Medicaid nursing home reimbursement policies, rates, and expenditures

by Charlene Harrington and James H. Swan

Nursing home expenditures, along with those of hospitals, have been a target of cost containment efforts because they constitute a growing share of overall public expenditures for health. Of the total $287 billion spent on personal health care in 1982, $27 billion (9.5 percent) was spent on nursing home care (Gibson, Waldo, and Levit, 1983). Nationally, nursing home expenditures increased at a rate of 17.4 percent between 1980 and 1981 and 12.9 percent between 1981 and 1982, more rapidly than overall health care expenditures (Gibson, Waldo, and Levit, 1983).

Introduction

Nursing home expenditures are a particular public policy concern because public programs paid for 55 percent of the total health care expenditures in 1982 (Gibson, Waldo, and Levit, 1983). In 1982, Medicaid paid for 48.3 percent, Medicare for 1.8 percent, and other public programs for 4.8 percent of the total nursing home costs. Private individuals paid 43.6 percent of the costs, while private insurance and philanthrophy paid only 1.5 percent (Gibson, Waldo, and Levit, 1983). Considering expenditures for the aged, 75 percent of Medicaid expenditures were for nursing home care in 1982, having increased from 71 percent in 1978 (Health Care Financing Administration, 1983).

Because Medicaid pays the greatest proportion of total nursing home expenses, State Medicaid policies for nursing home reimbursement substantially affect national nursing home expenditures. The total Medicaid expenditures for nursing homes are made up of the Medicaid rates per day, the number of recipients, and the number of days of service per recipient. Efforts at cost constraint focused on many if not all of these factors.

Within Federal guidelines, State Medicaid programs have considerable discretion in establishing reimbursement policies for nursing homes; and State Medicaid reimbursement policies for nursing homes establish State rates per day. States have moved away from retrospective cost-related reimbursement and toward prospective reimbursement systems in an effort to reduce nursing home costs (Spitz and Atkinson, 1982; Harrington et al., 1984). Since 1980, States have been given greater discretion in setting reimbursement rates for nursing homes, and have made many other changes in reimbursement policies, so as to reduce the growth in nursing home expenditures (Intergovernmental Health Policy Project, 1982; National Governor's Association, 1982).

Although a number of studies have examined factors related to nursing home costs, these studies have generally focused on the costs for individual nursing homes, and not on total State nursing home costs (Bishop, 1980; Ruchlin and Levey, 1972; Walsh, 1979; and Shaughnessy et al., 1982). Some studies have examined differences in nursing home cost across States (Jensen and Birnbaum, 1979; Lee and Birnbaum, 1979; Birnbaum et al., 1981b). Other studies have examined issues and trends in nursing home reimbursement, (Congressional Budget Office, 1977a and 1977b; Health Care Financing Administration, 1981a and 1981b; Shanks et al., 1980; U.S. General Accounting Office, 1979; and Spitz, 1981a). Few studies have examined specific State Medicaid policies that affect nursing home utilization (Scanlon, 1980a and 1980b; Feder and Scanlon, 1980) or expenditures (Birnbaum, et al., 1981a; Ting, 1982; and U.S. General Accounting Office, 1983).

This study employed an analysis of secondary data to examine State reimbursement policies in the Medicaid program and their effects on State nursing reimbursement rates and expenditure patterns. Particular attention was given to the effects of prospective and retrospective reimbursement systems on Medicaid nursing home rates and expenditures. The study was limited to skilled nursing facility (SNF) and intermediate care facility (ICF) services. Intermediate care facilities for the mentally retarded (ICF-MR) were excluded because these services are not targeted for the aged.

The first objective was to examine 1978-82 trends in basic State reimbursement systems for skilled nursing and intermediate care facilities. The level of each State's reimbursement rates, and the changes in these rates were then examined for the period of 1979-81. Additional data on other reimbursement policies and rates for 1978 and 1982 were not available at the time of the analysis.

The study used regression analysis to examine the relationship of State reimbursement systems to average State reimbursement rates and to changes in the rates. Regression analysis was also used to examine the relationship of nursing home expenditures per recipient to State reimbursement systems, considering the mediating effects of reimbursement rates.

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Background

Federal Medicaid reimbursement policies

When Medicaid was established, States were given considerable latitude to determine their rates for nursing home services. By contrast, Medicare skilled nursing reimbursement was based on reasonable costs of providing services, and these were determined retrospectively (after the services were delivered) on the basis of actual costs. Although some States established their own reimbursement policies for Medicaid, others adopted the Medicare reimbursement regulations for their Medicaid program (U.S. General Accounting Office, 1983). Those States that used their discretion generally set their Medicaid rates below those of Medicare and private payers.

