, 1967, p. 675.

Most observers believe that recent environmental changes, particularly the increase in real income per capita, have contributed to better health status. I think that this inference is incorrect. Some tentative findings from my research suggest that the environmental and life-style changes of the past two decades have had either a neutral or negative impact on health for most of the population. One piece of evidence in support of this hypothesis is the stability of age-adjusted death rates in the United States in the face of large increases in medical care and improvements in medical science.<sup>5</sup>

All these questions, however, are in need of more study. The National Center for Health Statistics is now developing vast new bodies of relevant data. A combined assault on these data by health experts and social scientists could yield information of great importance in our continuing efforts to understand and improve the nation's health.

### *Accounting Illusion*

In concluding this discussion of demand, it should be noted that part of the observed increase in medical care costs is an accounting illusion. It does not involve any increase in real costs—only money costs. It is the result of an increase in the proportion of medical care produced and sold in the market, and a decline in the proportion provided outside the market by family, friends, and neighbors. Only the former is included in the GNP. A generation ago, a considerable amount of bed care and associated services for the sick were provided for at home. Surely there is relatively less of this today.

Some of the reasons for this shift other than increases in income and insurance coverage, are: (1) urbanization, (2) the fragmentation of the family, and (3) the increased labor force participation of women. We do not know how much of the increase in observed medical care costs can be attributed to this shift, but it may be substantial. One corollary is that "home care" programs and other current plans to transfer costs back out of the hospital will reduce the money costs of medical care by more than they will reduce real costs.

## **SUPPLY OF MEDICAL CARE**

I turn now to the supply of medical care. In studying the supply side of an industry there are three main elements to look at. The first is the supply of the factors of production—labor and capital—flowing into the industry. The second is changes in productivity, and the third is

<sup>5</sup> See the essay "The Production of Health, an Exploratory Study" below.



the degree of monopoly control, or other market imperfections that may influence the supply actually available to consumers.

### ***Supply of Productive Factors***

With respect to the supply of labor going to the health industry, the crucial question is whether the industry has to pay inordinately high wages in order to attract an increasing fraction of the total labor force. There is some evidence to suggest that the answer to this is "no." In technical terms, the supply of labor for the medical care industry is very elastic.<sup>6</sup> This is true, incidentally, of most other industries as well. Except in the extremely short run, the U.S. labor force is highly mobile and adaptable; studies of interindustry differences in earnings consistently refute the hypothesis that expanding industries must pay unusually high wages to bid away labor from other industries.

Between 1950 and 1960 medical care employment rose by 54 per cent, compared with only 14 per cent for total employment. Throughout the postwar period the annual rate of increase has been about 5 per cent for medical care employment, compared with a little over 1 per cent for the economy as a whole. Despite this rapid expansion, wages for medical care personnel seem to have been rising at about the same rate as in many other industries. This last point has not been thoroughly documented, but seems to be a reasonable inference from the data available.

An analysis of the supply of capital to the medical care industry is much more difficult to undertake because most capital is used in hospitals, and most hospitals are nonprofit. Thus, the flow of capital is not determined by the rate of profit (as it is in most industries), but by government decisions and by philanthropy. It is possible, however, to devise methods of financing and reimbursing hospitals that would make the flow of new investment more responsive to market-type mechanisms. The Soviet Union and other socialist nations have been attempting to do precisely this with substantial portions of their "non-profit" economies.

### ***Productivity***

Changes in the supply of any good or service, in the sense of changes in the price-quantity relationships, depend primarily on changes in productivity. It is a commonplace to argue that productivity in medical care has advanced less rapidly than in the economy as a whole; but in

<sup>6</sup> It certainly would be in the absence of medical licensure and other restrictions on entry.

the absence of reliable measures of the output of medical care this must remain a matter of speculation.

The development of such measures is an extremely difficult task because of our ignorance concerning the precise contribution of medical care to health. In addition, output is not limited to improvements in health but takes other forms, including validation services and the "hotel" aspects of hospital care.<sup>7</sup>

There is some reason to believe that the available measures understate the true output of the medical care industry. A visit to a physician today is surely more productive than one twenty years ago, and this is even more true of a patient-day in a hospital. On the other hand, it is possible that many of the expensive procedures that are now part of "best practice" techniques are really not worth the money in the sense that their marginal contribution is small and the same amount of resources used in other ways would yield more utility to the consumer.

The common practice of reimbursing hospitals on the basis of their costs, as under Medicare and many other public and private programs, appears to be an open invitation to inefficiency. At best, the ability of hospital management to improve productivity is imperfect because of the independence of the attending staff. Under present arrangements, almost no one has any incentive to be concerned with the efficiency of the hospital as a whole.<sup>8</sup>

### ***Physicians***

The physician plays a key role in the supply of all medical care; his decisions and behavior affect almost everything else. Physician supply is now more specialized than formerly. This growth of specialization is often attributed to exogenously determined advances in medical science, but such an explanation ignores the role played by changes in demand. Two hundred years ago, Adam Smith observed that the division of labor is limited by the extent of the market. The relevant market for any one physician's services has grown tremendously because of the growth of income and population, the increased concen-

<sup>7</sup> See the preceding essay in this volume.

