
RUG-II Impacts on Long-Term Care Facilities in New York

Barry M. Schultz, M.D., M.S., David Ward, M.P.A., and James R. Knickman, Ph.D.

This article observes changes during the first 5 years of Resource Utilization Group, Version II (RUG-II) system utilization by the New York State Department of Health (NYDOH) for Medicaid program reimbursement. Findings include a dramatic increase in the number of residents scoring in the highest intensity resident-care categories, a substantial increase in staffing and expenditures for rehabilitation therapies, and a possible negative impact on the financial performance of New York long-term care (LTC) facilities. RUG-II appears to have been successful in improving access to nursing homes for individuals with heavy-care needs and in encouraging the appropriate utilization of institutionalized skilled nursing care.

INTRODUCTION

RUG-II, a case-mix-based resident classification system designed to be used with the New York State Medicaid Reimbursement System for Long Term Care (hereafter "payment system"), was implemented by NYDOH on January 1, 1986, in order to match payment with intensity of care, ensure placement of residents in appropriate levels of care, and encourage restorative care (Schneider et al., 1988).

The research presented in this article was supported by Grant Number 19189 from The Robert Wood Johnson Foundation (RWJF) Program on Changes in Health Care Financing and Organization and was sponsored by the Greater New York Hospital Foundation, Inc. Barry M. Schultz was with The Long Island College Hospital and the State University of New York Health Science Center at Brooklyn when this research was performed; he is now with Integrated Medical Direction. David Ward is with the Robert Wagner School of Public Service, New York University. James R. Knickman is with RWJF. The opinions expressed in this article are those of the authors and do not necessarily reflect those of RWJF, the Greater New York Hospital Foundation, Inc., The Long Island College Hospital, the State University of New York, Integrated Medical Direction, New York University, or the Health Care Financing Administration.

This marked a major change in reimbursement methodology for the Medicaid program in New York, which previously reimbursed LTC facilities a uniform per diem amount based on facility-specific historical costs. RUG-II created an entirely new set of financial and management incentives for LTC facilities.

As the single largest third-party payer in New York, Medicaid accounts for approximately 80 percent of nursing home reimbursement in the State. Based on the influence of Medicaid LTC reimbursement, the implementation of RUG-II was expected to result in significant changes in the New York LTC industry. The incentives created by RUG-II were considered likely to impact several aspects of the LTC industry, including the demographics of the resident population and the types of services offered, financial performance, and management practices of LTC facilities.

RUG-II was inspired by concerns about perceived inequities of earlier Medicaid LTC reimbursement systems based on a single unadjusted daily rate (Weissert et al., 1983). Being based on historical costs, these systems did not adjust reimbursement according to differences in resource use. Without this distinction, these reimbursement systems created disincentives for facilities to admit residents requiring higher intensity care. Moreover, cost-based reimbursement contained no provisions for LTC facilities to consider issues of cost effectiveness or efficiency in providing care. As a result, the lack of incentives to control expenditures frequently forced costs up to an imposed ceiling. According

Table 1
RUG-II Patient Classification System

Hierarchy	ADL Index	Category	Weight
Special Care	5-7	Special A	1.51
	8-10	Special B	1.74
Rehabilitation	3-4	Rehabilitation A	1.57
	5-9	Rehabilitation B	1.79
Clinically Complex	3	Clinically Complex A	0.70
	4-6	Clinically Complex B	1.18
	7-8	Clinically Complex C	1.32
	9	Clinically Complex D	1.64
Severe Behavioral Problem	3	Behavioral A	0.69
	4-7	Behavioral B	1.03
	8-9	Behavioral C	1.25
Reduced Physical Functioning	3	Physical A	0.55
	4	Physical B	0.83
	5-7	Physical C	1.03
	8	Physical D	1.17
	9	Physical E	1.41

NOTES: RUG-II is Resource Utilization Group, Version II. ADL is activity of daily living.

SOURCE: Office of Health Systems Management, New York State Division of Health Care Financing, 1986.

to NYDOH (1986a), the goals of RUG-II were to match payment with intensity of care, to ensure placement of residents in the appropriate level of care, and to encourage restorative care.

The first goal was specifically designed to recognize the reality of differential costs associated with variations in the intensity of care by utilizing a resident classification hierarchy (Table 1). The second goal provides incentives for admission of high-intensity care residents to LTC facilities. Prior to the implementation of RUG-II, individuals requiring intensive levels of nursing care often had difficulty gaining admission to nursing homes. Consequently, these individuals often remained in hospitals for lengthy time periods while waiting for admission to LTC facilities. The third goal provides higher levels of reimbursement for individuals requiring restorative rehabilitation. The additional resources provided by the introduction of resource-based reimbursement are intended both to meet the costs of providing higher level services to residents requiring special

types of care and to be used in the development of restorative-care programs for residents who may benefit by intensive physical therapy. Thus, a major theme of the RUG-II system was to promote functional improvement and discharge of residents back into the community.