In 1972, amendments to the Social Security Act (Public Law 92-603) were changed to require States to implement reasonable-cost-related reimbursement plans for nursing homes by 1976 (later changed to 1978). These changes were enacted, in part, because of provider complaints that States were too restrictive in their policies. Under the new provisions, each State was required to explain its cost-finding procedures (methods to determine reimbursable costs) and cost-reporting requirements (information and reporting periods) (Grimaldi, 1982). This change did appear to stimulate growth in State Medicaid nursing home costs.

In 1980, the Omnibus Reconciliation Act (Public Law 96-499, section 962) changed the Medicaid nursing home reimbursement requirements to give States more flexibility in interpreting reasonable costs. This change allowed rate methods and standards that are reasonable and adequate to meet the costs that would be incurred by efficiently and economically-operated facilities. This change was made in response to State complaints that delays in the issuance of Federal regulations unduly restrained State administrative and fiscal discretion, forcing the States to rely heavily on the Medicare principles. The Senate Finance Committee found the reasonable-cost-related requirements to be inflationary and to lack incentives for efficient operation by providers (Commerce Clearing House, H.R. 934, 1979).

State Medicaid reimbursement policies

States have long used nursing home reimbursement as a means to achieve a variety of public policy goals related to access and quality of care. More recently, State policymakers have focused their use of reimbursement methods on the control of increases in the costs of Medicaid services (Spitz et al., 1980 and 1981b). When establishing rates, State policymakers may take into account such factors as the supply of (number and type of beds) and the demand for (number of individuals seeking services and the number eligible for services) nursing home services (Feder and Scanlon, 1980; Scanlon, 1980a and 1980b). When developing reimbursement methods and rates, policymakers may also take into account historical delivery patterns, growth rates in expenditures, private prices for services, political pressures and other factors.

Public reimbursement policies are complex and include a large number of dimensions. States methods differ in the cost components allowed; in ceilings on various components or on overall costs; and in the consideration of such factors as property costs, inflation rates, State licensing standards, and profit rates (Spitz et al., 1980, 1981a, 1981b; Grimaldi, 1982; McCaffree, 1976). In addition, States may elect to modify service delivery patterns and costs through incentives and disincentives involving such factors as occupancy rates, quality of care, and case mix (Birnbaum et al., 1979, 1981a, and 1981b; Kurowski and Shaugnessy, 1983; Walsh, 1979; Bishop, 1980). Historically, data on Medicaid reimbursement policies have not been accurately recorded, thus restricting the historical policy analysis that can be conducted. Only recently have efforts been undertaken to collect State policy data on Medicaid reimbursement (La Jolla, 1982).

The requirement that State Medicaid programs set reimbursement rates in some relationship to the cost of care necessitates periodic adjustments for inflation. Most State Medicaid programs adjust their rates for inflation annually, although some States have been willing to make semi-annual adjustments. In 1978, 42 States made annual rate revisions, six made semi-annual adjustments, and one made adjustments every third year (American Health Care Association, 1978). States have several options in their adjustments for inflation, including the use of the Consumer Price Index (CPI), the Market Basket Index (which includes only health-related costs), the gross national product deflator (GNP-deflator), and the Nursing Home Price Index developed by the Department of Health and Human Services (Spitz and Atkinson, 1982; U.S. General Accounting Office, 1983). States make periodic reimbursement rate adjustments without changing their basic Medicaid reimbursement systems or policies.

Discretionary State Medicaid nursing home reimbursement policies are translated into rates, which in turn affect nursing home expenditures. Although nursing home rates are the products of State policies, rates cannot be seen as completely manipulable factors. The setting of nursing home rates must take into consideration nursing home costs, customary levels of reimbursement, and some level of cooperation by nursing home operators. Moreover, State rate setting generally takes place in an environment of strong industry influence, including lobbying by one or more nursing home associations. Thus, it is reasonable to expect that a State's reimbursement system would influence rate setting, especially the State's ability to contain increases in rates.

Types of reimbursement methods

Reimbursement methods can be classified in different ways. One of the most important issues is whether reimbursement is made on a retrospective or on a prospective basis. Retrospective reimbursement is paid after services have been provided, using some type of reimbursement formula based on the expenses incurred. Retrospective cost-related or cost-based payment methods offer little incentive for facilities to restrict their costs, and may encourage facilities to expand staff, to raise wages, to spend funds on capital improvements, and to undertake other activities that are fully reimbursed with few limitations (Grimaldi, 1982). Thus, State cost-containment policies may be overshadowed or contradicted by the incentives created under retrospective cost-based payment systems (Office of the Secretary, 1982; Coelen and Sullivan, 1981). However, reimbursement under retrospective systems may be limited by various ceilings on cost centers and constraints on allowable costs.

