Impact of municipal health services Medicare waiver program

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A major goal of the municipal health services program (MHSP) was improvement of health services for the elderly while containing Medicare reimbursement. A Health Care Financing Administration financed Medicare waiver program provided some additional benefits to Medicare Part B enrollees who used the MHSP clinics. Disadvantaged and sicker elderly groups were underrepresented in MHSP facilities. However, even after taking these differences between MHSP and other patients into account, analyses of Medicare records showed that participants in this program had lower reimbursement for hospital inpatient, outpatient, and emergency room services. Also, participants had higher reimbursements for physicians' ambulatory and ancillary care. The net result was total Medicare reimbursements were decreased for program participants.

Introduction

The purpose of this article is to provide evidence on the savings to the Health Care Financing Administration (HCFA) that resulted from the municipal health services program (MHSP). MHSP was launched by the Robert Wood Johnson Foundation in 1977 with an invitation to the 50 largest cities in the United States to submit proposals. They had to describe how they would be able to develop a network of three or more clinics that would include a full range of primary care services and be available in areas of low access to care. The clinics could be new physical entities, or they could be existing facilities in which additional services would be placed to provide the range of services required by the program. HCFA joined the project, offering Medicare, and later Medicaid, waivers to the funded clinics.

The expectation was that the new clinics would be located away from any municipal hospital campus, but that resources already allocated to health in the cities would be diverted to the clinics. Therefore, services could be offered at more reasonable costs. A major difference between this project and the earlier Office of Equal Opportunity clinics was a requirement that the mayor be committed to the program in each city and that those overseeing the municipal hospital operation also support the project.

Five cities were awarded grants based on documented need for such funds to serve populations with poor access and the viability of the proposals submitted. Random allocation of patients to the program, in order to better assess its effect, was considered infeasible because of the involvement of political entities in the cities to assure its success and the service intent of the program. Each grant was for funds up to $3 million over a 5-year period, which began in July 1978. The cities chosen were: Baltimore, Cincinnati, Milwaukee, St. Louis, and San Jose.

Two evaluations of this program were mandated by the funders. One, carried out by the Conservation of Human Resources Project at Columbia University, focussed on the process of implementation of the program and the political and economic factors that affected that process (Ginsberg, Davis, and Ostow, 1985). The second was carried out by the Center for Health Administration Studies at the University of Chicago to evaluate the effects of the program on the access to medical care of the populations served and changes in overall expenditures for medical care as well as costs to the public payors, Medicare and Medicaid (Fleming and Anderson, 1986). We focus on the second evaluation and particularly the success of the program in controlling Medicare reimbursements.

Background

Reimbursement under the waiver program began in the fall of 1979. In addition to services normally covered under Part B of Medicare, preventive exams, drugs, dental care, dentures, 50 percent of the cost of eyeglasses, transportation, and devices in addition to artificial limbs such as canes and trusses were covered when provided at MHSP clinics. The conditions under which ancillary providers could be reimbursed were made less stringent; that is, less supervision by physicians was required. The usual condition for these services being covered when they were incident to a physician's service was waived, and services of ancillary personnel were covered even for certain preventive care provided to patients. Providers affected by this provision were nurse practitioners, physicians' assistants, optometrists, physical, speech and occupational therapists, audiologists, podiatrists, and psychologists. In practice, most of the clinics did not offer these ancillary services except for dental and, less often, optometry and podiatry. The usual deductible and coinsurance charges for patients served at MHSP clinics were also eliminated.

The MHSP clinics were reimbursed through a cost-based reimbursement system. This type of

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reimbursement required a different recordkeeping system from the one necessary for reimbursing physician services under the regular Medicare program. The MHSP clinics were reimbursed directly by HCFA's Office of Direct Reimbursement based on their quarterly financial reports rather than through intermediary insurance companies.

The basic Medicare waiver program assumption was that more complete coverage for Medicare eligibles, especially for preventive care services, would lead to early treatment and lower costs. In particular, the hope was that use of inpatient, outpatient and emergency room services would be reduced.

For the past few years, HCFA has supported demonstrations that analyze the effects of altered Medicare and Medicaid coverage. The various demonstrations have been designed to study plan participation, marketing, and reimbursement under alternative delivery systems. There is evidence that reimbursement rates affect provider participation in the Medicare and Medicaid programs. Sloan, Mitchell, and Cromwell, (1978), determined that low reimbursement rates are a factor in whether physicians participate in Medicaid. Paringer (1980) adapted the analytic model used by Sloan, Mitchell, and Cromwell (1978) to study the impact of increased Medicare assignment, and showed that increased rates would, in the short run, increase physician willingness to accept assignment.

In other studies, incentives were created for Medicare eligibles to join health maintenance organizations (HMO's) and increase HMO participation in the Medicare program. Kaiser-Permanente's Medicare Plus project demonstrated that it is possible to design a prospective payment system that costs Medicare less than services purchased from fee-for-service providers. Utilization of inpatient services by Medicare Plus members decreased and visits to ambulatory care facilities increased (Greenlick et al., 1983). In a study described by Friedlob (1982), HCFA aimed to reduce unnecessary surgery by waiving cost-sharing requirements for patients seeking a second opinion. The incentive (waiving cost sharing) did not appear to be sufficient encouragement for extensive use of the benefit. Users were a select group of beneficiaries seeking health care information.

The health care delivery demonstrations of the past few years suggest benefits from some changes in the reimbursement structure of Medicare. Several of the alterations appear to have the advantage of being cost-effective by reducing hospitalization rates.

On the other hand, the literature does not unambiguously suggest that visits to private physicians' offices and clinics are necessarily substitutable for visits to hospital outpatient departments and emergency rooms. Friedman, Manheim, and Melczer (1983) reported findings from one study that suggested that the availability of medical specialists in private practice was positively associated with hospital-based ambulatory care visits, while total physicians per capita had an insignificant effect on hospital-based visits. Sloan and Bentkover (1979) showed that, when physicians are scarce in relation to population, patients are much more apt to go to hospital outpatient departments and emergency rooms. They also found that patients of office-based family and general practitioners were similar to those of hospital-based providers, whereas office-based specialists were the providers of preference for families with more income. Manheim and Friedman (1982) suggest that these findings may be compatible if we interpret them all to indicate that visits to private office-based family and general practitioners are substitutable with hospital-based ambulatory care, whereas private office-based specialist visits generally are not. This interpretation suggests that the MHSP clinics, that were staffed with family practitioners as well as internists and pediatricians (depending on the city and clinic), would offer services that might be substituted for hospital-based outpatient care.

