The Pricing Behavior of Medical Groups

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This study discusses a model of the pricing behavior of medical groups. Using data collected, by a mail survey, from medical groups in North Carolina, an empirical test of the model is performed. The results suggest that the prices charged by medical groups are positively influenced by the per capita income of the county in which the group is located, and the per physician utilization of medical, technical, and office personnel. They also suggest that for groups in the sample, a non-physician manager and a non-salaried system of remuneration to member physicians are negatively related to the price of medical services. The results of this study also indicate that the managerial structure of group practice is an important area for further research.

Introduction

Improving the distribution and reducing the price of medical services are two of the major goals of our health care system. Difficulties in moving toward these objectives have produced increased pressure to alter the current system. One of the most frequent proposals is to increase the number of physicians in group practice. The American Medical Association (1971) reports that group physicians are presently 17.6 percent of the active nonfederal physicians, and 19.9 percent of all physicians engaged in patient care, excluding interns and residents. Furthermore, there is an increased interest in group practice because the prepaid groups fit within the definition of Health Maintenance Organization (HMOs). The purpose of this study is to investigate the pricing behavior of medical groups.

After defining group practice, we discuss two important economic characteristics of group practice. In the next section we adopt Feldstein's "excess demand model" and expand it to include some important aspects of group practice—the size and type of group, utilization of non-physician personnel, type of manager, and the type of remuneration scheme used. An empirical test of this model, using data collected from medical groups in North Carolina, indicates that different managerial structures and pecuniary incen-

tives to physicians are associated with variations in medical prices. The final section discusses some of the implications these findings have for social policy and points out needed areas for future research.

Defining Group Practice

The definition of group practice used by the American Medical Association (1971:4) is as follows:

> The application of medical services by three or more physicians formally organized to provide medical care, consultation, diagnosis, and/or treatment through the joint use of equipment and personnel, and with income from medical practice distributed in accordance with methods previously determined by members of the group.

Two important economic characteristics emerge from this definition. One is the joint use of equipment and personnel, which raises questions (Reinhardt, 1972; Scheffler, in press; Smith, et al., 1972; and Newhouse, 1973) related to the production function of medical groups. Of prime concern is the possibility that medical groups may be able to achieve certain economies of scale. Simply defined, economies of scale are achieved when, after all inputs are optimally adjusted to given rates of output, the unit cost of production can be reduced by increasing the rate of output (Reinhardt, 1972; Newhouse, 1973; Bailey, 1970; and Scheffler, 1974a). However, recent work by Kimbell and Lorant (1973), using a number of aggregate production functions and data collected on 1,181 groups containing 53,819 physicians in 1971, suggests that multispecialty groups exhibit decreasing returns to scale and that the optimal size for single-specialty groups is quite small, ranging from two to five doctors.

The second economic characteristic is the different income-sharing schemes used by groups and their effect on the group's economic behavior. There are three distinct types of income-sharing schemes used by medical groups: (1) fee for service, (2) salary, and (3) a percentage or point system. Under fee for service, physicians receive remuneration based on the volume of income generated for the group by their services. This system is identical to that used by solo practitioners. A salary system for group physicians means that each physician is paid a fixed sum, usually on an

annual basis. Since income differentials are significant between different medical specialists, adjustments according to medical specialty are usually made. With the percentage or point system, physicians' remuneration is based on a number of considerations which may include years of practice, years with the group, specialty of the physician, investment in overhead, increasing the status of the group, the ability to attract new patients, the number of cases or patients treated by the physician, as well as other factors the group deems appropriate.

A Pricing Model for Physicians in Group Practice

We now turn our attention to the development of an empirical model of the pricing behavior of physicians in group practice. Following Feldstein (1970), we assume that physicians have discretionary power over their fees (i.e., they are price setters), and set them so as to maintain excess demand in the market for their services. In addition, our empirical model considers the effect of a number of important characteristics of the group. They include the composition of the medical specialties in the group, its size, the type of manager employed, and the income-sharing scheme which is used.

On a national scale (American Medical Association, 1971), in 1969 there were 6,371 medical groups; approximately 50 percent were single specialty, 37 percent were multispecialty, and the remaining 13 percent, general practice. One basic difference between these groups is that multispecialty groups provide a wider range of medical services than general-practice and single-specialty groups. It is possible that pricing policies may vary with the number of different medical services sold by the group. Therefore, we have included a dummy variable in the empirical model to test for any price differences between multispecialty, as compared to single-specialty and general-practice groups.

The relationship between the size of the medical group and medical care prices is an important public policy concern. If larger groups are able to lower their prices to patients, then recent policies to stimulate the growth of groups would have justification. Since physicians are clearly the most important factor of production, we include the number of physicians in the group as a proxy measure for size.

Another characteristic which may affect the pricing behavior of medical groups is their management structure. The type of manager employed by the group indicates a difference in the managerial structure of the group (Scheffler, in press), e.g., the manager may be a physician or a non-physician. Both types of managers, in order to justify their salaries, should be concerned with reducing costs. Their effectiveness in lowering costs may differ, however. In order to test for the effect of the type of manager used by the group, we include a dummy variable to measure whether the group is managed by a physician or a non-physician. Our expectation is that non-physician managers, because of their specialized skills, may be able to lower costs and thus permit the group to set lower fees.

The final economic characteristic to be considered is the type of income-sharing scheme of the medical group. Although the variety of income-sharing arrangments is large (as described earlier), our data permit us to consider only the difference between salaried and non-salaried schemes. A predetermined salary scheme may provide no incentive for physicians to improve their productivity, or to behave in a manner which would reduce costs.[1] Alternatively, a fee-for-service or point system may provide an incentive. A dummy variable is included to examine the relationship between the type of income-sharing scheme and the price of the medical services sold by the group.