Prospective reimbursement methods are those by which payment rates are determined before services are provided and funds expended (Grimaldi, 1982). Such advance determination of rates gives providers incentives to keep expenditures within the amounts allowed. It may, however, also give providers incentives to reduce services and quality, so that different types of monitoring systems are needed for prospective reimbursement systems than for retrospective systems. Studies of prospective reimbursement for hospitals have shown States with mandatory programs to be effective in controlling costs (Coelen and Sullivan, 1981; Office of the Secretary, 1982; U.S. General Accounting Office, 1980). Prospective systems have, thus, been designed by States to control costs, with the rationale that providers will lower expenditures for Medicaid recipients in order to stay within the annual rates.

Some States have developed modified reimbursement or combination systems that include some aspects of both prospective and retrospective reimbursement. For example, such an approach may include setting a rate in advance, but making retrospective adjustments for selected items.

A second distinction in reimbursement methodology is whether facilities are reimbursed on an individual basis or on a class (i.e., group or flat rate) basis (La Jolla, 1982). States with facility-specific rates apply a reimbursement formula to each individual facility, dependent upon its costs or other factors. In contrast, class rates are characteristically determined for peer groups of facilities, or for types of facilities in a State, using a method of estimating costs over a designated period for an expected number of patient days. These rates impose limits on overall expenditures but vary according to the formulas used and the variables taken into account. States may institute class rates with the expectation that rates will be better controlled and/or that this approach will lower State administrative costs.

Methods

Secondary source data on Medicaid nursing home reimbursement methods and rates from 1978-82 were compiled and analyzed. To describe these State Medicaid program characteristics, data were used on reimbursement methods for 1981-82, and the rate data for 1979 through 1981, collected by the La Jolla Management Corporation (1982) for a Health Care Financing Administration (HCFA) Contract No. 500-81-0400. The rate data were based on weighted averages submitted by the individual States to La Jolla Management Corporation and verified by the Health Care Financing Administration. Historical data on reimbursement methods for 1978-80 were obtained from data collected by the American Health Care Association (1978) and the National Governors' Association (1982) surveys of Medicaid policies.

The classification system for reimbursement methodology designed by La Jolla Management Corporation was used in comparing State methods. Where conflicting data were reported, telephone interviews of State Medicaid officials were made by our project staff, to obtain correct data or clarify the conflicting information.[1] Data on Medicaid expenditures from the HCFA Form 2082 were complied by States for the years 1978-82. Medicaid expenditures were analyzed on a per recipient, rather than on a per-day basis, because data on days of care were considered less accurate.

Regression analysis was used with State Medicaid nursing home expenditures and reimbursement rates on dummy variables, representing reimbursement methods that are alternatives to retrospective reimbursement. Thus, the regression coefficients represent differences between alternative and retrospective systems. Analysis was done using both actual rates and rates that were adjusted for regional CPI. No differences were found in the patterns of relationships using the adjusted rate measures. The following results are discussed in actual dollar amounts.

Study results

State reimbursement methodologies

For this analysis, four types of reimbursement systems were considered:

- Retrospective
- Prospective facility-specific
- Prospective class
- Combination retrospective and prospective.

The latter three systems were considered to be alternative systems to the traditional retrospective reimbursement system.

[1] Project staff have undertaken a telephone survey of State Medicaid programs to obtain data on Medicaid nursing home reimbursement systems and rates for the period 1978-83. Data from this survey will be available in the near future.

Table 1

State skilled nursing facilities and intermediate care facilities, by type of Medicaid reimbursement system: 1978-82

Reimbursement system	Skilled nursing facilities					Intermediate care facilities				
	1978	1979	1980	1981	1982	1978	1979	1980	1981	1982
Nursing facilities	Number of States									
Retrospective	18	17	16	15	12	15	14	13	12	9
Alternative	(32)	(33)	(34)	(35)	(38)	(35)	(36)	(37)	(38)	(41)
Prospective facility specific	22	22	23	23	25	25	25	26	26	28
Prospective class	4	4	4	5	6	4	4	4	4	5
Combination	6	7	7	7	7	6	7	7	8	8

SOURCES: Adapted from American Health Care Association: *How Medicaid Pays for Long Term Care*. Washington. American Health Care Association, 1978.

Adapted from National Governor's Association. *A Catalogue of State Medicaid Program Changes*. Washington. The State Medicaid Program Information Center. National Governor's Association, 1982.