Methods

The primary research questions are: (1) Did the Medicare waiver program change the pattern of health care utilization among its users? and (2) Did changed use patterns alter the costs of medical care, as measured by Medicare reimbursements, for waiver program users? Medicare records include billing and payment data but do not necessarily distinguish between units of service. Therefore, our focus is on the second question, but, from our analysis of the records, we can make inferences about utilization as well. Also of interest are the numbers and types of Medicare eligibles who are attracted to the waiver program.

To answer these questions, we first selected one clinic from each city for study. This limitation was imposed on the study to keep the cost of the analysis within the budget for the evaluation. The clinic chosen, in all cities, was the one in existence during the first year of the program (July 1978 through June 1979) that had the largest percentage of patients enrolled in the Medicare program. Zip codes were then identified that best approximated that portion of the service areas of these clinics from which the most concentrated 75 percent of the patients came. This was done by discussing expected service areas with new clinic managers, and by carrying out patient origin studies based on any existing patient rosters that were expected to comprise the patients to be referred to the MHSP clinics.

Sampling

A 1-year period was selected for the study. It consists of all Medicare services delivered March 1, 1981, through February 28, 1982, a period of time about 2 years after program startup. The Medicare (HISKEW) file, which contains all Medicare eligibles, provided the sampling frame for the study. The sample was drawn from the HISKEW file, current

through December 1982, for zip codes approximating the site clinic service areas.

All Medicare eligibles who had ever received benefits under the Medicare waiver from the beginning of the demonstration project were initially selected. These individuals are categorized as waiver beneficiaries. Such persons could go outside of the MHSP clinics for care, although there were strong incentives not to use ambulatory care outside of the MHSP clinics, because deductibles and copayments would then have to be met. Also selected, were individuals with claims for Medicare benefits for services at the public general hospitals serving the areas since the demonstration projects began. These hospitals were Baltimore City Hospital, Cincinnati General Hospital, Milwaukee County Hospital, St. Louis City Hospital, and Santa Clara Valley Medical Center. These public general hospital users were included in the sample because they were relatively few in the areas and, as they were a major target group in the experiment, we needed to adequately control their characteristics in examining reimbursements by Medicare.

The remaining HISKEW records (excluding cases who died prior to December 1979) were sorted in hierarchical order of zip code, sex, race, and age. Every thirteenth record was sampled from these, beginning with a random position between 1 and 13. In all, the initial sample consisted of 6,245 waiver beneficiaries, 8,929 hospital beneficiaries, 1,788 who were both, and 8,560 other Medicare eligibles, for a total of 25,522 individuals. In the analyses these cases were weighted where necessary to correct for the differential sampling rates between this group, the waiver beneficiaries, and the public general hospital users.

Subsequently, individuals who had died prior to March 1, 1981, or who had not submitted claims for Medicare benefits during the period between March 1, 1981, through February 28, 1982, were eliminated. Thus, the comparisons are limited to persons alive at the beginning of the study year who had some Medicare claims for services received during the study year. Limitation to those with claims was considered important because all the Medicare waiver users were, by definition, patients who had used at least one service during the study period. This final sample consists of 3,166 individuals who at some time were waiver beneficiaries, 4,581 site hospital beneficiaries, 663 who were both waiver and hospital beneficiaries, and 6,753 other Medicare beneficiaries, for a total of 15,163 beneficiaries during the year. This sample of beneficiaries was then weighted to reflect the actual distribution of beneficiaries in the zip code areas sampled.

Records

The records used for analyses include both billing forms generated by HCFA for the regular Medicare program and special billing forms submitted to HCFA's Office of Direct Reimbursement for services delivered under the waiver program. Under regular Medicare, administrative files are documented in the Medicare Statistical Files Manual (Health Care Financing Administration, 1977). Under the demonstration waiver program, administrative records were documented in the Municipal Health Services Provider Manual (Health Care Financing Administration, 1981). The records used in these analyses consisted of Medicare eligible (person) level records (HISKEW); hospital and other institutional billing records; physician payment records; provider records from regular Medicare; and special records designed for the waiver program, that covered all services rendered at the MHSP centers.

Statistical methods

Waiver program variables were cross tabulated with several background variables: age, disability status, and race. Logistic regression was used to develop choice models to identify the background variables that made a unique contribution to prediction of use of the waiver program.

To investigate the impact of the program on utilization of services, a two-staged method (similar to the Rand four-stage model described by Duan et al., 1983) was used. First, regression was used to model the probability of use of five categories of services: inpatient; outpatient and emergency rooms; extended care; other physicians; and ancillary services. Waiver user status for the year was the independent variable. Although all those in the sample had used at least one service during the study year, they had not all used a service from each of the five categories. Background variables likely to be important predictors of MHSP clinic use were included as covariates. In the second stage, those individuals who used a particular service were selected (separately for each of the five services). For these individuals, the log of amount billed to HCFA for the service was regressed on waiver user status and the other background variables previously employed to predict waiver user status.

Constructed variables

User definition

For purpose of sampling, a clinic user consisted of anyone who had ever received benefits under the waiver program and a key hospital user consisted of anyone with hospital billing records from one of the public general hospitals already mentioned.

For analysis, the definition of users was further limited and refined. An individual could be treated as more than one type of user. That is, if an individual used a waiver facility during the analysis year and also a public general hospital, the individual was classified as both a waiver user and a public general hospital user. User status was represented by a set of dummy ("yes" or "no," "1" or "0") variables indicating the use of the waiver program, key hospitals already mentioned, any public hospitals, private hospitals,

long-term care facilities, skilled nursing facilities, and home health.

The most important user group from the program point of view is represented by the waiver variables. The waiver group defines the effects of the program for those who used the MHSP centers. Although we focussed on the service area of one center only, a waiver user in any of the city's clinics from this area is included in the waiver group.