The Data

Data were collected via mail survey of medical groups in North Carolina during 1972. Appendix A contains a copy of the questionnaire utilized. Some 80 medical groups were surveyed, and 61 responses were received, a figure which represents approximately 40 percent of the groups in North Carolina in 1969 (American Medical Association, 1971).

Table 1 presents the mean and the standard deviation of a number of variables derived from the survey results. Using the number of physicians as a measure of size, we observe that most groups are small. Groups in the survey vary from three to 26 physi-

[1]Newhouse (1973) has found that cost sharing by groups also increased average costs.

TABLE 1

Survey Results of Medical Groups in North Carolina: 1972 [a]

	Mean	*Standard Deviation*
Number of full-time doctors in the group	5.44	5.15
Medical personnel per physician	1.08	0.47
Technical personnel per physician	0.26	0.24
Office personnel per physician	1.44	0.67
Presence of non-physician manager	0.48	0.51
Heterogeneous groups	0.35	0.48
Fee-for-service remuneration	0.05	0.23
Salary remuneration	0.47	0.50
Percentage or point system of remuneration	0.35	0.48

[a] There is a total of 61 groups in the sample.

cians, with a mean of 5.44 physicians and a standard deviation of 5.15 physicians. On the national level (American Medical Association, 1971) we find that in 1969, 95.3 percent of all medical groups had from three to 15 physicians, and that these groups employed 68.8 percent of all group-practice physicians. Therefore, we may conclude that an analysis of groups in this size range of our sample covers a significant portion of medical groups in the United States. Of interest is the fact that 36 of the 61 groups used a salaried system of remuneration. Of the remaining 35 groups, six used a fee for service, and 29 a percentage or point system.

Data on the employment of non-physician personnel per physician indicate that our sample of medical groups in North Carolina has characteristics similar to medical groups in the United States as a whole. In order to facilitate a comparison of non-physician medical personnel with national data, we have combined all categories of technical and medical personnel per physician in our sample into one category. This produces a ratio of 1.34 non-physician medical personnel per physician, which is similar to the national figure of 1.30. The number of office personnel per physician was 1.30 for the nation sample (American Medical Association, 1971) of medical groups also, as compared to 1.44 for groups

in North Carolina. Thus, we conclude that the utilization of non-physician personnel by the groups in our sample is comparable to that found for the aggregate of medical groups in the United States.

In order to study the pricing behavior of medical groups, price data were collected on the customary price for three different medical services. Previous studies have used the price of an office visit as the unit of analysis. The unit is unsatisfactory, however, because an office visit is a heterogeneous output. Our approach was to select three basic medical services which are quite common and represent a significant portion of the volume of medical services. The services used were: (1) an initial complete physical examination, (2) a blood count, and (3) a set of chest X rays. These services have the additional characteristic of representing services which utilize different and distinctive production processes. Physical examinations usually require physician and non-physician medical personnel; a blood count may be produced with a physician; and X rays are more efficiently produced with technical personnel. Although disaggregation on the service level is an improvement in output measurement, it still has inherent problems. Each service is in fact the sum of a number of medical procedures that are separate and distinct. Some groups may set prices and bill for each individual service, while others do not. For example, a physical examination may involve laboratory tests. The group could include the laboratory tests in the price of the physical or bill for it separately. Different billing procedures make the collection of any price data a difficult task. However, with these caveats in mind, price data by service type still appear useful for study purposes.

Empirical Results

Using the data described above, our price equation for medical groups was specified in the following manner:

P_i = $f(Y, S, H, A, T, O, M, R)$, where $i = 1, 2, 3$, and
P_1 = price of physical examination
P_2 = price of blood count
P_3 = price of X rays
Y = per capita income of the county where medical group is located

S = number of full-time physicians in the group

H = type of group, a binary variable; one represents a multi-specialty group, and zero a general-practice or single-specialty group

A = number of medical personnel per physician

T = number of technical personnel per physician

O = number of clerical personnel per physician

M = type of manager, a binary variable; one represents a physician manager, and zero a non-physician manager

R = type of remuneration scheme used by the group, a binary variable; one represents a salaried group, and zero a non-salaried group

Estimates were made using ordinary least squares and may be found in Table 2. A table of first-order correlations between independent variables is found in Appendix B.

For both physical examinations and blood counts, there is a statistically significant positive relationship between prices and per capita income. However, because of the unavailability of county health insurance data, the estimate of the per capita income variable may be biased. To the extent that health insurance and per capita income are positively related, the bias is in an upward direction. The statistically insignificant result for X rays probably reflects the fact that this medical service is priced more uniformly than the other two. This is further evidenced by the smaller coefficient of variation for the price of X rays defined as the standard deviation divided by the mean (.23, as compared to .52 and .35 for physical examinations and blood counts, respectively). A relationship that is also of interest is the responsiveness of fees to income. One measure of this responsiveness is the so-called income elasticity of fees. [The elasticity at the mean for a linear equation $Y = a + bx$ such as one used here is equal to $b(\bar{x}/\bar{y})$.] For physical examinations and blood counts, the elasticity at the mean was found to be approximately .57 and .28. Newhouse (1970) found estimates that ranged from .7 to .9, which appear comparable to ours. Fedlstein's results (1970) include an insurance variable and, as expected, are somewhat smaller; they ranged from .09 to .21 depending on the specification.