Table 1 reports the types of Medicaid nursing home reimbursement systems employed by States from 1978-82. States using a retrospective facility-specific reimbursement system decreased from 18 to 12 for skilled nursing facilities (SNF), and from 15 to 9 for intermediate care facilities (ICF). Of those States with alternative systems, the great majority used prospective facility-specific reimbursement—all but 10 in 1978. During 1978-82, three States switched from prospective facility-specific reimbursement to prospective class or combination systems.

All but three States used the same reimbursement methodologies for both SNF and ICF facilities. The three States (Iowa, New Hampshire, and Tennessee) that were exceptions had retrospective reimbursement systems for SNF's but prospective-facility specific facilities for ICF's. In all three of these States, the majority of the beds were intermediate care, with SNF care representing only a small percentage of the total nursing home beds. The States all had approved systems that were reasonably cost related.

The pattern of State Medicaid reimbursement methods gradually changed during 1978-82, with most changes occurring in the last year. For both SNF and ICF reimbursement systems, two States (Ohio and South Carolina) changed in fiscal year 1979, one State (Kentucky) changed during fiscal year 1980, two States (Utah and West Virginia) changed in fiscal year 1981, and four States (Arkansas, Idaho, Missouri, and Nebraska) changed in fiscal year 1982. Of these nine States, six changed from a retrospective to an alternative system, while three States (Arkansas, Ohio, and Utah) changed from one alternative to another alternative system. The changing of reimbursement systems by nine States is not a slow rate of change over a 5-year period, especially since the policy changes involved programs with large expenditures of funds and were such that they might have important effects on providers of services. Moreover, these changes represented decreases of one-third in the number of States with retrospective reimbursement systems for SNF's, and of two-fifths in those with such systems for ICF's, during a four-year period. These changes in reimbursement systems, especially the trend away from retrospective reimbursement, can be taken to reflect a nationwide effort to achieve greater cost constraints in Medicaid nursing home reimbursement.

State nursing home rates

Reimbursement rates for nursing home services are generally developed on a cost-per-day basis. The average daily SNF reimbursement rate for each State was collected by the La Jolla Management Corporation for fiscal years 1979, 1980, and 1981.[2] The La Jolla data reported that the cross-state average Medicaid SNF reimbursement rate was $41.71 per day in 1981 (Table 2). States ranged from a low of $25.53 per day in Arkansas to a high of $97.39 in Alaska. The average ICF rate in 1981 was $33.49, with a range from $22.16 in Kansas to $97.39 in Alaska. These data show considerable cross-state variation that may be explainable by reimbursement systems.

Changes in Medicaid reimbursement rates can be examined both by comparing percentage increases, and by considering absolute changes between years (Table 2). For the 46 States and District of Columbia, the national average SNF rate increased from $33.20 to $41.71 (27 percent) from 1979-81. During the same period, the national average ICF rates increased 25 percent. Individual States varied considerably on changes in rates.

The average State Medicaid rate increase was about the same as the rate of inflation for the 1979-81 period (CPI increased 25.3 percent in this period). Using the 1977 CPI increases to adjust the rates for each state in the four regions of the U.S., the average SNF and ICF Medicaid rates across the States showed no real change over the 1979-81 period (Table 2).

[2] The La Jolla data were gathered by a written survey of State Medicaid programs. Requested rate data were to be in the form of average rates, weighted for the number of beds covered by each specific rate, for SNF, ICF, and ICF-MR reimbursement.

Table 2

State Medicaid nursing-home average daily rates, by year and changes, 1979-81

Year	Nursing home average daily rates [1] In dollars SNF [2]	In dollars ICF [3]	In constant 1977 dollars SNF	In constant 1977 dollars ICF
1979	$33.20	$26.82	$28.38	$22.91
1980	37.63	30.13	28.31	22.65
1981	41.71	33.43	28.43	22.77
Changes				
Average dollar change	$ 8.51	$ 6.61	$ 0.06	$ −0.14
Average percent change	26.6	25.1	1.0	−0.2
Number of States [4]	46	45	46	45

[1]Averages across States of State weighted average rates.
[2]Skilled nursing facilities.
[3]Intermediate care facilities.
[4]Includes only States with data available for the entire 1979-81 period.

SOURCE: La Jolla Management, Corporation: *Medicaid Program Characteristics: Summary Tables. Volume 1.* Contract No. 500-81-0040. Prepared for the Health Care Financing Administration. Calif. 1982.

Changes in reimbursement methods

State Medicaid methods were classified into four categories to study possible effects on rates of different reimbursement methods. Average rates and average changes in rates across States were compared across these categories. In addition, average rates for the retrospective systems were compared to the combined alternative systems.