We report here the findings of an evaluation study designed to measure the impacts of RUG-II over its first 5 years (1986-90) on several aspects of the LTC industry in New York. One major focus of this evaluation was to determine whether the implementation of RUG-II resulted in the reversal of a key disincentive against admission of individuals with heavy-care needs to nursing homes. Initial evaluations of the first year of RUG-II revealed a significant increase in the case mix of LTC facilities in New York (New York State Department of Health, 1986a, 1986b, 1986c, 1987). Our evaluation determined the degree to which this trend continued. We examined a measure of staffing levels to determine whether facilities utilized increased payments to hire additional staff and increase

expenditures for rehabilitation therapies. We also attempted to evaluate the empirical impact of RUG-II on the financial performance of LTC facilities. Lastly, we attempted to evaluate the role of the RUG-II payment system in the context of its use as a cost-containment mechanism during a time of weakening fiscal condition for the State of New York.

Other States have implemented or are planning to implement resource-based resident classification systems for use with Medicaid LTC payment systems. In addition, the Health Care Financing Administration is currently evaluating a version of RUG-II for Medicare LTC reimbursement. Our findings may provide a valuable policy resource to those interested in prospective resource-based LTC reimbursement.

METHODS

The analyses done for this study were based on financial and other data derived from NYDOH LTC facility Cost Report data for the years 1983 and 1986-90. We originally intended to analyze data from 1983-90, so as to include 3 preimplementation

years of data, but keypunched data for the years 1984-85 were not available. Analyses were based on data culled from two computerized NYDOH datasets: the Data Collection Masterfile and the Rate Collection Masterfile. The Data Collection Masterfile dataset contains the Residential Health Care Facility 4 (RHCF-4) reports that are filed annually by every LTC facility in New York. The RHCF-4 contains a financial profile of each facility, including balance sheet, income statement, change in fund balance, and statement of cash flow, as well as a collection of demographic data. The Rate Collection Masterfile contains the Medicaid rate and case-mix index (CMI [a global reflection of resident care intensity and resource use]) data for each facility. The evaluations performed for this study are based on a sample of 169 LTC facilities, out of a total of approximately 650 in New York. The selection of the study sample was based on the availability of a complete dataset for each facility for the years 1983 and 1986-90. The demographic characteristics of the study sample were compared with those for the entire New York LTC facility population to assess the validity of our sample (Table 2).

Table 2
Comparison of Statewide and Sample Facility Characteristics¹

Facility Characteristic	Statewide		Sample
Mean Capacity ²	162		173
Location		Percent	
Upstate	51		54
Downstate	49		46
Sponsorship			
Proprietary	47		49
Voluntary and Public	53		51
Payment Corridor			
Below Corridor ^{2,3}	37		34
Within Corridor ^{2,3}	34		50
Above Corridor ^{2,3}	29		16

¹Differences in location, auspice, and corridor position found to be statistically insignificant using the 2-tailed t test.

²1986 data.

³Payment corridors require facilities' expenditures to fall within a range predicted by 1983 base costs in order to receive full cost reimbursement. See Figure 4 for further information.

NOTES: Downstate New York includes the following counties: New York, Queens, Kings, Nassau, Suffolk, and Westchester. All other counties are upstate.

SOURCE: New York State Department of Health, 1986-90.

We examined case-mix data to assess how the implementation of RUG-II influenced resource use and how facilities responded to the new incentives introduced by RUG-II. In particular, we were interested in determining the degree to which RUG-II led to an increase in heavy-care and rehabilitative-care residents beyond the trend reported in the year following RUG-II implementation (New York State Department of Health, 1986a). Accordingly, the proportions of residents in the 16 RUG-II categories at the end of 1986 (the first year of implementation) and 1991 are reported. Changes in CMI for study sample facilities from 1986-90 are reported, and the CMI for subgroups of facilities differing in terms of sponsorship, location, and size are compared.

The implementation of RUG-II was designed to provide higher payments in order to encourage facilities to admit heavy-care individuals. The higher reimbursements were meant to be used by facilities to pay for increased resources, including additional staff, that would be needed to care for sicker residents. Accordingly, we assessed RHCF-4 Cost Reports for two measures of staffing level—full time equivalents (FTEs) and expenses for per diem staff (both individual fees and agency contracts)—for the years 1983 and 1986-90. Another explicit goal of RUG-II was to create incentives for LTC facilities to provide more rehabilitative care in order to improve outcomes for individuals requiring restorative therapy. Rehabilitative care includes physical therapy, occupational therapy, and speech therapy. To assess whether RUG-II resulted in an increase in this type of care, RHCF-4 Cost Reports were analyzed for expenditures for these services for the years 1983 and 1986-90.

The payment system divides reimbursements to LTC facilities into four cost

components: direct; indirect; non-comparable; and capital. The RUG-II classification system, which measures care based on resource use and leads to a CMI for each facility, is applied to only the direct component of reimbursement. Non-comparable (as defined) and capital costs are clearly identifiable as aspects of reimbursement that are unrelated to care intensity. However, concerns have been raised that certain elements (i.e., dietary and laundry) of the indirect cost component may, in fact, vary according to resource use and should therefore be part of the direct cost component. If these concerns are valid, the placement of these elements in the indirect cost component would have resulted in inadequate reimbursements to some facilities. These concerns led us to perform analyses of various cost centers, including dietary, laundry, program services, support services, ancillary services, physical therapy, occupational therapy, and speech therapy, to determine whether they vary with case mix.

