

Services Utilization Before and After the Prospective Payment System by Patients With Somatization Disorder

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Abstract

This study analyzed services utilization before and after the implementation of Medicare's Prospective Payment System (PPS) in psychiatric patients with somatization disorder in two samples: one recruited before the PPS and the other after the PPS. Individuals with this psychiatric disorder present with multiple unexplained medical complaints and consume a great number of health resources. The results from this study indicated that Medicare PPS was associated with fewer hospital admissions and fewer hospital days, with a greater number of physician visits (for Medicare patients) and emergency room visits (for non-Medicare patients) and with lower overall health expenditures. However, there were no significant changes in the average length of stay after PPS. In contrast to previous studies, Medicare PPS was significantly associated with changes in service utilization by non-Medicare patients as well, a possible "spillover effect." This study confirms the results from other research indicating that higher levels of efficiency may be achieved for certain psychiatric disorders through prospective payment mechanisms.

The reimbursement mechanism for health services in the United States has been transforming from a retrospective to a prospective system to contain the rapid growth in health care expenditures. This transformation has been precipitated by the ever tighter budget for health services in the state and federal levels and by the increasing market share of managed care. Capitations for mental health services in state Medicaid programs, diagnosis-related groups (DRGs) for hospital services in Medicare, and the resource-based relative-value scale for physician services in Medicare are examples of prospective payment systems (PPS).

The essence of prospective payment is the shift of financial risks from the payer (insurer) to the provider. In PPS, providers (physicians and hospitals) are reimbursed a predetermined fixed amount based on a per patient or per episode basis, regardless of the number of services rendered. A provider makes a "profit" if the costs of the services provided to a patient are lower than the predetermined

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payment and incurs a loss otherwise. Therefore, providers have financial incentives to treat patients more efficiently by, for example, reducing and/or eliminating unnecessary services without compromising on quality of care.¹⁻⁴ On the other hand, if too many services are eliminated, quality of care may be negatively affected.

Medicare implemented its PPS beginning in October 1983 to reimburse hospitals for services rendered to Medicare patients.⁵ According to the PPS, hospitals are reimbursed a fixed payment for all hospital services provided to a patient during a given episode, depending on the patient's DRG. In other words, reimbursements are the same for two patients who fall into the same DRG, regardless of the number of services provided to them.

PPS has been studied extensively in general health. However, few studies have examined its effects for patients with psychiatric disorders.^{1,6,7} This study investigates the impact of Medicare's PPS on health service utilization in patients with somatization disorder (SD), a psychiatric disorder in which patients present with multiple unexplained medical complaints.⁸ Patients with SD often demonstrate substantial deficits in health status, even more than patients with chronic medical diseases.⁹ Although the prevalence of SD in the general population is relatively low, the annual health expenditures by patients with SD are very high, especially when the disorder is not properly managed.^{10,11} SD is difficult to manage effectively; high numbers of services are often rendered to patients with SD yet without significant improvement in their symptoms and/or health outcomes in general.^{10,11} Effective management includes regular visits, careful physical examination, and avoidance of hospitalization.⁹ Therefore, these patients, managed properly, may provide mental health or primary care settings with opportunities to save health care costs without sacrificing health outcomes. As a result of prospective payment mechanisms, savings in health expenditures for these patients may indeed be realized through greater efficiencies.

Multiple studies in the past have examined provider responses to Medicare PPS. These responses included (1) discharging patients earlier and possibly readmitting them into another DRG,^{3,12-14} (2) shifting patients from the more expensive inpatient treatment mode to the less expensive outpatient treatment mode or to a nursing home,^{12,15} (3) coding patient conditions into the highest reimbursement DRG category possible to maximize payment from Medicare,¹⁶ and (4) "dumping" patients (with high levels of severity within a DRG and hence high costs to treat) to other facilities.¹⁵ One unanswered question is whether these responses are also observed in groups of psychiatric patients such as those with SD who use many health services.

Although Medicare's PPS is targeted for hospital services, it may affect physician services and emergency room services as well. For example, if inpatient services are reduced in response to the PPS, physician services may be increased to provide continuity of care after hospital discharges. Another possible effect, or a "spillover effect," is a change in utilization for non-Medicare patients, resulting from payers (insurers) adopting similar prospective schemes to reimburse providers or from the providers' change in practice patterns. This effect may be more pronounced in markets where the Medicare market share is relatively large. Therefore, to assess the PPS effects on cost containment accurately and comprehensively, it is important to measure patients' use of services from all providers, examine overall use of services in addition to subcategories of services (e.g., overall expenditures in addition to expenditures for hospital services or physician services), and examine non-Medicare patients to evaluate possible spillover effects.