For the analysis a strategy of considering changes from retrospective to alternative system was adopted (there were six such changes). For the examination of rates in any year, the States are classified in terms of the systems in place in that year, except that States changing from retrospective to alternative systems between that year and 1982 are separated from the other retrospective States. When changes in rates between 1979 and 1981 were examined, the 1979 reimbursement system measures were used as independent variables, and the retrospective States that changed to alternative systems between 1981 and 1982 were separated from the other 1981 retrospective States. The States that subsequently changed from retrospective systems were separated from other retrospective States because they may already be nonrepresentative of such States. States that change from retrospective to alternative systems might be expected to be different from other retrospective States on such outcomes as average rates—low-rate States might change systems in order to maintain their cost control, or high-rate States might change systems in order to constrain their high costs.

In fact, the six States that changed from retrospective to alternative reimbursement systems during the 1978-82 period have lower average rates than do the other retrospective States on SNF and ICF rates between 1979 and 1981, even though half of them did not change their systems until after 1981 (Table 3). The highest rates among these six States were lower than the averages for all retrospective States, and lower than the rates for most of the individual retrospective States that did not change their reimbursement systems. Thus, retrospective States that changed their reimbursement systems between 1978 and 1982 were already among those with the lowest rates even before such changes.

Table 3

Average daily rates, by number of States and retrospective system: 1979-81

Retrospective system	Number of States	Average daily rates SNF [1] 1979	SNF [1] 1980	SNF [1] 1981	Number of States	ICF [2] 1979	ICF [2] 1980	ICF [2] 1981
Total	18	$38.54	$43.20	$48.10	15	$30.61	$34.09	$37.67
Changed system	6	30.87	35.69	38.71	6	23.34	25.78	28.90
Unchanged system	12	42.38	47.71	53.73	9	36.07	40.31	44.26

[1]Skilled nursing facilities.
[2]Intermediate care facilities.

SOURCES: Adapted from American Health Care Association: *How Medicaid Pays for Long Term Care.* Washington. American Health Care Association, 1978.
Adapted from National Governor's Association: *A Catalogue of State Medicaid Program Changes.* Washington. The State Medicaid Program Information Center. National Governor's Association, 1982.
La Jolla Management: *Medicaid Program Characteristics: Summary Tables. Volume 1.* Contract No. 500-81-0040. Prepared for the Health Care Financing Administration. Calif. 1982.

Relationship between Medicaid reimbursement methods and rates

The relationship between reimbursement methods and rates was considered by regressing average rates in a given year on dummy variables. These variables represent each alternative reimbursement system in place in that year and the subsequent change in that system. In order to test the hypothesis that methods significantly influence rates, these regression methods were employed to contrast the mean rates for the States with alternate systems to rates in States with unchanging retrospective systems.

Table 4 shows that the average SNF and ICF rates are related to the reimbursement systems. In States with prospective facility-specific systems, 1979 SNF rates averaged over $10 less than in States retaining retrospective systems (this difference is statistically significant, $p < .05$). The difference in 1981 average rates is almost $14 (significant $p < .01$). Likewise, the differences are between $16 and $20 for States with prospective class systems (significant $p < .05$). The differences for the States with combination systems are between $13 and $17 for each year (significant $p < .05$). Table 4 reports similar findings for ICF systems and rates. States with each of the alternative systems have average rates for each year that are at least $10 lower than those for States retaining retrospective systems. These differences are all significant.

Table 4 also shows that States changing from retrospective to alternate systems have significantly lower rates than do States with unchanging retrospective systems. In 1979, SNF rates were over $12 lower for the retrospective States that subsequently changed than for those that did not; this difference was well over $17 for 1981 rates ($p < .05$). The difference is between $13 and $17 for ICF rates. These differences in rates cannot be attributed to the newly-adopted alternative systems because they involve only changes from retrospective to alternative reimbursement occurring after the year for which the rate is being estimated.

Findings suggest that reimbursement systems do influence reimbursement rates—States with alternative reimbursement systems tend to have lower rates. However, the absolute level of rates in a State in a given year is highly related to rates in earlier years, so an association between rates and systems in a given year may not necessarily indicate effects on rates of alternative reimbursement systems in effect in that year.

The findings for the States changing to alternative systems could also be taken to suggest that a State's changing of reimbursement systems is related to its rates. A test of this hypothesis might involve regressing changes in the reimbursement system on earlier rates, predicting systems by rates—logistic regression techniques would be appropriate because the reimbursement system measures are categorical. An alternate hypothesis is that there are other factors (State policies or State characteristics) causing certain retrospective States both to have lower rates and to be likely to change to alternative reimbursement systems (e.g., such States may have a greater propensity to cost constraint). This article encompasses the testing of neither of these hypotheses; but the interpretation of the findings should be done with these hypotheses in mind.