Another goal of this evaluation was to assess the financial performance of LTC facilities in New York during the implementation of RUG-II. Analysis of mean net income and operating margin were the methods used for this evaluation. While evaluating the impact of RUG-II, we became increasingly aware of the importance of distinguishing between the RUG-II classification system, which categorizes residents according to their resource utilization, and the payment system, which utilizes classification system data as well as other factors to establish reimbursement levels. It appeared that some of the changes seen as a result of RUG-II implementation may have been due to newly implemented aspects of the payment system (discussed later) that coincided with the incorporation of RUG-II. These

Table 3
Statewide RUG-II Category Distributions: 1985 and 1991

Category	Weight	1985 Assessments	1991 Assessments	1985-91 Percent Change
Total	—	91,419	92,214	0.87
Statewide CMI	—	0.935811	1.092439	16.74
Special A	1.51	958	1,038	8.35
Special B	1.74	2,588	3,763	45.40
Rehabilitation A	1.57	465	891	91.61
Rehabilitation B	1.79	982	5,436	453.56
Clinically Complex A	0.70	2,141	2,809	31.20
Clinically Complex B	1.18	4,082	8,544	109.31
Clinically Complex C	1.32	2,311	6,810	194.68
Clinically Complex D	1.64	432	2,017	366.90
Behavioral A	0.69	2,517	945	-62.46
Behavioral B	1.03	5,371	3,000	-44.14
Behavioral C	1.25	1,057	1,041	-1.51
Physical A	0.55	27,634	15,120	-45.28
Physical B	0.83	4,592	3,492	-23.95
Physical C	1.03	25,995	25,268	-2.80
Physical D	1.17	7,711	8,798	14.10
Physical E	1.41	2,583	3,242	25.51

NOTES: RUG-II is Resource Utilization Group, Version II. CMI is the case-mix index of the New York State Department of Health Rate Collection Masterfile.
 SOURCE: Office of Health Systems Management, New York State Division of Health Care Financing, 1991.

observations, while anecdotal and difficult to quantify, may be instructive in regard to the way RUG-II implementation offered an opportunity to control New York Medicaid LTC expenditures during a period of weakened financial position for the State.

This article relies on simple descriptive statistics of changes in case mix, staffing patterns, and financial performance over the 5-year study period. Clearly, with this simple pre- and post-analytical design, it is not possible to rule out other environmental changes as contributing to these changes. However, changes in reimbursement methodology were clearly the major environmental change during this time period. While individual facilities may have had special circumstances that influenced conditions, we believe the alterations we observed among aggregates of LTC facilities are safely attributable to changes in the reimbursement system. However, because of the simplicity of the research design, we recognize that the analysis should be viewed as descriptive and exploratory. Its role is to raise questions about the workings

of the incentive systems inherent in resource-based reimbursement approaches.

RESULTS

Changes in Case Mix

Table 3 contains assessment counts for each of the 16 RUG-II categories in 1985 and 1991 and reveals the dramatic shift in resident-care intensity that occurred in the New York LTC industry after the implementation of RUG-II. Total assessments increased less than 1 percent from 1985 to 1991, so the changes demonstrated by this data demonstrate real shifts in resident-care categories. As anticipated, the most striking increases occurred in categories with the highest relative weighting. For example, both Rehabilitation categories had large increases, with the A subgroup nearly doubling and the B subgroup showing a particularly dramatic (greater than fivefold) increase. Similarly impressive increases occurred in the Clinically Complex categories, with graduated changes toward the highest activity of daily

Table 4
CMI Change Comparison, by Sponsorship, Location, and Size: 1986-90

Characteristic	1986	1987	1988	1989	1990	Percent Change 1986-90
Statewide Percent Change	—	5.5	1.6	1.1	0.45	8.9
Statewide (n = 169)	1.066	1.125	1.143	1.156	1.161	—
Sponsorship						
Proprietary (n = 83)	1.046	1.099	1.121	1.140	1.141	9.1
Voluntary (n = 68)	1.075 (p=.231)	1.145 (p=.000)	1.162 (p=.021)	1.170 (p=.017)	1.179 (p=.003)	9.7
Public (n = 18)	1.122 (p=.033)	1.163 (p=.001)	1.173 (p=.004)	1.174 (p=.050)	1.180 (p=.024)	5.2
Location						
Upstate (n = 92)	1.070	1.135	1.145	1.151	1.148	7.3
Downstate (n = 77)	1.060 (p=.643)	1.111 (p=.054)	1.140 (p=.701)	1.161 (p=.386)	1.175 (p=.026)	10.8
Bed Size						
More Than 130 Beds (n = 83)	1.053	1.113	1.131	1.138	1.140	8.3
Fewer Than 130 Beds (n = 86)	1.078 (p=.256)	1.135 (p=.067)	1.154 (p=.045)	1.173 (p=.002)	1.180 (p=.001)	9.5

NOTE: CMI is the case-mix index of the New York State Department of Health Rate Collection Masterfile. Downstate New York includes the following counties: New York, Queens, Kings, Nassau, Suffolk, and Westchester. All other counties are upstate.

living subgroup, D, showing a nearly five-fold increase. Conversely, the low intensity care categories, including Physical A/B and Behavioral A/B, revealed substantial reductions in numbers of assessments.