Turning our attention to the size of the group, we find that size did not have a statistically significant effect on the price of the

TABLE 2

Estimates of Price Equations

	Income per Capita Y	*Number of Doctors* S	*Medical Personnel per Physician* A	*Technical Personnel per Physician* T	*Office Personnel per Physician* O	*Presence of Nonphysician Manager* M	*Non-salaried System of Remuneration* R	*Type of Group* H	*Constant*	R^2	*No. of Cases*
Physical examination, P_1 $\bar{X} = 23.12$ $\sigma = 11.85$	.005 (1.723)	.091 (.221)	4.985 (2.281)	24.344 (2.910)	5.605 (1.905)	−4.408 −(1.943)	−2.194 −(2.266)	3.481 (.836)	−15.330	.524	61
Blood count, P_2 $\bar{X} = 5.32$ $\sigma = 1.98$	.003 (3.815)	.205 (1.007)	.651 (1.875)	4.922 (2.501)	.234 (.517)	−2.184 −(2.093)	−1.841 −(1.544)	.435 (.456)	−4.698	.540	60
X rays, P_3 $\bar{X} = 15.10$ $\sigma = 3.47$	−.000[b] (.000)[b]	.068 (.454)	2.141 (1.883)	4.482 (1.704)	0.557 (.645)	−.263 −(.148)	−1.181 −(.477)	−1.628 −(.802)	11.575	.450	58

[a]Using a one-tail test, "t" values of 1.67 or greater are significant at the 10-percent level.

$\bar{X}$ = mean σ = standard deviation

[b]Zero values due to rounding

medical services considered. Alternative specifications were also tested, including one with a size-squared term. The results produced estimates that were not statistically different from zero. If this relationship is representative of all medical services, then policies to stimulate the growth of medical groups may not be helpful to reducing medical prices. Because our sample contains groups that average 5.44 full-time physicians, the reader is cautioned that this result may not be as applicable for very large groups.

The empirical results for the three medical services tested indicates that the specialty composition of the group, H, does not have a statistically significant effect on price. Without further empirical work for other medical services, however, we should be careful not to generalize this result.

The relationship between the price and the utilization of nonphysician personnel by group practices produced an interesting result. For the medical services analyzed, increases in the per physician utilization of (1) medical personnel, A, (2) technical personnel, T, and (3) office personnel, O, are associated with increases in price. These results, however, may not apply to physician assistants (Scheffler, 1974b), who are being trained to carry out many of the medical tasks previously performed exclusively by the physician. Feldstein (1970) found a similar relationship and suggested that this result may reflect quality differences in the services provided. These quality differences are probably due to the fact that these medical personnel complement the production of medical services and are not used as physician substitutes, and thus their impact on productivity may be quite small. Bailey (1970:270) points out that ". . . the addition of paramedical personnel does not directly affect physician productivity rates but may result in the substitution of paramedical time for physician time spent on certain tasks which are extraneous to patient visits." Although increases in quality may be desirable, the resulting price increases should not be overlooked.

Of considerable interest is the statistically significant negative coefficient found for the type of manager, M, in the equation for the price of physical examinations and blood counts. This suggests that groups with a non-physician manager set lower prices. Furthermore, the magnitudes appear substantial, a $2.19 difference

for physical examinations and $1.85 for blood counts. One explanation for this finding is that managerial efficiencies in medical groups are a real possibility. Perhaps one of these efficiencies is the likelihood that a non-physician manager is more concerned with billing and collection methods which reduce costs, in order to justify his salary to the group. Another possibility is that we are observing some evidence of economies of scale. Since larger groups are more likely to be able to employ a specialized non-physician manager, they are subsequently able to benefit from the resulting management efficiency (Scheffler, in press). Because of limitations of the data, it is not possible to separate these two effects.

Our results indicate that in groups where physicians are paid using a non-salaried system, the prices for physical examinations and blood counts are reduced. The coefficient for X rays had the predicted negative sign but was not statistically different from zero at conventional levels. These findings are consistent with our a priori expectation that salaried physicians may not have the financial incentive to increase their productivity. Additional evidence related to the effect of incentives is provided by Newhouse (1973). He suggests that the physician behaves inefficiently in group practice because he does not have to bear the financial consequences of his decisions and that this inefficiency is an increasing function of the size of the group. An empirical test of this theory by Newhouse concluded that groups with cost-sharing agreements have higher costs of production.

Conclusions and Social Policy Implications

Generally, we have found that the pricing behavior of the sample of medical groups tested is comparable to Feldstein's results (1970) for all physicians in private practice. Other findings related to the characteristics of medical groups were important in explaining price differentials among groups. Of considerable interest is the type of manager and the remuneration system used by the group. Both results suggest policy recommendations that have the potential for reducing price of medical care delivered by medical groups.

Perhaps one of the most neglected areas of research in the health services industry is the management structure. Medical care delivered by any mode of practice requires managerial skills. Even

the solo practitioner must devote some of his time to managerial functions. These functions become more complex for group practices, clinics, and hospitals, and thus they require important organizational decisions. Moreover, the efficiency of these models of practice depend, to some degree, on the successful performance of managerial functions. The empirical findings in this paper suggest that groups which utilize non-physician managers are associated with setting lower medical prices. Although there may be a number of reasons for this relationship, it certainly indicates the potential importance of the management input. Current proposals to stimulate group practice should consider the difficulties in providing the management skills required for the operation of group practices. Furthermore, additional attention should be given the entire question of managerial structure of group practice.