States with alternative reimbursement systems have been found to have lower rate structures than do retrospective systems, perhaps as a consequence of the alternative reimbursement systems. A further analysis of this possibility necessitates the consideration of changes in rates. Any influence on rates by alternate reimbursement systems should come in the form of constraints on rate increases.

Table 4

Average daily rates for Medicaid nursing home, by reimbursement system and changes in reimbursement system: 1979-81

	Average daily rates					
	SNF [2]			ICF [3]		
Reimbursement system [1]	1979	1980	1981	1979	1980	1981
Nonchanging retrospective system	$42.38	$47.71	$53.73	$36.07	$40.31	$44.26
Changed from retrospective system, by 1982	[4] 29.98	33.26	[4] 36.16	[4] 22.58	[4] 25.69	[4] 27.28
Prospective facility specific	[4] 32.07	[4] 36.13	[5] 39.88	[4] 25.93	[4] 28.91	[4] 32.24
Prospective class	[4] 25.92	[4] 30.42	[5] 34.47	[4] 21.45	[4] 24.33	[4] 27.79
Combination	[4] 28.70	[4] 33.28	[4] 37.25	[4] 24.07	[4] 28.19	[4] 31.60

[1]The nonchanging retrospective system average mean dollar rate is shown for those States retaining retrospective systems between each year in question and 1982. It is estimated by the intercept when the rate for a given year is regressed on dummy variables representing each alternate system and on the dummy variable representing the change from a retrospective system. Each difference from the retrospective system average, for a given type of alternative system or for States changing from a retrospective system, is estimated by the corresponding unstandardized regression coefficient, and the mean is computed using this difference.
[2]Skilled nursing facilities.
[3]Intermediate care facilities.
[4]Difference from retrospective system mean significant at .05 level.
[5]Difference from retrospective system mean significant at .01 level.

Change in SNF and ICF rates by reimbursement systems

The relationship between reimbursement rates and reimbursement systems does not necessarily indicate that systems affect changes in rates. A test of the cost-constraining characteristics of alternative reimbursement systems is in the demonstration that lower increases in rates follow from their use.

To examine percent or absolute dollar changes in rates across years, observed changes as a function of predicted changes were measured, using base year rates (1979). Such regression-adjusted changes in rate are obtained by regressing changes in a period on the rate at the beginning of the change period, employing the residual values as the change measure. For absolute dollar changes, this method allows for a constant percent increase plus a constant absolute change over an earlier rate, estimated by regression coefficients. Regression adjustments with dollar changes assumes that some of the differences in rates across years are the result of changes proportional to the previous rates (i.e., overall percent differences across years). The change measure to be predicted is the deviation from the predicted values controlling for such overall changes. Regression adjustment of percent changes controls for those differences that are related to the magnitude of the base rate (i.e., controls for differences in percent changes that are attributable to the level of the previous rate). Regression adjustment can be accomplished by controlling for the earlier rate when regressing a change measure (absolute or percent change) on independent variables. Regression adjustment is necessary because States with higher base rates are expected to have greater dollar differences and smaller percent differences than States with lower base rates. Such regression adjustment was applied to both absolute dollar and percent changes.

Table 5 shows the results for the prediction of 1979-81 changes in rates. Of the alternative reimbursement systems, prospective facility-specific systems are significantly related to changes in SNF rates—States with such systems have expected changes in SNF rates $2.83 lower than do unchanging retrospective States, 9.8 percent lower on the percentage change measure. States with other alternative systems have expected SNF rate changes lower than do unchanging retrospective States, but these differences are not significant. The failure to find significant differences for systems may result from subsample sizes. However, where the three alternative systems are combined, the coefficient is significant—States with some alternative system show 1979-81 changes in rates about $2.57 and 8.6 percent lower than do States maintaining retrospective systems. Thus, evidence shows that alternative systems in general (and prospective facility-specific systems in particular) do allow for constraint of increases in SNF reimbursement rates. The results are no different when changes in rates are adjusted for changes in CPI.

When the analysis is done without regression adjustment, two types of differences emerge in the findings:

- The differences in dollar changes are significant for prospective class systems.
- The differences in percentage changes are not significant for prospective facility-specific systems.