Table 4 contains the statewide composite CMI from 1986 to 1990, as well as a breakdown of composite CMI for facilities differing in terms of sponsorship, location, and size. These numerical changes, while appearing small, may represent dramatic increases in revenue for New York LTC facilities when viewed in the context of the numerical range of weightings for the RUG-II patient classification system (0.55-1.79). To illustrate the magnitude of

CMI change, we include statewide CMI percentage change in each category for each study year as well as percentage increases for the entire study period.

Changes in Facility Staffing

Table 5 contains several measures of LTC facility staffing levels. These include average FTEs, cost of per diem labor fees and contracts for resident-care services (including nursing and rehabilitation), and direct cost of rehabilitation services (including physical, occupational, and speech therapy) for New York LTC facilities during the years 1983 and 1986-90. FTEs increased 3.7 percent from 1983-86,

Table 5
Mean Measures of Long-Term Care Facility Staffing Levels: Selected Years 1983-90

Measure of Staffing Level	1983	1986	1987	1988	1989	1990
Full Time Equivalents	174.70	181.25	181.76	183.35	185.77	188.64
Per Diem Fees and Contracts ¹	56,543	77,132	95,302	156,844	189,509	177,337
Physical Therapy ²	395.58	445.64	472.74	515.78	539.26	697.66
Occupational Therapy ²	154.18	182.41	195.48	224.58	238.09	311.78
Speech Therapy ²	48.84	53.93	57.90	63.18	69.21	87.65

¹Represents annual dollars per facility.

²Represents cost per bed.

NOTE: n = 168 (Data are missing for one facility.)

SOURCE: New York State Department of Health, 1983-90.

while changes in the early post-RUG-II implementation period were more modest (1.2 from 1986-88). The overall increase in average FTEs from 1986 to 1990 was 4 percent. Cost of per diem fees and contracts for resident-care services increased 36 percent from 1983 to 1986 (an estimated average annual increase of 12 percent). Following the first year of RUG-II implementation, the cost of per diem fees and contracts increased dramatically (145 percent) from 1986-89. In contrast, the fifth year after RUG-II implementation was associated with a modest decrease in this expense (-6.4 percent). Cost of rehabilitation services increased substantially following implementation of RUG-II. Physical therapy expenses grew 12.7 percent from 1983 to 1986 (an estimated average annual increase of 4.1 percent). This growth accelerated in the years following RUG-II implementation (57 percent), with the bulk of the increase occurring in the fifth year (29 percent). Expense growth in occupational and speech therapy services reveals similar trends.

Correlation of Cost Centers With CMI

Table 6 contains correlation coefficients for selected cost centers in relation to CMI. These findings indicate that variations in

Table 6

Bivariate Correlations of the Change in Case Mix and Selected Expense Variables: 1986-90

Expense Variable	Bivariate Correlation Coefficient for Change in CMI per Bed	p Value per Bed
Program Services	-.0306	.693
Ancillary Service	.1564	.042
Support Services	.0197	.800
Laundry	-.0297	.702
Food	.0199	.798
Physical Therapy	.1475	.056
Occupational Therapy	.1014	.190
Speech Therapy	.1300	.092

NOTE: CMI is the case-mix index of the New York State Department of Health Rate Collection Masterfile.

SOURCE: New York State Department of Health, 1986-90.

laundry and food service costs did not correlate with changes in case mix. Other cost centers that did not correlate with CMI were support services and program services (an unexpected finding). Cost centers that revealed a significant correlation with changes in case mix included ancillary services and physical therapy, while occupational and speech therapy demonstrated correlations that approached statistical significance.