Studies that use only one source of patient utilization data (e.g., hospital data alone) do not fully account for all the services a patient may receive from other sources.^{2,17} While PPS is associated with a reduction in inpatient services and with an increase in other services,^{2,3,13,15,17} little is known about the combined (inpatient + outpatient + emergency room) effect or the effect on overall use. Studies using exclusively Medicare patient data cannot estimate the possible spillover effect of PPS on non-Medicare patients,^{1,2,4,12,16,18} those that have examined non-Medicare patients use hospital discharge data alone, and therefore a patient's services other than those provided by the selected (study) hospitals are not included.^{3,13,15,17}

This study takes advantage of a unique database to examine the PPS effects on the comprehensive use of health services by both Medicare and non-Medicare patients with SD. This database contains comprehensive information on each patient's overall health care use measured by his or her total health care expenditures for all services (inpatient, outpatient, and emergency room) from all providers. The study of a psychiatric disorder with high costs and substantial opportunities for cost reduction through avoidance of hospitalization affords a unique opportunity to examine the impact of PPS implementation.

Methods

The data were collected as part of larger studies of cost-effectiveness and functional health status from a primary care population. The data collection process has been reported elsewhere in full detail^{10,19} and is highlighted here. Two samples of patients with SD were recruited in this study using the same data collection procedures. Specifically, internists and family physicians in the central Arkansas area were contacted by telephone and letter requesting the referral of patients who they felt met the essential feature of SD (i.e., "recurrent and multiple somatic complaints of several years' duration for which medical attention has been sought but which are apparently not due to any physical disorder"). After the informed consent was obtained, all the referred patients were interviewed in a research setting at the medicine department of a university medical center. The diagnoses were made using a semistructured research interview by a research psychiatrist (G. Richard Smith). All patients meeting criteria for SD in both samples participated in the study. In the first sample, 38 patients were diagnosed as SD patients in 1982 (intake or baseline) according to the *Diagnostic and Statistical Manual of Mental Disorders, Third Edition (DSM-III)*.²⁰ In the second sample, 73 patients were diagnosed as SD patients in 1987 (intake or baseline) according to *DSM-III-R*, the revised version of *DSM-III*. The concordance rate between these two diagnostic criteria is 96.4% for these two samples.¹⁹ The first sample was originally recruited as a pilot study, so it had a smaller sample size. None of the patients in the first sample was included in the second sample. To further examine whether the two samples were comparable, differences were compared between the two samples in sociodemographics using *t*-tests (for continuous variables) and χ^2 tests (for percentages). There were no statistically significant differences in age (44.9 years vs. 44.1 years; $p = 0.7$), in the percentage of females (84.2% vs. 84.9%; $p = 0.9$), in the percentage of minorities (36.8% vs. 20.5%; $p = 0.1$), in marital status (52.6% vs. 69.9% married; $p = 0.10$), in education (18.4% vs. 31.5% with college education; $p = 0.12$), and in the percentage of rural residence (47.4% vs. 47.9%; $p = 0.9$).

To obtain utilization data, each patient was asked for permission to release their medical utilization information. Physician records, hospital records, and insurance records were then requested. Follow-up telephone calls were often necessary. Information on each patient was reviewed to identify additional sources of care. If these were found, each new source was contacted until the patient's file was complete. When the actual charge for a service was unobtainable, the "usual, customary, and reasonable" fee from Arkansas Blue Cross-Blue Shield was used.

Each patient's utilization data were collected for 4 years—2 years before the intake (baseline) and 2 years after the intake. For these analyses to avoid possible effects of the patients' participation in the research on their utilization, only utilization data for the 2 years prior to the intake in both samples were chosen—namely, the 1980-1981 utilization data for the first sample and the 1985-1986 utilization data for the second sample. Thus, utilization of the first sample occurred clearly before the PPS and of the second sample well after the PPS implementation.