<sup>8</sup> With few exceptions, each hospital is independently "owned" and managed. In other industries an exceptionally able manager may gradually come to exercise supervision over an increasingly large pool of resources through the growth of his firm, through mergers, and through establishment of branch plants; this pattern is absent in the hospital field. Also, it is much easier for inefficient management to remain in charge for long periods of time.

tration in urban centers, and improvements in transportation. All these trends would lead to increased specialization, even if medical technology remained static. Moreover, given an increase in real income people want to buy more medical service for any given health condition. One way of buying more service would be to visit several different general practitioners, or to visit the same one several times. Alternatively, one can buy more medical service in each visit through the use of specialists. The specialist in medicine usually has more, not merely different, training than a general practitioner. The more valuable the patient's time, the greater will be the demand for "high powered" doctors. This demand-induced growth of specialization is thus a cause as well as a result of advances in medical science. Without a specialized practice, without the demand for specialized equipment and procedures, these advances would probably come more slowly.

Physicians have frequently been criticized because of their high earnings and their alleged desire to restrict their numbers. Such criticism, it seems to me, does not go to the heart of the matter. Most of the difference between the earnings of physicians and those of other occupations should not be attributed to their control over entry and competition, but to their long hours of work, the lengthy period of education required, and the absence of pensions, paid vacations, and other fringe benefits. Moreover, physicians' earnings account for less than 20 per cent of total health expenditures, and whatever the extent of their monopoly return, it could only be a small part of this fraction.

A more valid criticism, it seems to me, can be directed against physicians for their opposition to changes in the methods of producing and financing medical care. The medical profession, or at least a significant and articulate portion of it, seems to believe that there can be rapid and far-reaching technological change without disturbing the traditional organization of medical practice. This belief is irrational. One clear lesson from economic history is that technological innovation means organizational change.

One final aspect of physicians' market control is the extremely narrow range of options available for someone seeking personal medical care. One bit of evidence is the size distribution of earnings in the entire medical care industry which can only be described as unnatural. Nearly all American industries have a distribution which reflects a fairly smooth vertical hierarchy of personnel. There are usually large numbers performing routine functions, and relatively fewer persons at each successive stage of increased power and responsibility. Only in

the medical care industry do we find almost a void in the middle of the distribution and a peak at the high end.<sup>9</sup>

Whether consumers would use less expensive medical care personnel, if available, would depend upon a number of factors—the institutional setting and supervision, the presence of a financial incentive, and so on. That it is technically possible for professionals with fewer than ten to twelve years of training beyond high school to render useful medical care has been repeatedly demonstrated in a variety of settings.

As some of my earlier remarks suggested, patients with high incomes and patients with acute conditions would undoubtedly continue to seek the highest possible level of training and experience. But the demand for something less might be large in cases of chronic illness, or in isolated communities, or among those with low incomes.

### ***New Medical Techniques***

One special feature of the supply of medical care is the appearance of radically new medical techniques and procedures. Normally, when economists speak of the supply of a commodity they assume that the quality of the commodity remains unchanged. This is almost never strictly true, even for such staples as coal or wheat, but frequently the change in quality comes gradually and can be objectively measured, and an increase in quality can be thought of as a decrease in price.

In the case of medical care, some of the new procedures (such as renal dialysis and open heart surgery) are so radically different from anything previously available that they cannot conveniently be analyzed in this manner. Part of the increased expenditure for medical care is undoubtedly attributable to the appearance of these new techniques for treating conditions that simply could not be treated before.

## **SUMMARY OF THE DEMAND-SUPPLY ANALYSIS**

What conclusions emerge from this analysis of demand and supply? By now it should be clear that cost is the result of many forces, that rising costs are not necessarily bad (or necessarily good), and that economists have some interesting questions to ask, but are far from being able to supply all the answers. Many of the estimates have a large range of uncertainty, but sustained scientific investigation can reduce that range and increase understanding.

<sup>9</sup> See "The Distribution of Earnings in Health and Other Industries" by Fuchs, Rand, and Garrett below.

If we take as our analytical task the explanation of why medical care now accounts for 6 per cent of gross national product instead of the former 4 per cent, the following developments all seem to have played a role:

1. An increase in medical care prices vis-à-vis other prices facing a relatively inelastic demand. These price increases are probably related to the institutional rigidities that surround the organization and production of medical care.

2. The growth of insurance, prepayment, and other forms of third-party payment.

3. A shift from nonmarket to market production. If we measured all costs, the increase for medical care would not be as great as the GNP accounts indicate.

4. The introduction of radically new medical techniques and procedures to treat conditions that formerly could not be treated at all.

5. More tentatively, I have suggested that there may be greater need for medical care now to offset changes in the environment and in ways of living that are detrimental to health.

There is, admittedly, considerable question about the relative importance of these various factors, but the new emphasis being given to research on these problems should help us to make the quantitative estimates that are needed for planning and control.