Background variables

Basic background (including demographic) variables were obtained from information in the HISKEW file. These variables included race (white versus all others, a variable called WHITE), sex (SEX), original disability status (DISABLED), current Part B enrollment (PARTB2), whether the person died during the analysis year (DIED2), zip code of residence (ZIP1 through ZIP5 depending on how many zip codes were present in the service area), and age in years at the end of the analysis year (AGE). Age was divided into four categories for most purposes: AGEA (0-64 years of age); AGEB (65-74 years of age); AGEC (75-84 years of age); and AGED (85 years of age or over). Another age variable, JUST65, identified those who turned 65 years of age during the study year. Other background variables used for selected analyses included: NOMONTH1 (no billing or payment records of any kind during the previous year), INPAT1 (inpatient services were billed during the previous year), MDCD1 (Medicaid payments during the previous year), OPDER1 (outpatient or emergency room services billed for the previous year), KEY1 (use of key hospitals in the previous year), LTC1 (use of long-term care in the previous year), PRIVATE1 (had private insurance in the previous year), and PUBLIC1 (use of another public hospital in the previous year). A "1" in the variable label indicates experience in the year preceding the study year while a "2" designates experience in the study year.

Payment variables

Payment (or reimbursement) variables were constructed for inpatient services, outpatient and emergency room care, long-term and extended care, physician visits, and ancillary services. The amount reimbursed for physicians under the waiver program was estimated by multiplying the number of visits reported on the waiver records by the average cost per visit reported for each MHSP facility on HCFA financial reports. Amounts reimbursed for ancillary services under the waiver program were calculated by multiplying the amounts given in the waiver records by the average cost to charge ratios given on Schedule F. Under regular Medicare, amounts reimbursed were obtained directly from billing and physician records.

Reimbursement amounts rather than billed amounts were used as the dependent variable because the data were believed to be more accurate for what they represented. Although billed amounts were on the records, and might be thought to more truly represent costs, in reality they often were the same as the reimbursed amounts, suggesting that they might not be calculated to represent true cost differences. Moreover, Medicare does not allow all costs (from the provider's point of view) to be included in the calculations of costs on which payment is based, so that the billed amount is at best a compromise between the costs the provider recognizes and the Medicare definition of costs. Morever, there is no reason to believe that the difference between reimbursements and true costs was greater for either the waiver group or the nonwaiver group.

Findings

Proportion of users

As shown in Table 1 the weighted percent of the sample for each city made up of users of MHSP, public general hospitals, both, or neither. The weights reflect the proportion of people in the MHSP service areas represented by each group.

The proportion of Medicare beneficiaries in the service area who used an MHSP facility during this period of the waiver program varied considerably from a high of 16 percent in city 5 to a low of 1 percent in city 2. Less variation was shown in the proportion using the key public hospital which varied from a high of 17 percent in city 1 to a low of 8 percent in city 2.

One might wonder why the percent using MHSP in most cities is similar to the proportions using the key public hospitals, given that the hospitals are much larger organizations. The answer is that the study service areas were defined as contiguous areas surrounding the MHSP clinics from which the most MHSP patients come. The hospital service areas are much larger and less concentrated. Thus, it is the special service area definitions that lead to similar proportions of MHSP and public hospital users in most cities.

The residual percent represents the rest of the Medicare beneficiaries residing in the MHSP service areas, who used neither MHSP nor the public hospitals. This percent of the total Medicare beneficiary population of the area varies from a low of 71 percent to a high of 91 percent across the 5 cities.

Comparison of user groups

Demographic and health status characteristics of MHSP waiver users are compared with other MHSP beneficiaries in Table 2. The waiver users are divided into early users (Year 1), who used the waiver at least once during the first year of the program, and later users (Year 2 only), who did not use any waiver services until the second year of the MHSP program. These groups are separated so we can see if there are

Table 1

Percent of municipal health services program (MHSP) beneficiaries, by city and user category

User category	All cities	City 1	2	3	4	5
				Percent distribution		
Total	100	100	100	100	100	100
MHSP center	8	12	1	5	7	14
Public general hospital	10	14	8	8	11	10
Both MHSP center and public general hospital	2	3	0	1	1	2
Neither MHSP center nor public general hospital	80	71	91	86	81	75

substantial differences between the people using the waiver early in the program and those who began to use the program later on. Both of these groups are also compared with Medicare beneficiaries in the community who never used the waivers (neither year).

As shown in this table, the proportion of users 85 years of age or over tends to be less for MHSP users than for other Medicare beneficiaries. For all the cities combined, 10 percent of the nonusers were 85 years of age or over compared with 8 percent of the early users and 7 percent of the later users. The proportion of nonusers 85 years of age or over was higher than the user proportions in four of five cities as well. Only in city 2 is the pattern inconsistent for early users. Differences between the early and later waiver users are not large or consistent across cities.

Similar proportions of the waiver users and nonusers are Medicare eligible because of disability. Of the nonusers, 16 percent were entitled because of disability compared with 18 percent of the early waiver users and 16 percent of the later waiver users. The results are not consistent from city to city. In city 4 the proportions are similar, in cities 1, 2, and 5, fewer of the waiver users appear eligible because of disability, while in city 3 the opposite seems to be true.

Generally no difference was found in the sex distribution between waiver users and the comparison group. While the summary statistics for all cities suggest slightly more males among MHSP waiver users, the results are not systematic across all the cities.

Medicare beneficiaries who are MHSP users are generally not members of minority groups. For all cities combined the proportion who were black and other minorities appeared less for MHSP beneficiaries than for other Medicare beneficiaries residing in the MHSP service areas. These general findings were supported in three of the five cities. In one city there were few minority members among either MHSP users or the comparison group and in city 2 the minority proportion was considerably higher in MHSP than for the comparison population.

MHSP death rates were systematically lower than the rates for other Medicare beneficiaries across all cities and, generally, within each city as well. The only exception was the relatively high death rate among later users of MHSP in city 2.

Both early and later users of MHSP were less likely to have used public hospital facilities during the first year of the MHSP waiver program than other Medicare beneficiaries in the service areas. Thus, there is no evidence to suggest that MHSP was attracting disproportionate numbers of public hospital users among Medicare beneficiaries. In fact, just the opposite appears to be true, with smaller proportions of MHSP waiver users having previously used public hospital facilities.