The results of this study strongly suggest that the income-sharing scheme used by the group will influence the economic behavior of the member physicians. Although the link between the productivity of the physician and prices set by the group has not been established in this paper, it is likely that an incentive system increases productivity and thus permits the group an opportunity of setting lower prices. Nevertheless, it is clear that the type of income-sharing scheme used by the group is an important economic characteristic of group practice.

Two other results deserve further discussion. For the sample of groups tested, the size of the group was not statistically significant in explaining variations among prices. If this relationship is correct for group practices as a whole, then policies to increase the size of medical groups may have little effect on the prices charged to patients. The other important result of this paper suggests that utilization of non-physician personnel is complementary to the production of medical care by the group. This result implies that both the quality and the prices of medical services are related to the increase in non-physician personnel. Measures to increase quality are useful; however, any policy that has the potential for increasing prices warrants very careful examination.

There appears to be a strong case for prudence in providing government funds in order to stimulate the development for group practice. At risk is the possibility that such a policy, without the proper safeguards, will contribute to increasing cost of medical

care. It is hoped that this paper has identified some important factors that should be investigated before further stimulus is given to the growth of group practice.

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References

American Medical Association
1971 Survey of Medical Groups in the United States, 1969. Chicago.

Arrow, Kenneth J.
1963 "Uncertainty and the welfare economics of medical care." American Economic Review (December): 941–973.

Bailey, Richard M.
1968 "A comparison of internists in solo and fee-for-service group practice in the San Francisco Bay Area." Bulletin of the New York Academy of Medicine 44 (November): 1293–1303.

1970 "Economies of scale in medical practice." Pp. 255–273 in Klarman, Herbert (ed.), Empirical Studies in Health Economics. Baltimore: The Johns Hopkins Press.

Berry, R. E., Jr.
1970 "Product heterogeneity and hospital cost analysis." Inquiry 7 (March): 67–75.

Boan, J. A.
1966 Group Practice. Ottawa: The Queen's Printer.

Davis, Karen
1971 "Relationships of hospital prices to costs." Applied Economics 4: 115–125.

Donabedian, A.
1969 "An evaluation of prepaid group practice." Inquiry 6: 3: 3–27.

Feldstein, Martin
1970 "The rising price of physicians' services." Review of Economics and Statistics 7:2 (May).

Garbarino, Joseph W.
1959 "Price behavior and productivity in the medical market." Industrial and Labor Relations Review 13 (October): 3–15.

Graham, F. E.
1972 "Group versus solo practice: arguments and evidence." Inquiry 60:2 (June).

Kessel, Reuben
1958 "Price discrimination in medicine." Journal of Law and Economics (October): 20–53.

Kimbell, Larry J., and John H. Lorant
1973 "Physician productivity and returns to scale." Human Resources Research Center, University of Southern California. (Mimeographed).

MacCall, U.
1966 Group Practice and Prepayment of Medical Care. Washington, D.C.: Public Affairs Press.

Monsma, G. N., Jr.
1970 "Marginal revenue and the demand for physicians' services." Pp. 145–160, in Klarman, Herbert (ed.), Empirical Studies in Health Economics. Baltimore: The Johns Hopkins Press.

Newhouse, Joseph
1970 "A model of physician pricing." Southern Economic Journal 37 (October): 174–183.

1973 "The economics of group practice." The Journal of Human Resources 8:1 (Winter).

Rafferty, John A.
1971 "Patterns of hospital use: an analysis of short-run variation." Journal of Political Economy 79:1 (January/February): 154–165.

Reinhardt, U. E.
1972 "A production function for medical services." Review of Economics and Statistics (February).

Scheffler, Richard M.
in press "Further considerations on the economics of group practice: the management input." The Journal of Human Resources.

1974a "Productivity and economies of scale in medical practice." Rafferty, John A. (ed.) Health Manpower and Productivity New York: D.C. Heath.

1974b "The market for paraprofessionals: the physician assistant." Quarterly Review of Economics and Business 14:3 (Autumn): 47–60.

Smith, Kenneth R., Marianne Miller, and Frederick L. Golladay
1972 "An analysis of the optimal use of inputs in the production of medical services." Journal of Human Resources 7:2.

APPENDIX A

Sample Questionnaire for Medical Groups

1. Name_____
   Address_____
   _____

2. How many doctors practice in association with your group? _____
   Full time?_____ Part time (less than 20 hours/week)?_____
   Estimate of full-time equivalents: _____
   Please distribute totals by type:
   a. Generalists _____
   b. Medical Specialists _____
   (including pediatrics, psychiatrics)
   c. Surgical Specialists _____

3. If your group is a single-specialty group, indicate type:
   _____

4. Physician remuneration is by (circle): a. individaul fee-for-service, b. salary, c. percentage split, d. point system allocation (if so, indicate major determining factors:_____
   _____)

5. The business organization of your group may be classified (circle):
   a. partnership, b. association, c. corporation, d. foundation.