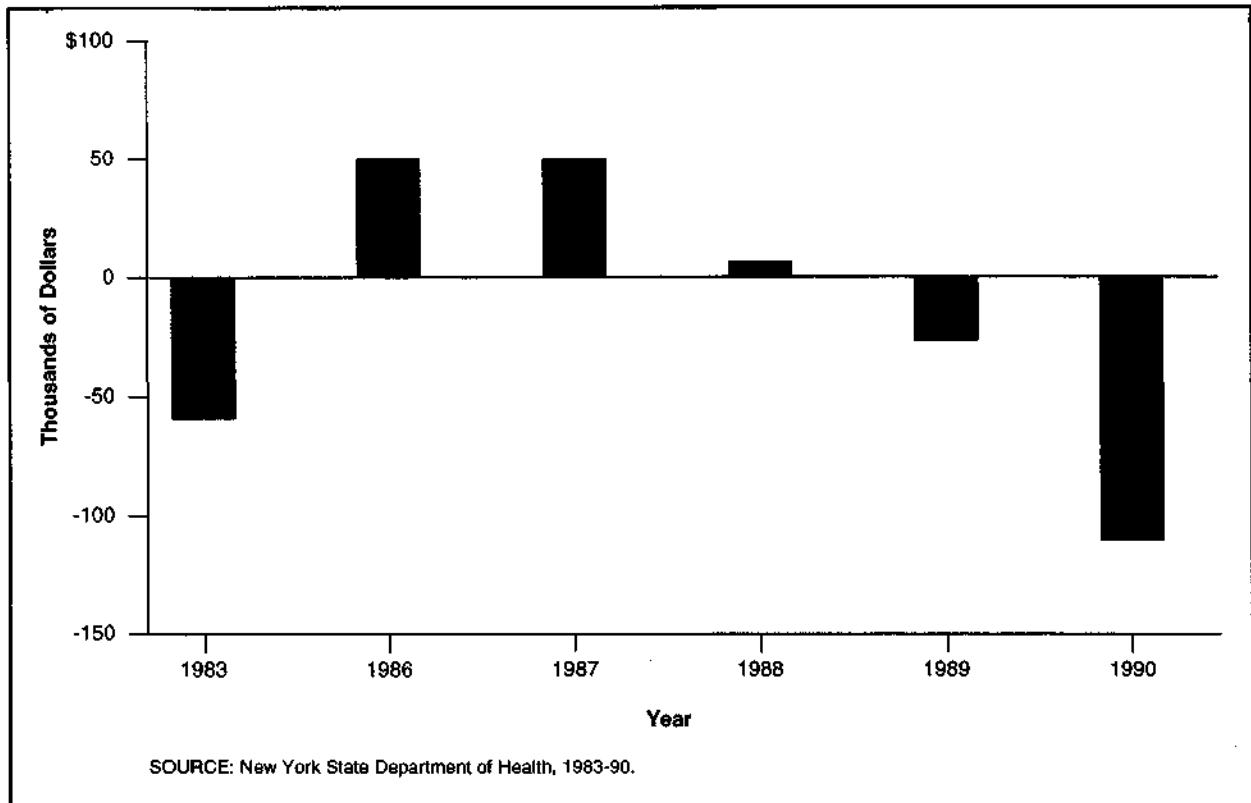
Changes in Financial Performance

In analyzing the financial performance of our sample, we looked at mean net income (Figure 1) and mean operating margin (Figure 2). While the analysis does not incorporate changes in the regional economy during the study period, it does provide an interesting picture of how LTC facilities performed financially during a period when the orientation of service delivery for many facilities was changing from mainly low-intensity custodial care to caring for individuals with higher intensity functional assistance and restorative rehabilitation needs.

Both net income and operating margin results demonstrate poor financial performance in the pre-RUG-II year 1983 (mean net income of -\$59,725 and a mean operating margin equivalent of 0). The early years of RUG-II (1986 and 1987) saw a \$106,000 increase in mean net income and an improvement in the operating margin of LTC facilities to a mean of 1 percent. Financial performance appears to decline beginning in 1988. By 1990, the financial performance of facilities in our sample was worse than their performance had been in 1983 (mean net income of -\$116,587 and a mean operating margin of -0.16 percent).

Figure 3 demonstrates cost growth for the New York LTC industry for the years 1983 and 1986-89. Nationwide LTC industry cost growth, total national health