As shown in Table 2, both similarities and differences are suggested when Medicare beneficiaries who are waiver users are compared with other Medicare beneficiaries residing in the same communities. Systematic differences were not uncovered according to sex distribution or entitlement as a result of disability. However, MHSP waiver users appeared to be younger (including fewer of the 85 years of age or over category), less likely to be from a minority group, have lower death rates, and less likely to have been previous users of public hospitals.

Multivariate analyses

In the previous section, we compared users of MHSP waivers with other Medicare beneficiaries looking at one variable or characteristic at a time. The multivariate analysis is limited to the second year for which we have data, when the program was at a more mature stage. Logistic regression was used to model the probability of being a waiver user (Cox, 1970). These models are of the form:

$$P_i(user) = (1 + exp[-\Sigma_j X_{ij}\beta_j])^{**} - 1$$

where X_j is a value of predictor variable j for Medicare beneficiary i, as in multiple linear regression, and β_j is a regression weight for predictor j. The values of β_j were estimated separately for each city using PROC FUNCAT (Statistical Analysis System Institute, 1982) by the method of maximum likelihood. Each case was weighted by the inverse of its sampling probability.

Table 2

Percent of municipal health services program beneficiaries, by age, sex, race, health status, city, and waiver use

City and waiver use	Age				Sex		Race[1]			Health status		
	Under 65 years	65-74 years	75-84 years	85 years or over	Male	Female	White	Black	Other	Died during year 2	Used public general hospital in year 1	Entitled because of disability
	Percent of beneficiaries											
All cities												
Total	12	48	30	10	39	61	88	7	2	7	27	16
Year 1	14	50	28	8	45	55	91	5	4	4	22	18
Year 2 only	13	55	25	7	42	58	93	4	3	3	17	16
Neither year	12	47	31	10	39	61	88	8	2	7	28	16
City 1												
Total	14	54	25	7	43	57	91	7	0	7	25	20
Year 1	11	56	27	4	39	61	97	1	0	4	25	17
Year 2 only	10	63	20	4	40	60	96	3	0	1	17	12
Neither year	15	53	25	8	44	56	87	10	0	9	26	21
City 2												
Total	14	42	33	12	37	63	83	13	0	6	28	10
Year 1	6	43	37	15	41	59	59	40	1	3	11	7
Year 2 only	9	36	45	9	9	91	74	26	0	9	9	4
Neither year	14	42	32	12	37	63	84	13	0	7	28	10
City 3												
Total	15	52	27	7	42	58	97	0	1	5	25	14
Year 1	17	55	24	4	48	52	98	1	1	3	22	26
Year 2 only	11	61	25	3	48	52	97	0	2	2	13	19
Neither year	15	49	28	8	40	60	97	0	1	6	26	13
City 4												
Total	13	45	32	10	40	60	86	12	0	10	31	14
Year 1	10	52	35	3	41	59	94	6	0	3	19	15
Year 2 only	11	58	27	4	43	57	95	4	0	3	21	14
Neither year	14	42	33	12	39	61	83	13	0	11	32	14
City 5												
Total	16	45	29	10	45	55	85	5	9	5	23	21
Year 1	15	43	32	9	42	58	87	2	11	3	20	20
Year 2 only	15	50	27	8	46	54	87	4	8	2	14	18
Neither year	16	45	29	10	46	54	83	6	9	6	24	21

[1] Categories do not sum to 100 percent because of some unidentified cases.

Although continuous predictor variables, for example, a person's age in years, may be used in logistic regression models, all of the predictor variables in the present application were categorical and, therefore, represented as 0 or 1 dummy codes. The following predictor variables were included in the selection model: categorized AGE, DIED2, DISABLED, JUST65, PARTB2, WHITE, SEX, NOMONTH1, INPAT1, KEY1, LTC1, MDCD1, OPDER1, PRIVATE1, PUBLIC1, and zip code categories.

The adjusted chi-square values for each variable in the selection models are given in Table 3. As shown, a number of patient characteristics consistently predict use of the Medicare waiver in most cities. Most important is whether there were Medicaid payments for the person in the year preceding the study year (MDCD1). In every city, people who were on Medicaid previously were significantly less likely to be waiver users. Medicaid is a payor of last resort (Medicare pays initially). Therefore, people with heavy utilization in the year preceding the analysis year, leading to costs which exhaust Medicare benefits and personal resources, are less likely to select the waiver program. These people are also less likely to have private health insurance or other supplementary sources including income and savings to pay for the medical care they receive.

A second characteristic significantly related to use of the waiver in four cities and marginally related in the fifth is presence of any Medicare billing in the year preceding the analysis year (NOMONTH1). In all

cities, the presence of Medicare billing was associated with a lower probability of using the waiver. As shown, the waiver users had a history of lower medical care use than other Medicare beneficiaries in the community.

While no other variables were as strongly or as systematically associated with waiver usage in the logistic regression analysis, several were significantly related in one or more cities. Most importantly, in three cities, people dying during the analysis year were less likely to be waiver users. Also, in three cities Medicare payments for long-term care, skilled nursing, or home health in the year preceding analysis (LTC1) were negatively associated with being MHSP waiver users. In selected cities, being 85 years of age or over (AGED), qualifying for Medicare because of disability (DISABLED), and having inpatient billing for Medicare in the year preceding the analysis year (INPAT1), were all negatively associated with being MHSP users. All of these findings support the general picture of MHSP users being a healthier group, making fewer demands for medical care prior to the analysis year.

The following effects on people's use of the waiver program are shown in Table 3: less likely to use if covered by Medicare Part B (two cities); more likely to use if white in two cities, but less likely to use if white in one city; more likely to use if a public general hospital user in the year preceding the analysis year (one city); and where people live as defined by zip codes is significantly associated with waiver use in most cities.

Utilization and reimbursements

We employed two-stage models of the utilization of services to investigate the effects of the waiver program on utilization of services for the second year of the program. Separate regressions were run for each stage and for each service. In the first stage, the probability of use of a service is estimated using a standard regression (Statistical Analysis System Institute, 1982). In the second stage, the log of the amount billed to HCFA for the service is modeled. In this stage, only individuals who used the particular service are included.