6. This questionnarie is being completed by (circle): a. professional business manager, b. administrator/director, c. financial manager, d. administrative practicing physician, e. physician, f. group-member liaison with professional management firm, g. member of professional management firm, h. other
   (specify) _____

7. What educational degree(s) do you hold? a. none, b. associate

degree, c. B.S. or B.A., d. M.B.A., e. M.A., f. Ph.D., g. J.D., h. M.D.
How many years of group directorship experience have you had? _____

8. Which of the following establishes operation policies or planning for the group? a. the business manager(s) or director(s), b. a policy or planning committee, c. physician-partners of the group, d. other (specify) _____

9. If a policy committee exists, enumerate composition of such by profession:
   a. physicians/surgeons _____
   b. administrators _____
   c. others (specify) _____

10. For what reason was the most recently acquired physician recruited?
    a. general community needs, b. community demand for an additional specialist, c. replacement, d. decision to expand the size or operations of the group, e. other
    (specify) _____

11. Indicate the customary charge for the following services:
    a. chest X ray (p.a. and lat.) _____
    b. blood count _____
    c. complete physical examination (excluding proctoscopic exam) _____

12. If you use the Relative Value Scale, what is your charge for a single unit? _____

13. Enumerate group-employed personnel other than physicians and surgeons:
    a. directors, assistants _____
    b. clerical staff _____
    c. physicians' assistants _____
    d. registered nurses _____
    e. practical nurses _____
    f. lab technicians, pharmacists _____
    g. custodial personnel, aides _____

14. As a group practice manager or director, list several of the more complex problems you have had to face (on reverse).

15. Additional comment: _____

APPENDIX B

Matrix of Simple Correlation Coefficients
Between Independent Variables

	Y	*S*	*A*	*T*	*O*	*M*	*R*	*H*
Per Capita Income (*Y*)	1.00							
Number of M.D.s (*S*)	0.06	1.00						
Medical Personnel per M.D. (*A*)	0.18	0.51	1.00					
Technical Personnel per M.D. (*T*)	0.05	0.11	0.84	1.00				
Office Personnel per M.D. (*O*)	0.18	0.50	0.01	0.46	1.00			
Presence of Nonphysician Manager (*M*)	-0.08	0.15	0.08	0.24	0.41	1.00		
Non-salaried System of Remuneration (*R*)	-0.12	0.18	0.04	0.31	0.05	0.01	1.00	
Type of Group (*H*)	-0.02	0.21	0.12	0.03	0.21	0.58	-0.14	1.00

The Effects of Prepayment on Access to Medical Care: The PACC Experience

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The data reported herein are taken from a larger study in which a prepaid medical foundation was compared with a non-prepaid free-for-service system on a number of factors pertaining to how health care is perceived by both Medicaid recipients and physicians. The data to be presented are confined to the issue of the impact of prepayment on Medicaid recipients' perceptions of their access to health care. Two sets of questions are explored. The first set bears directly on the issue of gaining access to care. The second set addresses the issue of the acceptability of the services received. Few differences were observed between the systems in either accessibility or acceptability. Thus, the fears of some critics of the HMO concept with respect to prepayment creating incentives for the denial of services are not supported by the data. It is concluded that the organizational features of medical practice which affect access are actually quite similar in the two systems.

An important concept in the present debate over the organization of health care is that of the Health Maintenance Organization (HMO). Although there are many organizational forms which have been included under this term, all have in common the delivery of prepaid health care to a defined population group. Advocates of HMOs contend that prepayment creates a financial incentive for the prevention and early detection of disease, thus avoiding the larger costs of treatment and, especially, hospitalization. Critics of this concept, on the other hand, argue that prepayment merely creates incentives to deny needed services (Klarman, 1971).

At present, there are a number of prepaid health care delivery systems throughout the United States. Although there are many differences among them, one of the major divisions into which these proto-HMOs can be divided is between prepaid, closed-panel group practice, and prepaid fee-for-service foundation practice (Ellwood, 1971). In the former, the population which is served is required to seek care only from the group, or panel, of physicians to whom they have made prepayment. In the latter, the population is

free to choose any physician they wish, who then bills the foundation for the services he has rendered, and is reimbursed according to the foundation's fee schedule. Prepaid practices of both types are currently of great interest as sources of evidence bearing on the HMO concept.

Unfortunately, there is little evidence which can be brought to bear on the effectiveness and efficiency of each system. Indeed, the criteria by which effectiveness and efficiency should be judged are by no means clear. Thus, although the research which has been done within either mode of organizing care has addressed a number of interesting variables, the data are unclear with respect to the claims of the advocates of each system (Klarman, 1971). Further, from a policy perspective, it is essential that each system be shown to be superior to the present system of delivering care before the funds required for an extensive conversion of that system are committed.

The Present Study

The data reported herein are taken from a larger study in which a prepaid medical foundation was compared with a nonprepaid fee-for-service system on a number of factors pertaining to how health care is perceived by both Medicaid recipients and physicians. The importance of comparing prepaid foundations with non-prepaid fee-for-service systems lies in the fact that such foundations are likely to become the predominant form of HMO. Thus, the vast majority of physicians practicing in both systems said that they would be unwilling to practice in a closed-panel group, although 80 percent of those currently practicing under fee-for-service said they would be willing to participate in a prepaid foundation aimed at providing care for the poor. The data to be presented in this paper are confined to the issue of the impact of prepayment on access to medical care.

The foundation which was studied is the Physicians' Association of Clackamas County (PACC). PACC is a non-profit, physician-sponsored, prepaid medical service plan in Clackamas County, Oregon. The plan was established in 1938 and is sponsored by the Clackamas County Medical Society. All physicians practicing in Clackamas County who were active members of the medical

society at the time of the study, with two exceptions, were members of PACC, as were all osteopathic physicians practicing in the county.

In 1967, the Clackamas County Medical Society proposed to the state of Oregon that the society, through the agency of PACC, administer and underwrite on a prepaid basis the physician, hospital, and prescription-drug portions of Medicaid for all welfare recipients residing in Clackamas County. In addition to the regular PACC members, there were fifty-three physicians practicing outside of Clackamas County who volunteered to participate in this program. Under the terms of the contract, Medicaid recipients may choose any physician they wish, whether participating or not. Physicians who are not participating, but who treat Clackamas County welfare patients are reimbursed by PACC according to the same fee schedule used by the Public Welfare Department.