Figure 1
Mean Net Income of New York State Long-Term Care Facilities: 1983-90



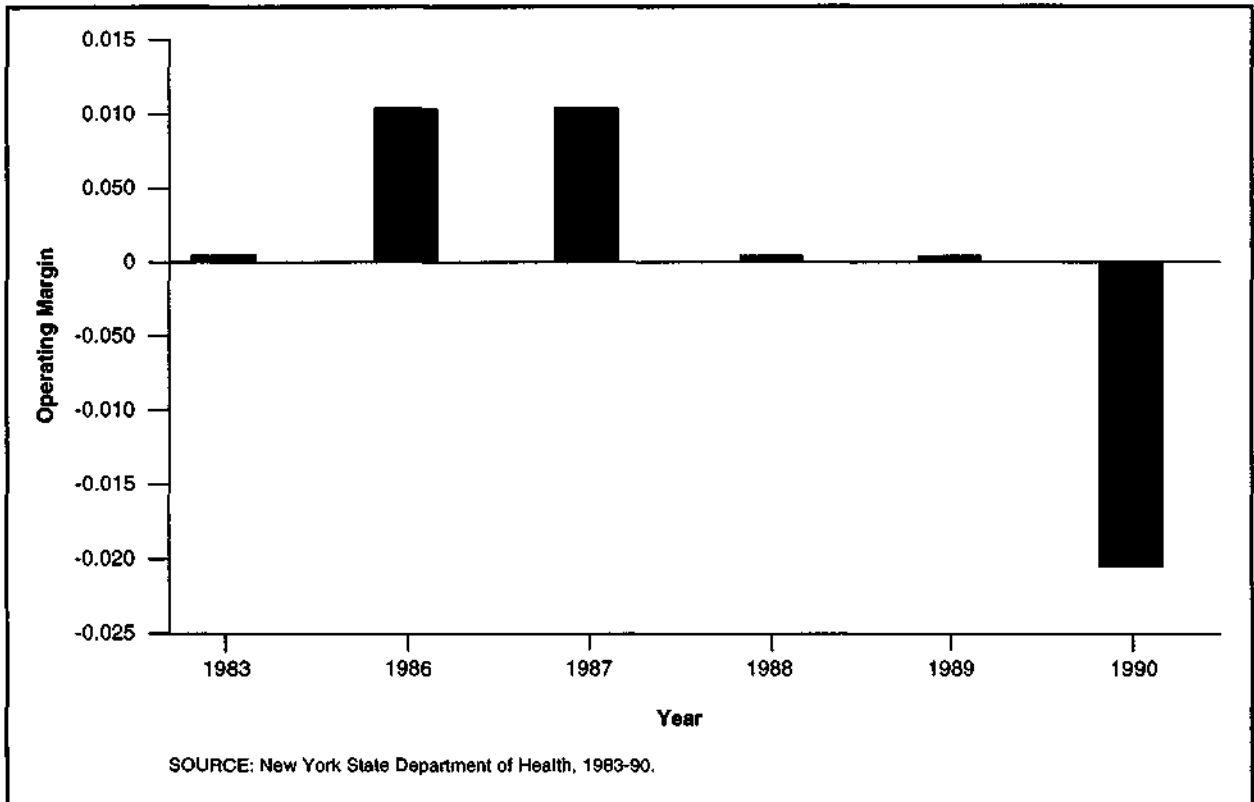
care expenditures, and the United States Consumer Price Index are shown for comparison. The accelerated growth of health care costs, compared with general cost inflation in recent years, has been well described. Cost growth in the national LTC industry has generally paralleled that of overall health care costs, except for a dramatic increase in 1988 (which persisted in 1989). In contrast, while New York LTC industry cost growth was considerably lower than that of the rest of the country in 1986, it increased dramatically in 1987 and then decreased slightly in the following 2 years. Of note is the dramatic growth of LTC industry costs in both New York and the Nation, although separated by a lag of 1 year.

DISCUSSION

The incorporation of a resource-based classification system (RUG-II) into New

York's LTC payment system was designed to rectify several perceived inadequacies of former reimbursement systems. These included an inherent disincentive to admit residents whose care levels were higher than a facility's existing resident population because the fixed rate mechanism did not permit correspondingly higher reimbursement levels. As a result, facilities were reluctant to admit individuals with intensive-care needs because cost-based reimbursement was inadequate to cover the costs of caring for them. Consequently, in the years prior to RUG-II implementation, New York hospitals had large numbers of long-stay patients with intensive custodial nursing needs and little hope of LTC placement (United Hospital Fund of New York, 1989). A related problem was the difficulty of individuals who required restorative

Figure 2
Mean Operating Margin of New York State Long-Term Care Facilities: 1983-90



physical therapy to obtain placement in LTC facilities because of inadequate reimbursement. Lastly, since facilities were reimbursed according to their historical level of spending, there was no incentive to limit cost growth or to provide care in a cost-efficient manner.

With these concerns in mind, RUG-II was developed to accomplish three explicit goals. RUG-II matched payment to intensity of care with the intent of: (1) encouraging admission of higher intensity residents; (2) ensuring the placement of residents in the appropriate level of care; and (3) encouraging restorative rehabilitation. The recognition of the relationship between the cost and intensity of care, along with a provision to provide higher payments for greater levels of care, is the hallmark of the incorporation of RUG-II, as it is for other