In both stages, predictor variables from the above selection effects models are used as covariates and dummy (0,1) indicators of user status were included to investigate program effects. Covariates include categorized AGE, DISABLED, PARTB2, WHITE, SEX, DIED2, and zip code categories. MDCD1 and NOMONTH1 were highly correlated (r = .9 or higher) and could not be used simultaneously because they produced large standard errors because of colinearities. We chose to include NOMONTH1 because it represents Medicare use in the year prior to the study year and, thus, seemed the most logical variable to control for previous tendencies to use the Medicare program. The dummy indicator for program effect is WAIVER. Medicare beneficiaries who had not used the waiver during the analysis year were used as the reference cell in the model. Differences between user groups are reflected in differences between their coefficients.

Table 3

Adjusted chi-square values for variables in model for selection into waiver2 status (from logistic regression)

	Chi-square statistics[1]				
Variable	City 1	City 2	City 3	City 4	City 5
AGEB	.55(+)	.53(+)	.18(−)	.08(+)	.93(+)
AGEC	.11(+)	.91(+)	.16(−)	1.27(−)	.60(+)
AGED	.56(−)	1.02(+)	**3.57(−)	.89(−)	.10(+)
DIED2	*16.18(−)	.74(−)	1.37(−)	*6.77(−)	*8.40(−)
DISABLED	*8.95(−)	.00(−)	.11(+)	1.49(−)	.09(−)
JUST 65	.90(+)	.02(−)	.03(−)	.35(+)	.56(−)
PARTB2	*25.67(−)	.13(−)	.07(−)	*14.97(−)	.60(−)
WHITE	*38.08(+)	**3.49(−)	1.05(+)	*12.57(+)	1.41(+)
SEX	2.45(−)	.09(−)	**3.81(−)	.38(−)	1.42(−)
NOMONTH1	*33.95(−)	*14.16(−)	**3.82(−)	*12.03(−)	*31.09(−)
INPAT1	.15(+)	.00(−)	.88(−)	*6.48(−)	1.08(−)
KEY1	.32(+)	1.47(+)	.20(−)	1.29(+)	.20(+)
LTC1	*10.62(−)	.00(−)	.52(−)	**3.35(−)	*7.36(−)
MDCD1	*160.91(−)	*117.23(−)	*10.36(−)	*16.97(−)	*27.04(−)
OPDER1	.12(−)	1.81(+)	.01(−)	2.61(+)	.03(−)
PRIVATE1	.35(+)	.15(−)	.40(−)	.22(−)	.25(−)
PUBLIC1	*7.61(+)	.45(+)	1.06(+)	.34(−)	.15(+)
ZIP1	*4.63(−)	.08(−)	**2.98(+)	*9.02(−)	1.63(−)
ZIP2	**3.67(−)	1.56(−)	—	.05(+)	*9.69(+)
ZIP3	—	.22(−)	—	*17.44(−)	1.21(−)
ZIP4	—	—	—	—	.02(+)
ZIP5	—	—	—	—	**3.21(−)
INTERCEPT	*7.20(−)	.14(−)	1.09(−)	2.25(−)	*5.71(−)

*$p < .05$.
**$p < .10$.
[1] In all cases degrees of freedom equal 1. Direction of effects is indicated in parentheses.

Table 4

Effects of waiver status on Medicare costs, by city and type of service

City and type of service	Probability of use		Medicare reimbursements[1]	
	Nonwaiver	Waiver	Nonwaiver	Waiver
City 1				
Inpatient	.44	*.24	$5,666	$5,474
Hospital OPD/ER[2]	.61	*.49	240	*155
Extended care	.09	*.04	859	890
Other physicians	.57	*.72	108	*159
Ancillaries	.67	*1.0	208	*370
City 2				
Inpatient	.44	*.19	2,969	3,481
Hospital OPD/ER[2]	.53	*.20	199	232
Extended care	.12	.10	625	([3])
Other physicians	.64	*.82	133	*307
Ancillaries	.61	*.96	181	*228
City 3				
Inpatient	.41	*.23	4,666	3,751
Hospital OPD/ER[2]	.61	*.46	187	180
Extended care	.06	.03	1,021	([3])
Other physicians	.76	*.85	116	*235
Ancillaries	.58	*.98	223	*403
City 4				
Inpatient	.50	*.28	3,599	*1,680
Hospital OPD/ER[2]	.50	*.44	198	166
Extended care	.13	.11	1,237	1,148
Other physicians	.58	*.86	104	*266
Ancillaries	.63	*.89	152	*254
City 5				
Inpatient	.34	*.23	4,703	3,590
Hospital OPD/ER[2]	.46	*.40	469	*413
Extended care	.14	*.09	610	680
Other physicians	.76	.79	197	*263
Ancillaries	.67	*1.0	249	*434

*$p < .05$.
[1]Average dollar estimates for those who used the service.
[2]Outpatient and emergency room.
[3]The value for the waiver group for this city could not be estimated in the multivariate equation because too few waiver beneficiaries had extended care.

The two-stage approach was applied separately for each of the five categories of services: inpatient; outpatient and emergency room; extended care, skilled nursing, and home health; other physician visits (including private office and clinic); and ancillary services such as dental care, optometry, pharmacy, X-rays, and lab tests. In each stage, for each category of service, we also included as a control variable that particular category of service in the year preceding the study year. For example, in the analysis of differences in inpatient use between waiver and nonwaiver users, use of inpatient services in the year before the study year is introduced as a control.

The results are summarized for each type of service in turn, for both the probability of use and the Medicare reimbursement for those who had the service (Table 4). The mean for nonwaiver users for each use/reimbursement dependent variable is reported together with the adjusted mean estimate for waiver program users. These measures together tell how the program affected various types of Medicare utilization. The other variables included in the model were important to this analysis primarily as controls and, therefore, are not included in the statistics reported.

Estimated dollar values were calculated for the waiver group from the least-squares group mean of the logged variables. First, we exponentiated the least-squares group means of the logged variable after adding to each of them half the variance of the logged mean values (Miller, 1984). This yielded a first-level estimate, which was further adjusted by the ratio of the sample mean of the unlogged variable to the estimated sample mean as computed from the group means of the logged variables (after they were exponentiated according to the above process):

$$Est1\ (X) = EXP[X + (\text{corrected sum of squares})/(2 * \text{weighted } N)]$$

$$Est2\ (X) = \frac{\text{sample mean} * Est1\ (X)}{\text{estimated sample mean}}$$

The second equation provided a proportional adjustment that yielded group means that would then average to the original sample mean. This was done in order to provide more realistic estimated dollar savings or losses from the program for policy purposes.