Method of Study

Since no absolute standards exist against which to compare the experiences which are reported by persons seeking medical care in a particular setting, it was deemed essential that this study be comparative. Accordingly, the problems of gaining access to care reported by the Clackamas County Medicaid recipients are compared with those reported by Medicaid recipients in Washington County, where Medicaid is administered on a non-prepaid fee-for-service basis. Washington County was chosen both because it shares a number of characteristics in common with Clackamas County, and because the two counties are adjacent.

Simple random samples of welfare cases which had been eligible for Medicaid for a continuous period of at least one year were drawn in each county. There were 296 interviews completed in Clackamas County and 297 in Washington County. These numbers represent roughly 89 percent of original sample size after it had been adjusted for cases which were found to be ineligible for inclusion in the study. The interviews were conducted with the female head-of-house whenever there was one present.

Some differences were found between the two samples in the distributions of age, sex, race, and number of children in the family. These factors were routinely taken into account in all analyses. Tables including these factors are presented only when

they alter an observed relationship between county and an outcome of interest.

No differences were observed between the samples in the distributions of education, recent illness experience, chronic illness experience, perceived health status, or self-reported utilization of either physician or hospital services. These factors, therefore, cannot explain any differences observed between these samples.

The interviews ranged over a wide number of topics pertaining to these respondents' perceptions, attitudes, and experiences of the medical services available to them. The data which follow, however, are taken from those questions which reflect the problems which the respondents experienced in attempting to make use of medical services.

Two sets of questions are explored for differences between Clackamas County and Washington County Medicaid recipients' responses. First, there are several questions which bear directly on the issue of gaining access to care. Second, there are some questions which address the issue of the acceptability of the services which these Medicaid recipients have used. Taken together, these questions are conceived as a set of indicators bearing on the extent to which the providers of medical care discourage the use of their services. Further, these perceptions are conceived as being more important in determing consumer behavior than are the "facts" as they might be determined by an impartial observer.

TABLE 1

"In the past 12 months, how much trouble have you had in getting an appointment with a doctor in (. . .) County? Would you say: a lot, some, not very much, no trouble at all?"

	Clackamas County		*Washington County*	
A lot	9.8	(21)	3.8	(9)
Some	12.1	(26)	13.5	(32)
Not very much	14.9	(32)	13.1	(31)
None	63.3	(136)	69.6	(165)
	100.1	(215)	100.0	(237)

$X^2 = 7.18$, $d.f. = 3$, $P/X^2 = $ NS, $\varphi = .14$

TABLE 2

"In the past 12 months, how much trouble have you had in getting an appointment for your children to see a doctor in (. . . .) County? Would you say: a lot, some, not very much, no trouble at all?"

	Clackamas County		*Washington County*	
A lot	8.7	(18)	6.9	(17)
Some	9.6	(20)	6.9	(17)
Not very much	14.4	(30)	12.1	(30)
None	67.3	(140)	74.1	(183)
	100.0	(208)	100.0	(247)

$X^2 = 2.67$, $d.f. = 3$, $P X^2 = NS$, $g = .15$

Results

The respondents were asked how much trouble they have had in attempting to obtain a doctor's appointment both for themselves and for their children. Although the Clackamas County sample was slightly more likely to say that they have had a lot of trouble to both questions, the differences are quite small, chi square does not achieve significance at the usual .05 criterion level, and the gamma measure of association is low. It appears, therefore, that there was no difference between the prepaid and the non-prepaid systems in the ease with which Medicaid recipients were able to obtain physicians' appointments.

Another indicator of the accessibility of medical care is the ease with which a physician may be seen when one does not have an appointment. The data bearing on this issue indicate that it was somewhat more difficult to obtain an unscheduled doctor's visit in Clackamas County than it was in Washington County. Yet, although chi square achieves significance at below the .05 level, gamma is low. Further, there is a reversal of linearity within this relationship. Thus, although Washington County respondents were more likely to respond "no trouble at all," and Clackamas County respondents were more likely to respond "a lot," the relationship was reversed in the two intermediate categories. These findings suggest that the relationship between prepayment and difficulty in seeing a doctor without an appointment is weak at best.

TABLE 3

"Now, when you don't have an appointment, how much trouble is it to get to see a doctor in (. . . .) County? Would you say: a lot, some, not very much, no trouble at all?"

	Clackamas County		*Washington County*	
A lot	29.3	(79)	20.8	(56)
Some	16.7	(45)	18.2	(49)
Not very much	31.9	(86)	26.4	(71)
No trouble at all	22.2	(60)	34.6	(93)
	100.1	(270)	100.0	(269)

$X^2 = 12.64$, $d.f. = 3$, $P/X^2 = .006$, $g = .18$

The respondents were also asked how long they had to wait to see a physician with whom they had an appointment. The response categories for this question were stated as subjective appraisals, rather than as estimates of amount of time. The reason for this procedure was to obtain the respondent's feelings about the length of wait. It was assumed that a person who reports having to wait "a very long time" finds the service less acceptable, and, hence, is less likely to make use of it, than a person who reports waiting "not

TABLE 4

"When you have an appointment for yourself, how long do you usually have to wait in the doctor's office before he sees you? Would you say: very long, fairly long, not too long, not long at all?"

	Clackamas County		*Washington County*	
Very long	13.1	(38)	9.9	(29)
Fairly long	24.4	(71)	17.7	(52)
Not too long	40.5	(118)	43.5	(128)
Not long at all	22.0	(64)	28.9	(85)
	100.0	(291)	100.0	(294)

$X^2 = 7.49$, $d.f. = 3$, $P/X^2 = \text{NS}$, $g = .17$

long at all." Further, it was assumed that a 30-minute wait could be appraised quite differently by different respondents.