The former may occur because the average 1979 rates are lower for prospective class systems, so the expected dollar changes are lower. The latter findings

Table 5

Changes in average Medicaid nursing home rates, by reimbursement system and changes in reimbursement system: 1979-81

	1979-81 changes in average rates							
	SNF [1]				ICF [2]			
	Specific alternatives		Grouped alternatives		Specific alternatives		Grouped alternatives	
Reimbursement system [3]	Dollar	Percent	Dollar	Percent	Dollar	Percent	Dollar	Percent
Unchanging retrospective system, 1981-1982	$10.38	32.7	$10.43	32.9	$6.74	24.9	$6.76	25.1
Changed from retrospective system, 1981-82	9.37	30.9	9.35	30.7	6.43	24.5	6.42	24.9
Alternative systems, 1981			[4] 7.86	[4] 24.3			6.59	25.1
Prospective facility specific, 1981	[4] 7.55	[5] 22.9			6.32	23.6		
Prospective class, 1981	7.89	26.0			6.68	27.8		
Combination, 1981	9.01	28.4			6.00	29.0		

[1]Skilled nursing facilities.
[2]Intermediate care facilities.
[3]The retrospective system measure is the mean dollar or percent change for States maintaining retrospective systems between 1981 and 1982. It is estimated, using regression, by the intercept and by the coefficient times the mean for the 1979 rate measure. Each difference from the retrospective system change is estimated by the coefficient for the variable representing a 1981 reimbursement system or the switch from a retrospective system; this is then used to compute the change measure.
[4]Difference from retrospective system significant at .05 level.
[5]Difference from retrospective system significant at .01 level.

may occur because the average 1979 rates are lower for prospective facility-specific systems, so the expected percent changes are higher.

No significant differences were noticeable for changes in ICF rates. In fact, the percent increases for States with prospective class and with combination systems are slightly (not significantly) higher than are those for retrospective systems. Current analysis indicates no evidence in these estimates that alternative systems allow for the constraint of ICF rate increases.

The retrospective States that switched to alternative systems have expected rate changes that are lower, but not significantly lower, than do the other retrospective States. It may be that there are too few such States to allow statistical significance to be detected with differences of the magnitude that exist, but it cannot be shown that such differences do exist. Thus, it may be that the changing States do not have lower increases in rates than do unchanging retrospective States—changes in reimbursement systems do not occur in States that had experienced more rapid increases than had the States without such changes. However, changing States may have expected to face larger increases in rates had they not switched from retrospective systems. Moreover, it is possible that such States faced higher expenditures or changes in expenditures, even if their rates were not higher.

Expenditures per recipient by reimbursement system

The effectiveness of alternate reimbursement systems is in the effects on overall costs, not just on rates. One effect of rates would be the impact on average Medicaid expenditures per day of nursing home care. Unfortunately, the State Medicaid data on days of care (HCFA Form 2082) are not adequate for this analysis. Therefore, the analysis considered average expenditures per recipient of nursing home care. Such expenditures are obviously dependent on the number of days of care, as well as payments per day, so that any inability to predict expenditures per recipient by reimbursement measures would possibly be due to the effects of days of care. Nevertheless, any evidence of effects of reimbursement systems on expenditures per recipient are important to the consideration of the effects of alternate reimbursement systems. Further, the hypothesis that reimbursement systems affect expenditures through constraint of average daily rates, can be tested. Thus, if daily rates are also controlled for, there should be no separate evidence of constraining effects of reimbursement systems.

Table 6 indicates results of regressing Medicaid SNF and ICF expenditures per recipient on reimbursement system (Equations 1, 3, 5, and 7), as well as on reimbursement rates in addition to these systems (Equa-

Table 6
Regression analysis of skilled nursing facilities and intermediate care facilities for Medicaid expenditures per recipient by reimbursement system and coefficients: 1979 and 1981 by average daily reimbursement rates

	1979 expenditures per recipient for nursing home care				1981 expenditures per recipient			
	SNF [1]		ICF [2]		SNF		ICF	
Coefficients	[3] EQ 1	EQ 2	EQ 3	EQ 4	EQ 5	EQ 6	EQ 7	EQ 8
	Amount in dollars							
Intercept	[5] 3,709	−472	[5] 6,178	[4] 1,841	[5] 5,465	799	[5] 8,010	[4] 2,496
Reimbursement systems:								
Prospective facility specific	479	[4] 1,343	−537	488	−757	548	−1,159	301
Other prospective	210	[4] 1,596	−1,338	103	−669	901	[4] −2,453	−651
Changed 1979-82 from retrospective [7]	−36	832	−1,502	−244	−916	720	−2,391	−276
Daily rate in 1979 [7]		[5] 101		[5] 125		[5] 84		[5] 125
R2 =	.013	[5] .354	.083	[5] .500	.019	.216	.159	[5] .587
N =	[6] 44	44	[6] 43	43	[6] 41	41	[6] 44	44

[1] Skilled nursing facilities
[2] Intermediate care facilities
[3] EQ = equation.
[4] Coefficient is significant at the .05 level.
[5] Coefficient is significant at the .01 level.
[6] Limited to these States for which the rate measure is available so that the N is the same as the equation that includes the rate measure. The N would otherwise have been 47 for equations 1, 3, and 7, and 44 for equation 5.
[7] In the equation for the 1981 expenditures, the reimbursement system change was for 1981-82 and the daily rate was for 1981.