It is important to keep in mind that throughout the discussion of these results, when we talk about the probability of use, we are talking about Medicare use, that is, the reporting of services that are eligible for Medicare reimbursement. Therefore, services that are not covered by Medicare may have been obtained by people in the sample, although they are not recorded on the files. This is particularly relevant for the mean estimate for all users. For example, as dental care is not covered under the regular Medicare program, we must expect it to be omitted for the reference group more often than for the WAIVER group. Moreover, the dollars with which we are dealing are for reimbursements by Medicare and do not include other costs of care, for example, those covered by providers and beneficiaries.

The proportion of nonwaiver beneficiaries who had inpatient claims in the five cities varied from a low of 34 percent in city 5 to a high of 50 percent in city 4 (Table 4). The effect of the waiver was to significantly reduce the probability of having Medicare inpatient reimbursements in the study year in each city. After adjusting for the effects of all other variables in the model, the estimated portion of waiver users who had Medicare inpatient reimbursements during the study year varied from a low of 19 percent in city 2 to a high of 28 percent in city 4. Thus the waiver, after we accounted as best we could in the multiple regression for other inpatient characteristics, appears to have the expected effect of reducing inpatient admissions.

Mean Medicare reimbursements for nonwaiver persons and Medicare reimbursements for the waiver group are shown in Table 4 for the study year. For inpatient services the average mean inpatient reimbursements for nonwaiver beneficiaries in the cities varied from a low of $2,969 in city 2 to a high of $5,666 in city 1. The effect of the waiver on volume of reimbursements for inpatient services was generally not significant after adjustment for other variables in the model. Only in city 4 is there a significant reduction in the volume of inpatient reimbursements attributed to the waiver. While the waiver appeared to reduce the probability of Medicare beneficiaries entering the hospital, it did not appear to have such a consistent impact on lowering the magnitude of inpatient reimbursements for those admitted during the study year.

The effect of the Medicare waiver was to reduce the probability of having outpatient and emergency room (OPD-ER) reimbursements as well as inpatient reimbursements. The reduction is significant in each city. The estimated probabilities for nonwaiver beneficiaries having OPD-ER reimbursements vary from 46 percent to 61 percent among the cities, while the adjusted estimates for the waiver users vary from 20 percent to 49 percent.

As in the case of inpatient reimbursements, the waiver effect on volume of reimbursements for outpatient and emergency room use is not as strong or consistent as the effect on probability of use. In only two cities (1 and 5) does the waiver effect significantly reduce the estimated OPD-ER reimbursements. The adjusted estimates for OPD-ER reimbursements for the study year vary from $187 per person in city 3 to $469 in city 5. The waiver does appear to reduce Medicare costs for outpatient department and emergency room services primarily by reducing the proportion of beneficiaries who had such reimbursements in the survey year.

The effects of the waiver on having Medicare extended-care reimbursements (Table 4) are generally to reduce the probability of use. In two cities, the reduction in proportion with reimbursements is significant. Thus, while the probability of having extended care reimbursements for nonwaiver beneficiaries varies from 6 percent to 14 percent, the adjusted estimate for waiver beneficiaries varies from 3 percent to 11 percent among the 5 cities. The effect of the waiver on the volume of extended care reimbursements can be estimated in three of the cities only, because of the small number of waiver beneficiaries who had these services in the other two (cities 2 and 3). The effects are not significant in any city.

The effect of the waiver on other Medicare physician reimbursements, which includes visits in doctor's offices, is opposite to what we have observed for the inpatient and outpatient department and emergency room. While the waiver appears to reduce Medicare reimbursements for all of the latter, it increased physician reimbursements. The waiver significantly increases the probability that people will have Medicare physician costs in four cities (1, 2, 3, and 4). Thus, the estimate of proportion of people in the various cities who have physician reimbursements among nonwaiver beneficiaries varies from 57 percent to 76 percent, while the adjusted estimates range from 72 percent to 86 percent for the waiver users.

The strongest waiver effect on physician reimbursements is, however, on volume rather than on the probability of having such reimbursements. The waiver program leads to a significant increase in volume of physician reimbursements in every city. While the mean physician reimbursements range from $104 to $197 for nonwaiver beneficiaries, the adjusted mean estimates range from $159 to $307 for the waiver users. The main conclusion is that the waiver increases other Medicare physician reimbursements and appears to do it by increasing the volume of such reimbursements for those waiver users with expenditures as well as by increasing the probability of use.

The final type of reimbursement considered in

Table 5

Adjusted per capita Medicare expenditures for waiver and non-waiver groups, by city and type of service

City	Type of service	Estimated mean Medicare expenditures		
		Nonwaiver	Waiver	Savings
All cities[1]	Total[2]	$2,277	$1,537	$741
		(2,149)	(1,189)	(961)
	Inpatient	1,813	828	985
	Hospital OPD/ER[3]	[5]136	[5]88	[5]48
	Extended care	111	73	38
	Other physicians	89	200	−111
	Ancillaries	128	348	−220
City 1	Total[2]	2,905	1,900	1,005
		(2,767)	(1,530)	(1,237)
	Inpatient	2,477	1,304	1,173
	Hospital OPD/ER[3]	147	76	71
	Extended care	81	35	46
	Other physicians	62	115	−53
	Ancillaries	139	370	−232
City 2	Total[2]	1,616	1,284	332
		(1,506)	(969)	(536)
	Inpatient	1,316	673	643
	Hospital OPD/ER[3]	105	46	59
	Extended care	(4)	(4)	(4)
	Other physicians	85	250	−165
	Ancillaries	110	314	−204
City 3	Total[2]	2,234	1,548	686
		(2,104)	(1,153)	(951)
	Inpatient	1,901	871	1,030
	Hospital OPD/ER[3]	115	83	31
	Extended care	(4)	(4)	(4)
	Other physicians	88	199	−111
	Ancillaries	130	394	−265
City 4	Total[2]	2,204	1,118	1,087
		(2,109)	(892)	(1,216)
	Inpatient	1,785	469	1,316
	Hospital OPD/ER[3]	98	72	26
	Extended care	165	123	42
	Other physicians	60	227	−167
	Ancillaries	96	226	−130
City 5	Total[2]	2,205	1,689	517
		(2,040)	(1,254)	(786)
	Inpatient	1,586	823	763
	Hospital OPD/ER[3]	217	163	53
	Extended care	87	59	28
	Other physicians	150	208	−58
	Ancillaries	166	434	−269

[1] Mean average over all cities for each service.
[2] Figures in parentheses are totals excluding ancillaries. Totals do not always add to sum of components because of rounding.
[3] Outpatient and emergency room.
[4] Not included because extended care component included insufficient waiver (less than 25) observations.
[5] Mean average for cities 1, 4, and 5 only.