Again, although Clackamas County respondents were slightly more likely to report waiting "very long" or "fairly long," the percentage differences are quite small, chi square fails to achieve statistical significance, and gamma is low. These data indicate, therefore, that there was essentially no difference between the prepaid and the non-prepaid systems in the subjective length of time which patients must wait to see a physician.

In addition to difficulty in gaining access to medical services, the acceptability of the services which an individual receives will have an impact on his willingness to make further use of those services. Accordingly, the respondents were asked whether they had seen a physician in the past year whose competence they doubted, and whether they had been treated rudely or discourteously by a physician or a member of his staff.

Washington County respondents were somewhat more likely to report having questioned the ability of a physician they had visited during the past year. Although the percentage difference is not large, chi square is significant at less than .05 level and gamma for this relationship is moderate. Further, a difference of approximately this magnitude was found for all subgroups of the samples. It appears, therefore, that Medicaid recipients are somewhat more critical of the care they receive in a non-prepaid system. An examination of the verbatim reasons these respondents gave for having been critical failed to provide an explanation for this difference.

TABLE 5

"In the past 12 months, have you or any members of your family gone to a doctor whose medical ability you questioned?"

	Clackamas County		*Washington County*	
Yes	11.2	(31)	20.8	(60)
No	88.8	(246)	79.2	(228)
	100.0	(277)	100.0	(288)

$X^2 = 9.01$, $d.f. = 1$, $P/X^2 = .003$, $g = -.35$

TABLE 6

"In the past 12 months, can you recall any experiences when you or a member of your family was treated rudely or discourteously by a doctor or some member of his office or clinic staff?

	Clackamas County		*Washington County*	
Yes	20.1	(56)	22.0	(64)
No	79.9	(223)	78.0	(227)
	100.0	(279)	100.0	(291)

$X^2 = .21$, $d.f. = 1$, $P/X^2 = \text{NS}$, $g = -.06$

No differences were observed between the samples in the percentage of respondents who reported having been treated rudely or discourteously. Interestingly, however, about one in five of these Medicaid recipients reported such experiences.

The respondents were also asked if the quality of care they or their children had received over the past year was as good as that received by other people. There were no differences between the samples on either of these items, and well over 90 percent of the respondents in each county answered "yes" to both. Further,

TABLE 7

"Considering the visits you and your family have made to the doctors in this county over the last 12 months, how satisfied are you with the care you have received?"

	Clackamas County		*Washington County*	
Very dissatisfied	6.5	(17)	6.9	(19)
Somewhat dissatisfied	3.0	(8)	8.7	(24)
Somewhat satisfied	26.2	(69)	25.1	(69)
Very satisfied	64.3	(169)	59.3	(163)
	100.0	(263)	100.0	(275)

$X^2 = 7.96$, $d.f. = 3$, $P/X^2 = .047$, $g = -.12$

although over 80 percent of the respondents in each county indicated that they were satisfied with the health care they had received, the Washington County respondents were slightly more likely to report being dissatisfied.

It appears, therefore, that prepayment creates no disadvantages in the acceptability of the medical services available to these Medicaid recipients. Thus, from the patient's point of view, at least, prepayment has little adverse effect on the physicians' treatment of welfare patients. If prepayment leads to the creation of barriers to utilization, therefore, these data suggest that such barriers are encountered by the individual prior to his achieving patient status and do not extend to the treatment he receives as a patient.

Up to this point, the analysis has focused on indicators of the accessibility of medical services which are postulated to affect the use of such services. An alternative approach to the question of the impact of prepayment on access to medical care lies in assessing whether there is a difference between the prepaid and the non-prepaid respondents in their use of services at times when they recognized the need. These data indicate that the Clackamas County sample is slightly more likely to say that, during the past year, they or a member of their family did not go to the doctor when they thought they should. Again, however, chi square does not achieve significance and gamma is low. It appears, therefore, that there is little difference between the prepaid and the non-prepaid samples in their failure to seek care when the need is recognized.

TABLE 8

"In the past 12 months, have there been any times you felt that you or a member of your family needed to see a doctor but didn't go?"

	Clackamas County	*Washington County*
Yes	33.4 (99)	26.9 (80)
No	66.6 (197)	73.1 (217)
	100.0 (296)	100.0 (297)

$X_2 = 2.68$, $d.f. = 1$, $P/X^2 = \text{NS}$, $g = .15$

There are two general trends which may be observed in the data which have been presented. First, prepayment does not adversely affect the acceptability of the medical care which these welfare recipients have received. Second, the effect of prepayment on a series of indicators of the accessibility of medical care is small and, in every case except one, not statistically significant. Yet there relationships are consistent in showing that the prepaid respondents are slightly disadvantaged with respect to access to care. Because of the consistency of this pattern, the possibility that prepayment in fact has an adverse effect on the accessibility of medical care could not be ruled out.

In order to explore this possibility, the relationships which have been presented were examined within categories of sex, age, race, and number of children in the family. It will be recalled that these were the background variables on which the distributions of the two samples were found to differ. In every case it was found that the differences between the samples were confined to respondents with three or more children living at home, and that the size of these differences was enhanced within this group. These respondents represented about a third of the Clackamas County sample.