SOURCES: American Health Care Association: *How Medicaid Pays for Long Term Care*, Washington. American Health Care Association, 1978.
National Governor's Association: *A Catalogue of State Medicaid Program Changes*. Washington. The State Medicaid Program Information Center, National Governor's Association, 1982.
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Health Care Financing Administration, Division of Medicaid Cost Estimates: National Statistics, Fiscal Years 1975-1982 by State, Form 2082. Table Data Tape, 1983.

tions 2, 4, 6, and 8). For this analysis, prospective class and combination system States are combined into a single category of non-prospective-facility-specific alternatives. This is done because of the small number of States in each of these categories and because of the relatively large standard errors for expenditures per recipient. When the regressions are run with separate categories for each, the coefficients for prospective class and for combination systems are not much different from one another.

For 1979, alternative reimbursement systems do not have expenditures per recipient significantly different from those of nonchanging retrospective States; but there are significantly lower 1981 ICF expenditures per recipient for States with non-facility-specific alternative reimbursement systems. States that subsequently changed reimbursement systems do not have expenditures per recipient significantly different from nonchanging retrospective States, so the lower 1981 expenditures for alternative systems are probably not due to the adoption of alternative systems by States that already had lower expenditures. Thus, it appears likely that alternative reimbursement systems do allow States to achieve lower ICF expenditures per recipient.

When average daily rates are controlled for (Table 6), alternative systems have significantly higher 1979 SNF expenditures per recipient than do retrospective systems. This indicates that States with alternative systems might have had much higher expenditures per recipient were it not for the constraining effects of their reimbursement systems on average daily rates. States with alternative systems may have had more average days of care per recipient, and they may control overall expenditures in the face of these more numerous days of care by restraining reimbursement rates. The 1981 results for expenditures per recipient support this interpretation. When 1981 ICF rates are controlled for, ICF expenditures per recipient for non-facility-specific reimbursement systems are not significantly lower than those for nonchanging retrospective systems. Likewise, the prospective facility-specific States had estimated lower (though not significantly lower) expenditures per recipient, but the estimate is slightly positive when rates are controlled for. Thus, the lower expenditures per recipient of States with alternative reimbursement systems can be largely attributed to lower rate structures.

In sum, it appears that alternative reimbursement systems allow States to control their expenditures per recipient of nursing home care by controlling the rates of reimbursement paid to providers. There is evidence that States with such reimbursement systems in 1979 tended to be those that would otherwise have had far higher expenditures per recipient than did retrospective-reimbursement States. By 1981, alternative reimbursement States tended to have lower ICF expenditures per recipient than did retrospective States, which can be largely attributed to their control of reimbursement rates.

Conclusions

The data presented in this article show that States using alternative reimbursement systems tend to have lower nursing home rates than do those States with retrospective reimbursement systems. The reimbursement system predicts rates well.

When retrospective States were divided into two groups on whether or not they changed to an alternative system by 1982, each alternative system showed significantly lower rates than did retrospective States that did not change their systems by 1982. More importantly, States with alternative reimbursement systems in general, and prospective facility-specific systems in particular, showed significantly lower 1979-81 increases in SNF rates than did the unchanging retrospective States. However, no such differences were found for changes in ICF rates.

It was expected that States that had experienced high rates or rapid increases in rates would be those found to adopt alternative reimbursement systems. No such relationships were found. To the contrary, retrospective States with lower rates in a given year were likely to be those that subsequently (by 1982) changed to alternative reimbursement systems. Thus, the States that later changed may have already been different from other retrospective States by 1979 or earlier. No relationship was found between changes from retrospective reimbursement systems and changes in rates. The direction of influence between rate levels and the changing of reimbursement systems could not be determined using techniques applied in the article. An interesting hypothesis arising from this research is that the retrospective-reimbursement States with lower rates are those most likely to change to alternative reimbursement systems.

It was further found that the lower-rate effects of alternative reimbursement systems appear to translate into lower expenditures per recipient. Such effects are detected even in the absence of any controls for days of care per recipient. Further analysis employing such controls is likely to produce even stronger estimates of such cost-constraining effects of alternative reimbursement systems.

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