Table 4 is reimbursements for ancillary services. The waiver effect increases these reimbursements through both higher probabilities of use and higher reimbursements for those using ancillary services. Both kinds of effects are significant in every city. These findings were anticipated, given the emphasis in MHSP on ancillary services not covered in the traditional Medicare program.

We see definite indications of waiver program effects on Medicare reimbursements. Significant reductions appear to be achieved through reduced use of inpatient, outpatient, and emergency room services. Conversely, increased Medicare reimbursements appear to result from other physician and ancillary services.

Estimated savings in reimbursements

The adjusted estimated Medicare reimbursements per capita for the MHSP waiver users are shown in Table 5. The estimate is reached by multiplying the estimated reimbursement per person with expenditures by the estimated proportion of waiver users with expenditures. Both of these components are provided in Table 4.

Comparing these estimates with the adjusted estimates for nonwaiver beneficiaries in the communities gives estimated savings or losses to Medicare resulting from the MHSP waiver program.

It must be emphasized that these estimated savings are only an approximation because: the multivariate analysis may adjust imperfectly for all the special characteristics of MHSP waiver users that might influence their reimbursements other than the MHSP programs; and the method to convert the logged units of expenditures in the multivariate analysis back to dollar equivalents is imperfect. Because a major purpose of the MHSP evaluation is to estimate the impact of MHSP on Medicare reimbursements, we used these approximations to provide the reader with some guide as to the magnitude of the waiver effect.

In addition to estimates of reimbursements for various services and total reimbursements for each city, estimates for all cities combined are also provided. These combined estimates provide one indication of a general program effect.

In parentheses are the estimates of total Medicare reimbursements excluding those for ancillary services. These estimates give some measure of program effects in the absence of waiver coverage of ancillary services. They are particularly relevant in the event that implementation of the MHSP program, excluding ancillary coverage, is contemplated.

MHSP Medicare savings on inpatient services, ranged from a high of $1,316 per person in city 4 to a low of $643 in city 2. The average savings across all cities is estimated at $985 per waiver user. These substantial savings are based on significant reductions in the proportion of waiver users having inpatient care in every city and also lower reimbursements among those with services, although the volume reductions were judged significant in only one city.

There are also savings to Medicare for hospital OPD-ER expenses from the waiver in all cities, ranging from $26 per person in city 4 to $71 per person in city 1. The saving averaged for all cities is $48. The savings for hospital outpatient services by the waiver are obviously of considerably less magnitude than the inpatient savings. Still, the consistency of the findings across all cities suggest MHSP does have potential to de-emphasize hospital outpatient services and attain some cost savings in the process.

In three of five cities, the overall effect of the MHSP waiver was to reduce Medicare reimbursements for extended-care services. In the other two, an estimate could not be made because of the small number of waiver beneficiaries using extended care services. The savings ranged from $28 to $46.

In every city, the MHSP waiver appeared to considerably increase Medicare reimbursements for other physician services. The magnitude of these additional reimbursements varies from $53 per beneficiary in city 1 to $167 in city 4. The average additional costs to Medicare were $111. These additional reimbursements result from significantly higher waiver costs per person using physician services in every city, as well as a generally higher probability of having such expenses in the waiver program.

Finally, the ancillary services appear to be the most costly services to Medicare in the waiver program. Significantly higher probability of use as well as higher reimbursements for those using ancillary services in every city result in estimated additional costs to Medicare, ranging from $130 in city 4 to $269 in city 5. The average additional reimbursement for all cities for the ancillary services is $220.

The total rows (Table 5) provide a summary perspective of the overall MHSP waiver effect on Medicare reimbursements. The question is, what happens when we balance the estimated savings on inpatient and hospital outpatient expenses against the higher reimbursements for other physician and ancillary services. In every city, there is an apparent overall savings to Medicare from the MHSP program. These apparent savings range from $332 per person per year in city 2 to $1,087 in city 4. While we do not have an explicit significance test for these overall savings, since they result from calculations made on the aggregate results, the consistency of the results across cities and the magnitude of results suggests they should be viewed as having substantive import.

A final set of estimates (Table 5) excludes the ancillary reimbursements from the totals (numbers in parentheses). This calculation is done because the ancillaries add significantly to the waiver costs. Later implementation of a program similar to MHSP conceivably could exclude the additional ancillary coverage. The numbers in parentheses give some idea of possible savings of such a program. Of course, it should be pointed out that exclusion of ancillary coverage might increase Medicare costs for other services. The estimates do not take the possibility of such a substitution into account.

The estimated savings of the waiver program, excluding ancillary reimbursements, ranged from $536 per capita in city 2 to $1,237 in city 1. The average savings for all cities is $961, which is a 30-percent increase over the estimated savings including ancillary services of $741.

Waiver savings in inpatient, hospital outpatient, and extended-care services more than compensate for additional waiver costs of other physician and ancillary services to Medicare. Further, the exclusion of ancillary services could conceivably increase the savings to Medicare from the MHSP waiver.

Conclusion

Although this article provides considerable evidence of MHSP waiver effects, some caution is needed in interpreting the results. Most importantly, one can never be certain that all selection effects are completely controlled. While a number of covariates were employed to make the waiver users statistically more comparable to other Medicare users, it is possible that their levels of health care needs remained different after controlling for the background variables.