Although there appeared to be no a priori reason why respondents with large families should be singled out for discriminatory treatment in attempting to gain access to medical care under prepayment, two attempts were made to explore this possibility. First, the samples were compared on the reasons which Medicaid recipients with three or more children gave for not seeking care for which they recognized the need. These data indicate virtually no substantive differences between the prepaid and the non-prepaid subsamples. If Medicaid recipients with large families are more likely to encounter problems in seeking access to medical care under prepayment, they are no more likely to cite any particular reason for not seeking needed care than are their less disadvantaged counterparts in a non-prepaid system.

Second, comparisons were also made between these subsamples on the suggestions which they offered regarding how the health care in their county could be improved. Again, there are virtually no substantive differences between these subsamples. Thus, those respondents who expressed the greatest access problems were not any more likely to call for a particular improvement in the care available to them.

TABLE 9

"In the past 12 months, have there been any times when you felt that you or a member of your family needed to see a doctor, but didn't go?"

Three or More Children	*Clackamas County*		*Washington County*	
Yes	37.3	(41)	20.8	(27)
No	62.7	(69)	79.2	(103)
	100.0	(110)	100.0	(130)

$X^2 = 7.20$, $d.f. = 1$, $P/X^2 = .007$, $g = .39$

Taken together, then, these data indicate that, although Medicaid recipients receiving medical care in a prepaid system were slightly disadvantaged with respect to gaining access to care, this finding was confined to those respondents with large families,

TABLE 10

Reasons why "In the past 12 months have there been times when you or a member of your family needed to see a doctor, but didn't go?"

Three or More Children	*Clackamas County*		*Washington County*	
Financial considerations	9.0	(7)	7.3	(3)
Doctor or facility would not accept welfare	1.3	(1)	0.0	(0)
Didn't think doctor would adequately deal with the situation	2.6	(2)	12.2	(5)
Dislikes physician	15.3	(12)	21.9	(9)
Problem with access into system such as transportation	5.1	(4)	4.9	(2)
Problem of time or convenience	13.0	(10)	12.2	(5)
Recurring condition or just waited to see	26.9	(21)	31.8	(13)
Miscellaneous	26.9	(21)	9.8	(4)
	100.1	(78)	100.1	(41)

TABLE 11

Reasons for Agreeing That Health Care in (. .) County Could Be Improved

Three or More Children	*Clackamas County*		*Washington County*	
Quality of care should be better	5.2	(5)	5.3	(5)
Need to improve financing of care	7.3	(7)	7.4	(7)
Need more doctors or facilities	40.6	(39)	35.8	(34)
Doctors should take more interest in their patients	13.6	(13)	15.8	(15)
Need better information about where to go	2.1	(2)	3.1	(3)
Doctors should keep more convenient hours	5.2	(5)	1.0	(1)
Miscellaneous	26.0	(25)	31.6	(30)
	100.0	(96)	100.0	(95)

and was probably not attributable to the prepayment mechanism. Thus, there was little in either the reason why these respondents did not seek needed care or in the improvements they suggested for their medical care which could be attributed to PACC's administration of Medicaid on a prepaid basis. This conclusion is reinforced by the data which indicated that prepayment does not adversely affect the acceptability of the care which these respondents have received.

Discussion

The fact that little difference was observed between the counties in the accessibility and acceptability of medical services for Medicaid recipients has important implications for the Health Maintenance Organization concept. The fears which some critics of this concept have expressed with respect to prepayment creating incentives for denying needed services are not supported by these data. Rather, the data suggest that the organizational features of medical practice which affect access are quite similar in the two systems studied.

This conclusion is supported by the fact that there were few differences between the counties in rates of self-reported utilization of either physician or hospital services. Although these self-reported rates are subject to considerable inaccuracy, there is evidence that such data are useful in providing relative approximations of utilization patterns for comparative purposes (Richardson and Freeman, 1972). Thus, the fact that these rates were approximately the same for the two counties reinforces the conclusion that there was no important difference between Clackamas and Washington counties in the accessibility or acceptability of medical care for Medicaid recipients.

One obvious implication of this conclusion is that the foundation-type HMO is unlikely to differ significantly in those organizational features of medical practice which the consumer must confront in order to obtain care. Hence, although these data do not bear on the issue of the technical quality of care under prepayment, it appears that the experience of seeking and receiving medical care is not much different in a prepaid foundation than it is in a non-prepaid fee-for-service system.

Indeed, it could be argued that there is little reason to expect that Medicaid recipients' perceptions of the care they receive would be much different in these two systems. From the recipients' point of view a fixed portion of his felt need for health care is paid in full in both systems. The process of seeking care is similar in both, as are the bureaucratic procedures which must be endured in order to make use of Medicaid. Further, only part of the recipient's health needs are provided for. Other needs, which may be of some urgency to him, must either be paid for out-of-pocket, or must be foregone. The fact that this care is prepaid in one county and non-prepaid in another is of little consequence from the recipient's point of view, unless this difference were to eventuate in gross inadequacies in the provision of the care requested by the recipient in one system of the other. One would not expect this to be the case, and the data indicate that it is not.

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Support for this study was received under SRS Project #97-P-00029/9-01.

References

Ellwood, P.M.
1971 "Health Maintenance Organization: concept and strategy." Hospitals 45 (March): 53–56.

Klarman, H.E.
1971 "An analysis of the HMO proposal—its assumptions, implications, and prospects." In Health Maintenance Organizations: A Reconfiguration of the Health Services System. Proceedings of the 13th Annual Symposium on Hospital Affairs, Center for Health Administration Studies, Graduate School of Business, University of Chicago.

Richardson, A.H., and H.E. Freeman
1972 "Evaluation of medical care utilization by interview surveys." Medical Care 10: 357–362.