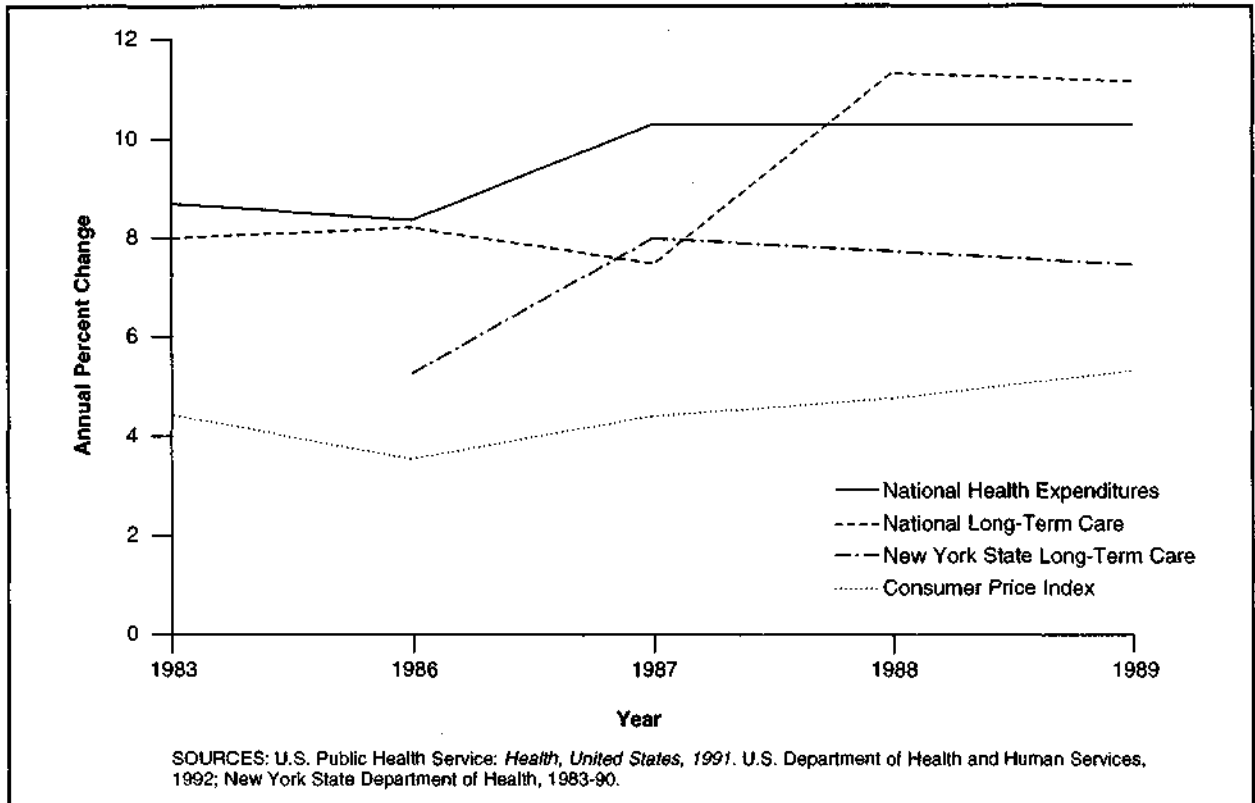
resource-based reimbursement systems. By establishing a system of classifying individuals with dissimilar diagnoses into groups based on common care intensity, RUG-II permitted the linkage of reimbursement with resource utilization. This allowed the introduction of incentives (through higher payments) for facilities to admit patients with heavy-care needs who had previously had difficulty obtaining admission to LTC facilities because of inadequate reimbursement.

Encouragement of Heavy Care and Rehabilitation

As expected, the composite CMI for LTC facilities in New York increased significantly from 1986-90, continuing the trend demonstrated in the first year following RUG-II implementation (New York State

Figure 3

Average Percentage Change in Health Care Costs, by Selected Index of Change: 1983-89



Department of Health, 1986a, 1986b). In addition, facilities were encouraged to admit patients requiring intensive restorative rehabilitation. Skilled nursing facilities represent a level of care that is intermediate to that offered in acute-care hospitals and intermediate-care facilities or through home health care. In addition to encouraging the admission of patients with greater care needs, RUG-II encouraged a more appropriate utilization of institutional skilled nursing care compared with utilization patterns seen before the implementation of RUG-II. Thus, RUG-II appears to have been successful in meeting NYDOH's implementation goals.

RUG-II Effects on Light-Care Individual Placement

With the creation of strong financial incentives to admit heavy-care individuals, as well

as residents requiring restorative rehabilitation, RUG-II simultaneously created a direct disincentive for LTC facilities to admit light-care residents. In fact, with the incorporation of RUG-II into the payment system, many facilities have established an explicit policy of eliminating certain resident-care categories (Physical A/B and Behavioral A/B) from consideration for admission because of the perception that reimbursement for these categories is inadequate to cover their costs (Kovner et al., 1993).

Many of these individuals are mild to moderately demented elderly persons who require only moderate physical assistance and therefore score as light-care in the RUG-II classification. However, because dementing illness adversely affects cognition well before a loss of physical functioning occurs, moderately demented

individuals may require relatively intensive supervision. This is due to dementia-related impairments in cognition and judgment with resultant wandering, incontinence, and behavioral problems.

Many providers feel that the current NYDOH version of RUG-II (1993) fails to recognize the resource needs of this category of individuals because of its reliance on impairments in activities of daily living. As a result of the emphasis of RUG-II on individuals with high resource needs based purely on physical functioning, there has been a loss of access to skilled institutionalized LTC for the growing class of demented elderly with preservation of some physical functioning. In a study recently completed by NYDOH (1993) designed to update the RUG-II case-mix indexes, cognitive impairment was found to have a significant effect on resource utilization, in contrast to the original index weights.