Three measures of health care use were analyzed in this study: inpatient utilization, including the annual number of hospital admissions, annual number of hospital days, and average length of stay; outpatient utilization, including the annual number of physician visits and annual number of

Table 1
Relative and Actual Changes in Annual Utilization
After PPS Compared to Before PPS

	Medicare Patients (<i>n</i> = 35)		Non-Medicare Patients (<i>n</i> = 76)	
	%	Actual (Before ± <i>SD</i> , After ± <i>SD</i>)	%	Actual (Before ± <i>SD</i> , After ± <i>SD</i>)
Hospital admissions	-57*	-0.98 (1.73 ± 2.57; 0.75 ± 1.14)	-44**	-0.34 (0.78 ± 0.98; 0.44 ± 0.73)
Hospital days	-68*	-11.42 (16.73 ± 31.99; 5.31 ± 9.87)	-42*	-1.54 (3.67 ± 4.98; 2.13 ± 4.86)
Emergency room visits	44	1.47 (3.32 ± 7.43; 4.79 ± 5.44)	446***	4.86 (1.09 ± 1.82; 5.95 ± 7.48)
Physician visits	83*	7.39 (8.86 ± 6.73; 16.25 ± 14.86)	-5	-0.68 (13.20 ± 10.33; 12.52 ± 9.77)
Health expenditures (\$)	-48	-4,047 (7,814 ± 12,704; 3,767 ± 5,297)	-27	-851 (3,171 ± 3,098; 2,320 ± 3,823)

NOTE: PPS = prospective payment system. The percentage change is calculated by dividing the difference between after- and before-PPS utilization by the before-PPS utilization. The average ± standard deviations before- and after-utilization figures are shown in parentheses.

p* < 0.10, *p* < 0.05, and ****p* < 0.01 in the before-PPS and after-PPS comparisons.

emergency room visits; and overall utilization, measured by annual total health expenditures for all services a patient received in one year. These expenditures were approximated by charges abstracted from each patient's medical records, billing records, and insurance records, and they were expressed in 1985 constant dollars by adjusting for medical inflation.²¹

The average annual utilization rates were calculated for inpatient, outpatient, and overall utilization for patients before the PPS and after the PPS, respectively. The percentage change in utilization for each utilization measure from the before-PPS sample to the after-PPS sample was also calculated. Since each patient has 2 years of utilization data or 2 observations (repeated) in the data, the utilization in the first year is likely to be correlated with that of the second year. This violates the assumption of independence among the error terms in ordinary least squares estimation. To account for the variance-covariance structure of the error terms, analyses of variance with repeated measures were performed to test whether the changes in utilization between these two samples (the between-subjects effect) were statistically significant different from 0. The general linear models procedure (PROC GLM) in SAS was used to perform the analyses.

Results

Relative (as well as actual) changes in utilization, measured by the percentage change from before PPS to after PPS—for Medicare patients and for non-Medicare patients, respectively—are presented in Table 1, along with their annual utilization rates presented in parentheses. Results significant at the *p* = 0.10 level were presented because of the small sample sizes in the analyses. The results show that significant changes for both Medicare and non-Medicare patients were reductions in hospital admissions and hospital days. However, for Medicare patients, there was a significant increase in the number of physician visits, and for non-Medicare patients, there was a significant increase in the number of emergency room visits. The reduction in health expenditures after PPS for Medicare patients was \$4,047, but it was not significant (*p* = 0.13) due to the small sample size and highly skewed distribution of expenditures. There were no significant changes in the length of hospital stay for both Medicare and non-Medicare patients (not shown in the table).

Discussion

After Medicare PPS, results from this study of patients with SD indicate (1) no significant earlier hospital discharges, (2) a shift from inpatient to emergency room services for non-Medicare patients and from inpatient to physician office services for Medicare patients, (3) lower total health expenditures, and (4) a possible spillover effect with concomitant changes in utilization for non-Medicare patients.

The results for Medicare patients with SD are consistent with previous findings for Medicare patients with general medical conditions in that inpatient services decreased after Medicare PPS,^{13,15,17} while the use of other services increased.^{15,17} In contrast to previous studies,^{13,15,17} however, this study shows that Medicare PPS is also associated with the changes in utilization for non-Medicare patients with SD. This possible spillover effect may be attributable to changes in practice patterns experienced by providers for individuals with SD that lead to similar changes in the use of services for both the Medicare and non-Medicare patients after Medicare PPS. This spillover effect may be unique to patients with psychiatric disorders.

However, it should be emphasized that spillover is only one possible explanation for the observed changes in use by non-Medicare patients. It is certainly possible that the observed changes, in both Medicare and non-Medicare patients, are due to a third variable other than PPS, such as the implementation of other cost containment policies. The results indicate only an association, not a causal relationship, between PPS and services utilization.

