

The Effects of a Prepaid Group Practice on Mental Health Outcomes

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Does a prepaid group practice relative to comparable fee-for-service plans lead to different mental health outcomes for its beneficiaries? To answer this question, we used data from the RAND Health Insurance Experiment. We observed no statistically significant or clinically meaningful differences in mental health outcomes for families randomly assigned to Group Health Cooperative of Puget Sound or to comparable fee-for-service insurance plans in the Seattle area. We found the same null result for overall mental health status as well as for psychological distress (e.g., anxiety and depression) and psychological well-being, and for the full population as well as the initially sick and poor, although our precision was low for the latter comparisons. Thus, the less intensive style of treatment in the prepaid group practice was not associated with noticeably worse mental health outcomes.

Health maintenance organizations (HMOs) have been advocated as major alternatives to fee-for-service health insurance coverage that substantially reduce health care costs (Enthoven 1980). Most empirical

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studies suggest that HMOs lower medical care costs relative to fee-for-service insurance plans through lower hospitalization rates (Richardson et al. 1980; Luft 1981; Gaus, Cooper, and Hirschman 1976; Manning et al. 1984) and lower mental health care costs through fewer outpatient visits per user (Williams et al. 1979; Diehr, Williams, Martin, et al. 1984; Manning and Wells 1986; Wells, Manning, and Benjamin 1986).

Of central importance in the decision to further promote HMOs are estimates of their effects on health status outcomes. Except for the RAND Health Insurance Experiment (HIE), however, prior studies comparing HMOs and fee-for-service plans focused exclusively on use of services, not outcomes. Using data from the HIE, Ware et al. (1986) found no significant differences in global mental health status at exit from the experiment between the typical adult HMO participant and the fee-for-service participant. Valdez et al. (1989) reached a similar conclusion about global mental health status for children; but children on the fee-for-service coinsurance plans did better than the HMO children in an index of behavioral problems.

In the current article, we reevaluate these conclusions using alternative methods. We do so for several reasons. First, because the HIE is the only major randomized trial to date of an HMO, the findings have considerable policy significance. Second, the earlier analyses had less precision than was possible. Ware et al. (1986) and Valdez et al. (1989) reported findings on outcomes assessed at the end of the experiment (after three or five years). Because many psychiatric problems (e.g., major depression) are episodic, we thought that data from the middle years of participation could reveal some transient differences in outcome that would not be detected at exit. We also sought to increase precision by combining data on adults and children.

Third, the conclusions of Ware, Valdez, and their colleagues were based on the Mental Health Index (Veit and Ware 1983), which aggregates information on psychological distress (i.e., symptoms of anxiety and depression) and psychological well-being (i.e., level of positive affect and quality of interpersonal ties). We decided to examine the effect of the HMO on these two dimensions separately because we think that psychological distress is the more clinically relevant dimension. Further, because psychological distress is much more predictive of use of mental health services than is psychological well-being (Ware, Manning, Duan, et al. 1984), we reasoned that the HMO, by lowering use of mental health services, might adversely affect psychological distress (for which people seem to be seeking care) more than psychological well-being.

DATA AND METHODS

We report data from the Seattle site of the HIE. See Newhouse (1974) and Brook, Ware, Davis-Avery, et al. (1979) for fuller details on the overall HIE design; a fuller version of this article is also available (Wells, Manning, and Valdez 1989a). The HMO is Group Health Cooperative of Puget Sound (GHC). GHC is a well-established, non-profit, prepaid group practice.

We compared participants experimentally assigned to either GHC or to one of several fee-for-service plans. The participants were random samples of the Seattle area population who were *not* enrolled in GHC in 1976 but who were otherwise eligible for the trial. Those ineligible for the study included people over 62 at the time of enrollment, Seattle area families whose incomes exceeded \$61,000 (in 1985 dollars), the institutionalized, the military and their dependents, veterans with service-connected disabilities, and those eligible for disability Medicare and end-stage renal dialysis programs.

Families were assigned to the GHC and fee-for-service plans using the Finite Selection Model (Morris 1979). Families were enrolled in the insurance plans *as a unit* with only eligible members participating. Families were randomly assigned to three or five years of participation.

Table 1 shows the enrollment sample size (excluding children under 5) and the number of observations (person years) by plan. The analytic sample consists of each year of participation for enrolled participants while they remained in the experiment and in the Seattle area.

Members of the Group Health Cooperative sample received services at GHC free of charge. The plan fully reimbursed covered ser-

Table 1: Seattle Sample Size

Plan	Initial Enrollment*	Estimation Sample (Person Years)
<i>Group Health Cooperative</i>		
GHC experimental	1,026	3,040
<i>Fee-for-Service</i>		
Free and individual deductible	625	1,542
Family pay	455	1,145
<i>Total</i>	2,106	5,727

*Includes individuals ages 5+ years with nonmissing data on initial mental health status.

vices sought outside GHC if services were not available at GHC, if on referral from GHC, and for emergency out-of-area care. Otherwise, participants were reimbursed only 5 percent of the charge for care obtained outside of GHC.