However, the results are substantiated in a second analysis of the same program, based on social survey data (Fleming and Andersen, 1986). Although the number of Medicare eligible cases for that analysis was much smaller and the Medicare reimbursement data were based on patient reports, there was a large number of measures of illness in the questionnaire that allowed for more controls for health status than in this analysis based on Medicare files. Yet the results for the program effects based on the analysis of social survey data were essentially the same as those reported here.

Some other caveats are in order in generalizing the results. The time period ended February 28, 1982. Perhaps the waiver program had not yet come to fruition. The sampling did not account for individuals moving in and out of the area. The service area under consideration was limited; it is possible that the program impact differed in peripheral geographic areas that were excluded from the sample. Medicare numbers change with the eligibility status of the individual. If new numbers are not correctly keyed to old numbers, then records will be effectively lost. Note, however, that there is no reason to believe that this was a significant problem or that it was more of a problem for waiver users than other Medicare users. Finally, our efforts to estimate dollar savings for the Medicare program are hampered because the expenditure dependent variables were transformed into logged values. While this process is generally thought to improve the results of the regression analysis, it becomes more difficult to interpret the meaning of the results in terms of actual dollars.

However, despite these caveats, we believe the findings shed considerable light on who used the waiver program and how it impacted on Medicare costs. We did not find differences between waiver users and other Medicare beneficiaries according to gender or entitlement as a result of disability. However, MHSP users appeared to be younger, including fewer of the 85 years of age or over category, less likely to be from a minority group (except in city 2), and have lower death rates. Also, the waiver program appears to have failed to attract disproportionate numbers of previous public hospital users.

A multivariate choice model was examined to see what the strongest predictors of becoming an MHSP waiver user were. Most important was not having been a Medicaid recipient in the year preceding the study year. Second most important in the choice model and correlated with Medicaid use in the previous year, was the presence of Medicare billing in the year preceding the study year, which was negatively associated with waiver use in all cities. This result suggests the waiver users had a history of less medical care use than other Medicare beneficiaries in the service areas. In general, findings from the choice model, as well as the cross tabulations, suggested an MHSP waiver group in somewhat better health who made fewer demands for medical care in the year prior to the analysis year.

In the subsequent analysis of the impact of the MHSP waiver program on Medicare expenditures, efforts were made to adjust for the selection effects previously discussed. The results suggest rather dramatic savings to Medicare for inpatient services and much less dramatic, but consistent, savings for outpatient and emergency room services. These savings seemed to be based more on reductions in the probability of use than reductions in the amount of reimbursements for those with Medicare reimbursements during the study year. In contrast, Medicare reimbursements for waiver users were significantly higher for other physician expenditures and especially for ancillary services. For these services, the effect of the waiver on increasing the volume of services among users appeared as great as its effect on the probability of use, although both played a role in the increased waiver expenses.

The Medicare savings on the inpatient and hospital outpatient side appeared to more than compensate for the increased expenditures for physician and ancillary services, suggesting potential overall savings to Medicare from the waiver program. These potential savings might be even greater if ancillary services were excluded from the waiver program.

We feel it unlikely that these savings can be explained away because the waiver program was simply attracting healthier people. Further, the shift from inpatient and emergency services to physician and ancillary services is encouraging to those who assume the shift provides better access and a more appropriate mix of services. In contrast to the Colorado Medicare Study (McCall and Rice, 1983), in this program a considerable percent of Medicare beneficiaries were aware of and used the waiver program. Similar to the Rand Health Insurance Study (Newhouse et al., 1982), this study shows that increasing insurance benefits for physician visits and ancillary services increases the utilization of these services. It remains to be demonstrated whether or not a corresponding increase in health status or quality of care accompanies these increases in benefits.

Current waiver program status

The Medicare waivers were scheduled to end in December 1984. However, acting upon a request from the U.S. Conference of Mayors, HCFA agreed to a 1-year extension of the waivers provided the cities submitted acceptable proposals to capitate the clinics by January 1986. All the cities, except St. Louis, submitted proposals in October 1984. These proposals addressed the following requirements:

- An analysis of existing and potential barriers at the State and local level that might preclude the municipal government from supporting a capitated, risk reimbursement system.
- A detailed, realistic workplan for moving to a capitated reimbursement system. The plan must show a site being at full risk no later than January 1, 1986.

- An actuarial analysis of costs to provide Medicare beneficiaries the regular Parts A and B Medicare benefit package, and additional MHSP services. These costs should be compared to 95 percent of the adjusted average per capita cost. This analysis must be completed by an actuarial consultant.
- An analysis of the Tax Equity and Fiscal Responsibility Act of 1982 (TEFRA) provisions, presentation of specific provisions the site would have difficulty meeting, and a discussion of plans to shift from waivers to TEFRA.
- An analysis of plans to capitate Medicaid, and an analysis of the possibility of synchronization of Medicare and Medicaid capitation.
- A statement of commitment to go at full risk with no risk sharing on HCFA's part.

HCFA approved the cities' proposals but rejected their request to waive the 50/50 requirements of the Tax Equity and Fiscal Responsibility Act of 1982. This requirement stipulates that the prepaid competitive medical plans cannot have more than 50 percent enrollment of Medicare and Medicaid clients.

As of July 1985, the cities had proceeded at varying degrees toward full implementation of their capitation plans. Baltimore used a competitive request for proposal to obtain the services of a private HMO. It planned to award the contract to Care First, a Baltimore based HMO, to incorporate the five MHSP clinics into its system. Given its current enrollment of 53,000 patients, Care First can meet the 50/50 provision. Cincinnati had been conducting negotiations with one of the local HMO's, which then suddenly announced it would terminate its program. Cincinnati then pursued negotiations with other local HMO's. Milwaukee and San Jose entered agreements with HMO's, HealthReach and the Family Health Foundation of Alviso, respectively. HealthReach was a new coalition of community health centers that entered into a capitation plan with the Wisconsin Medicaid program, while Alviso was a long established community health center that had also entered into a prepaid plan with the California MediCal (Medicaid) program in the last few years. The three cities, Cincinnati, Milwaukee, and San Jose all anticipated having difficulties in making the 50/50 requirement by January 1986. Therefore, Congress included provisions in Public Laws 99-190 and 99-272 to extend the waiver through December 31, 1989.

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