The results in this study indicate that the shifts from inpatient services to emergency room services and to outpatient physician services are different between Medicare and non-Medicare patients after the Medicare PPS. The data included hospital and nonhospital services from all the sources for each patient that provided a greater level of confidence in the comprehensiveness of calculating overall services utilization in this study and hence on the conclusions.

There was not a decrease in the average length of stay in contrast to previous studies.^{3,13,17} Thus, the reduction in inpatient services for the patients largely resulted from a reduced number of admissions, not from a reduced length of stay. Again, the results on the length of stay may be unique for patients with psychiatric disorders or SD in particular. Since the decrease in the length of stay was only 5% (3% for Medicare patients and 11% for non-Medicare patient), the small sample size should not have contributed to this nonsignificant finding in the length of stay.

There are several limitations to this study. First, results from this study, as well as those from other studies, confirm only an association;²² they do not imply a causal relationship between Medicare PPS and the changes in health care use. Other factors, such as changes in the practice environment and technology unrelated to PPS, may have an influence on services utilization. In this study, before-after comparison of utilization was carried out in two different samples of patients that may have had intrinsic differences in their propensity to use services even though their sociodemographic characteristics are comparable. Thus, the observed difference in utilization before and after the PPS may be a consequence of such unmeasured differences rather than the PPS.

Furthermore, SD patients are a unique group of patients. Because of their high numbers of unexplained medical complaints, these patients tend to have high utilization rates. Therefore, the results presented in this study may not be generalizable to patients with other psychiatric disorders. SD patients, by definition, have multiple unexplained physical complaints and are frequently hospitalized. Therefore, a reduction in hospital admissions may be more easily achieved compared to what might be possible for individuals with chronic and persistent mental illnesses such as schizophrenia. How these findings would generalize to specialty mental health settings and disorders such as schizophrenia is unknown. Furthermore, it would be important to replicate this study in other mental health disorders identified frequently in primary care settings, such as major depression.

The sample size in this study is relatively small, and the distribution of use is usually skewed. The differences of some of the before-after comparisons were not significant (or only marginally significant), yet were substantial in magnitude. For example, emergency room visits increased 44%

for Medicare patients, and overall health expenditures decreased 48% for Medicare patients and 27% for non-Medicare patients. These differences would become statistically significant if the samples were larger, assuming that the variances did not increase with the sample size. According to Cohen,²³ if the effect sizes (mean differences and variances) stay the same, a total of 78 (instead of the current 35) Medicare patients would be needed to detect the current decrease of 48% in health expenditures, with 80% power at the $p = 0.05$ level. Similarly, 154 (instead of the current 76) non-Medicare patients would be needed to detect the 27% decrease in overall health expenditures for non-Medicare patients with 80% power at $p = 0.05$. However, it is unlikely that the effect sizes will stay unchanged as sample sizes increase. Therefore, even larger samples may be needed to detect a significant before-after PPS change.

Implications for Behavioral Health Services

Studies on the impact of PPS on use of services by psychiatric patients are few in spite of their importance in today's health care policy decisions. Federal and state insurance administrators such as those of Medicare and Medicaid, as well as private insurers, are looking for ways to finance mental health services more efficiently, as the budget for these services is shrinking at all levels. For example, most states now have Medicaid waivers for managed mental health such as capitation.²⁴⁻²⁶ One inevitable concern for the state Medicaid programs is whether such capitation will negatively affect the use of mental health services by Medicaid eligibles. These results from patients with SD suggest that the use patterns are likely to change with fewer inpatient services, more outpatient services, and lower total health care expenditures. A recent study of Medicaid speciality services for mental health and substance abuse in Massachusetts found similar reductions in health services after the implementation of capitated Medicaid, without concomitant reductions in quality.²⁷

An important limitation to this study is that it was impossible to relate these changes in use patterns to changes in quality and outcomes of care. However, previous research in SD patients indicates that proper management of the disorder can result in savings in health expenditures without sacrificing health outcomes.^{10,11} Furthermore, a separate study of the prospective payment on costs and quality of care in a sample of elderly patients with depression indicates that Medicare PPS is not associated with a marked drop in quality and outcomes of care.¹ Evidence from these and other studies suggests that there may be opportunities to achieve higher levels of efficiency (reducing health costs without sacrificing quality of care) for certain psychiatric disorders through prospective payment mechanisms.^{6,28}

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