Families participating in the fee-for-service sample were assigned to insurance plans that had different levels of cost sharing. In Seattle, the coinsurance rates (percentage paid out-of-pocket) were 0 (free), 25, or 95 percent for all health services. Each plan had an upper limit of up to \$1,000 on out-of-pocket expenses, beyond which the insurance plan reimbursed all covered expenses. One plan was structured as an outpatient individual deductible plan with full reimbursement of inpatient services and of covered outpatient services beyond the deductible.

The scope of services covered was identical for the GHC and fee-for-service plans. A wide variety of services, including up to 52 outpatient psychotherapy visits per year per person, was covered.

Mental health status was assessed at enrollment and the end of each year of participation using the Mental Health Inventory (Veit and Ware 1983), based on 38 self-administered items for adults and 12 questionnaire items completed by a parent for children aged 5 through 13 (Eisen et al. 1980). The items assessed the frequency and intensity of symptoms of both psychological distress (PSDS) (e.g., anxiety and depression) and psychological well-being (PWB). These subdimensions, each represented by a multi-item scale, were combined (for adults, with two additional items) to form a summary mental health index (MHI) score. Each index was scored on a scale of 0 to 100. For both MHI and PWB, a higher score indicated better mental health. For the PSDS, a higher score indicated poorer mental health. The correlation between psychological distress and psychological well-being was -0.75 . The internal consistency reliability estimates exceeded 0.92 and one-year stability coefficients ranged from 0.61 to 0.69 (Veit and Ware 1983). Wells, Manning, and Valdez (1989b) developed an interpretation of an annual change in mental health inventory scores: being fired or laid off in the prior year lowers overall MHI by 2.34 (standard error = 0.35) scale points; lowers PWB by 2.85 (0.61) scale points; and increases PSDS by 1.66 (0.41) scale points. We used these differences as a metric for a clinically meaningful change in mental health status. We defined initially "sick" and "well" groups as those in the lowest and highest thirds of the distribution of a given mental health status measure at baseline.

The main independent variable was insurance plan, represented herein by three insurance plan groups: the GHC experimental; fee-for-service insurance plans with a family coinsurance rate of 0 percent,

including the individual deductible plan (IDP) (referred to herein as free care plans); fee-for-service plans with family coinsurance rates of 25, 50, or 95 percent for outpatient mental health services (referred to herein as family pay plans).

We included as covariates measures of general health perceptions (the General Health Index, GHINDX), based on 22 questionnaire items for individuals aged 14 and over, and 7 items for children (Davies and Ware 1981; Eisen et al. 1980); presence of any physical or role limitation, based on 12 questionnaire items for individuals 14 and over, and 5 items for children (Stewart, Ware, and Brook 1981; Eisen et al. 1980); and site, age, sex, race, and family income (divided by the square root of family size). Data on family were collected during the first year of the study; otherwise the data were collected prior to or at enrollment.

We used both analysis of variance (ANOVA) and least squares regression methods to estimate the effects of insurance coverage on changes in mental health status—the summary mental health index, psychological distress, and psychological well-being. For each outcome, we regressed the difference between that year's value and the entry value on insurance coverage. All differences were stated in terms of annual changes, whether they occurred in the first or the last year of the period examined. Each difference was deflated by the amount of time from the beginning of the study to the time of assessment. The independent variables were insurance plan, initial mental health status, age, sex, site, race, family income, GHINDX, and any physical or role limitation. To estimate the insurance plan effects, we compared mean difference scores (the difference between mental health status measured at baseline and at the end of each experimental year) for participants on each plan. We also predicted the average difference based on the estimated parameters of the least squares regression model. These predictions were standardized to the enrollment sample on all covariates. Our data exhibit positive correlations among individuals in the same family, and for the same individual over time. We modeled these correlations using a nested variance component or intra-class cluster model (Maddala 1971; Searle 1971).

Threats to Validity. The two major threats to validity are nonrandom refusal to participate and nonrandom sample loss. We have determined that these would not alter our conclusions (Manning, Leibowitz, Goldberg, et al. 1984; Manning, Wells, and Benjamin 1986, 1987). Participation was not related to health status, and rates of sample loss were not significantly different by plan after adjusting for time at risk. There were no significant differences in initial mental

health status among the dropouts on the various plans, or among those who stayed to the end of the study. We observed no differential response to plan by the dropouts during the period that they remained on the study.

RESULTS

As shown in Table 2, no statistically significant differences in mean effects of the insurance plan groups were found. With the data available, we had the precision to detect (at the 5 percent level) a difference in MHI of from -0.68 to +0.45 units per year between participants in the free care plans and the GHC experimental plan. A minus sign indicates better mental health outcomes for the free care plans. We had the precision to detect an adverse effect of about one quarter of the effect on mental health status of being fired or laid off—our criterion for a clinically meaningful effect (see Methods). But the estimated plan

Table 2: Differences among Insurance Plans in Change in Mental Health Status

Plan Comparison*	Change in Mental Health Status					
	MHI		PWB		PSDS	
	Diff.	t	Diff.	t	Diff.	t
<i>Unadjusted (Means)</i>						
Pay-Free	-.063	-.17	.183	.38	.137	.40
Pay-GHC	.037	.11	-.076	-.18	.027	.09
Free-GHC	.100	.33	-.258	-.66	-.111	-.39
<i>Adjusted Predictions†</i>						
Pay-Free	-.065	-.19	-.004	-.01	.066	.20
Pay-GHC	.048	.15	.104	.26	-.088	-.29
Free-GHC	.113	.40	.099	.27	-.153	-.57

*A positive value indicates that the free/individual deductible plan is worse for MHI and PWB, and a negative value indicates that the free/IDP is worse for PSDS if free/IDP is the contrast group (first and fourth rows). A positive value indicates that the GHC plan is worse for MHI and PWB, and a negative value indicates that GHC plan is worse for PSDS if GHC is the contrast group (second, third, fifth, and six rows). Means are estimated by generalized least squares.

Free = free and individual deductible fee-for-service plans;

GHC = GHC experimentals (free HMO); and

Pay = family pay.

†The predictions are from a model that controls for initial health status and other covariates.

differences are quite small, on the order of 5 percent of the effect on mental health status of being laid off or fired.

The conclusions were insensitive to the methods we used in doing the analysis. We obtained the same results using ANOVA and multiple regression methods. Adding two-way (plan \times income, and plan \times initial mental health status) and three-way (plan \times income \times initial mental health status) interactions did not alter the conclusions. These interactions were not statistically different from zero ($p > .50$ for the mental health index and psychological well-being, and $p > .25$ for psychological distress).

DISCUSSION

We found no statistically significant or appreciable differences in mental health outcomes between those enrolled in the HMO and those in the comparable fee-for-service plans; we reached the same conclusion using each of our mental health status measures. We also found no evidence of large differential effects of system of care for subgroups who differed in baseline mental health status and income (the sick, the poor, or the sick poor). However, our precision for testing these interactions was small.

Our main conclusion—no differences by system of care in mental health outcomes—is particularly noteworthy because there are large differences in the probability of inpatient medical use and the use of outpatient mental health services between those participating in the HMO and those in the fee-for-service plans (Manning, Leibowitz, Goldberg, et al. 1984; Manning, Wells, and Benjamin 1986, 1987; Wells, Manning, and Benjamin 1986). While HMO participants received a much less intensive form of psychotherapy than comparable fee-for-service participants, over a period of several years, a larger proportion of HMO participants received some outpatient mental health treatment, relative to comparable fee-for-service participants. These two stylistic differences in mental health treatment could have had a counterbalancing effect on mental health outcomes.

There are two other reasons why the HMO and fee-for-service plans might have had similar mental health status outcomes. First, only a minority of participants ever received care specifically designed to improve their mental health status (fewer than 20 percent under free fee-for-service care and fewer than 30 percent in the HMO over three years). Thus, one might not expect large effects, on average, of system of care on the total enrolled population.

Second, the HIE HMO and comparable fee-for-service (free) plans were more generous than some prevailing insurance plans. The effects on mental health status of HMOs and fee-for-service may differ in the context of less generous coverage, particularly of mental health services. However, we found little difference in mental health outcomes between the participants in the HMO and those in the combined pay plans, which include plans that are less generous than many prevailing insurance plans.

Because the HIE did not include measures of specific psychiatric disorders, we cannot comment on the effects of insurance coverage either on the course of psychiatric disorders or on outcomes for those with specific psychiatric disorders. This is a case study of a single, well-established prepaid group practice HMO. Thus, the results may not generalize to newer HMOs or to IPAs. Our findings do not necessarily apply when consumers can select among HMO and fee-for-service plans, especially when these plans differ in benefits. Individuals who were sicker or had a greater propensity to use could select the option with better benefits, making outcomes on these plans appear relatively worse (if unadjusted for case mix). However, in the particular HMO that we studied, we found no evidence for adverse selection effects (Manning et al. 1984). The HIE excluded the Medicare disabled, the elderly, and those institutionalized in long-term hospitals and jails. Thus, the results do not necessarily apply to several populations of considerable policy interest.

Our finding of no difference in mental health outcome for non-elderly adults and children who were enrolled in an HMO or comparable fee-for-service plans is of some importance, although the finding is derived from a single HMO. It suggests that considerable cost savings can be achieved without sacrificing mental health outcomes for the average participant. Currently, there is great interest in evaluating the performance of health care delivery systems through standardized, patient-based measures of health outcomes (Ellwood 1988). Our findings represent an early model of this approach. Future studies should build on our findings by examining both the use of mental health care services and mental health outcomes in multiple HMOs; research should focus on populations with specific psychiatric disorders, and should include clinical outcomes, such as remission. We are currently addressing some of these concerns in the Medical Outcomes Study (Wells, Stewart, Hays, et al. 1989).

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