Differences in Sponsorship

Analysis of CMI growth rates over the first 5 years of RUG-II revealed an interesting phenomenon related to the effect of RUG-II on the resident populations of facilities with differing sponsorship. In 1986, public facilities had a considerably higher CMI than either voluntary or proprietary facilities (Table 4), reflecting the tendency of public facilities to carry resident populations with much higher intensity care needs prior to the implementation of RUG-II. During the period prior to RUG-II implementation, public facilities functioned as a last resort for individuals who were unable to obtain admission to voluntary or proprietary facilities. At the time, public facility resident populations consisted mostly of persons having intensive-care needs with limited access to institutional skilled nursing care because of inadequate

reimbursement from a system that failed to link their greater care needs with higher payments.

As RUG-II was introduced, the traditional LTC incentive to admit individuals with the lowest possible resource requirements became reversed. Most facilities appear to have chosen a strategy to maximize resident-care revenue by greatly expanding their admission of individuals with high-intensity care needs (Knickman, Ward, and Schultz, 1993). According to CMI growth rates from 1986 to 1990, voluntary and proprietary facilities appear to have been more aggressive in maximizing their resident-care revenue than public facilities. However, this difference may be related to a limitation in the upside potential of increasing case mix for public facilities (because of their higher pre-RUG-II CMI). Other potential explanations for the failure of public facilities to match the CMI growth seen in voluntary and proprietary facilities include the possibility that managers of public facilities consciously chose to moderate their pursuit of higher resident-care revenue or failed to fully recognize the new incentives introduced by the implementation of RUG-II, or that the relatively small sample size of public facilities in this study ($n = 18$) did not allow for an accurate representation of CMI change (Knickman, Ward, and Schultz, 1993).

Changes in Staffing

The early post-RUG-II implementation period is associated with relatively mild increases in FTE staffing. In contrast, temporary agency staff (identified on Cost Reports as per diem fees and contracts) were added at a brisk rate, with the costs of these services almost tripling from 1986 to 1989. However, this trend appears to have reversed, with a decrease in this expense in

the final year of the analysis (1989-90). It appears that facilities added staff during the early years of RUG-II using temporary agencies, affording them a greater degree of flexibility than if the additions had been permanent FTE. The final year of this evaluation is associated with a decrease of per diem staff expenses; in the same year we see the largest FTE staff increase of the post-RUG-II evaluation period. By the fifth year following RUG-II implementation, facilities appear willing to add larger numbers of full-time permanent staff to meet the greater resource needs of their heavier care resident populations.

An unrelated factor that likely contributed to the need for facilities to add temporary staff during this period was a serious nursing shortage. This shortage was felt throughout the health care industry, and most institutional health providers were forced to utilize temporary nursing staff. Therefore, the extent to which RUG-II drove this trend is unclear in the context of the nursing shortage.

Cost Center Allocation

Our evaluation of the correlation from various cost centers and case mix confirmed a prior NYDOH finding that dietary and laundry services do not vary according to case mix. Therefore, their placement in the indirect cost category appears to have been correct. Cost centers included in the direct cost category that did vary with case mix, as expected, included ancillary and rehabilitation services. In an unexpected finding, program services were found to not vary according to case mix. It appears that facilities may have failed to utilize additional resident-care revenues for the program services for which they were intended. If this is true, the very premise of case-mix adjusted reimbursement was lost, at least temporarily. Potential explanations for this are discussed in the following section.

Utilization of Increased Resident-Care Revenues

Facilities responded to the new incentives created by RUG-II by admitting heavier care residents, leading to a higher case mix and greater reimbursement. However, these higher payments were apparently not used, at least initially, to support new and greater program services for the increasingly fragile resident population. It appears that some facilities may have failed to increase expenses for program services in accordance with the early rapid growth in case mix. An obvious advantage to this approach would be a more flexible utilization of additional resident-care revenues afforded by a higher case mix. Some facilities may have had a degree of redundancy within their program services prior to implementation of RUG-II. As one aspect of RUG-II was to promote efficiency, these facilities may have used this opportunity to consolidate their resources instead of simply adding to their program services in response to increasing reimbursement.

An alternative explanation for the lack of concordance between increasing case mix and the cost of program services is the possibility that quality of care may have deteriorated in facilities where the increase in case-mix had outstripped the facility's ability to provide higher intensity care. An early evaluation of RUG-II by the NYDOH (1986b) attempted to link issues of quality with RUG-II by noting that the number of deficiencies declined on average in the year following RUG-II implementation, implying an improvement in quality. However, the extent to which this linkage is meaningful is unclear, because of the absence of objective resident outcome measures in NYDOH quality surveys. We were not able to address issues of quality in our study, and therefore cannot comment

directly on the impact of RUG-II on quality of care. However, future research efforts using objective measures of resident outcomes will be required to assess the impact of resource-based reimbursement systems on the quality of institutionalized skilled nursing care.

Possible Causes For Worsening Financial Performance

Our analysis of LTC facility financial performance during the first 5 years of RUG-II implementation demonstrates that, while the LTC industry appeared fiscally healthy early in the post-RUG-II implementation period, there seems to have been a decline in financial performance during the last 3 years of our evaluation. It is important to note that the financial performance of New York LTC facilities mirrors that of the regional economy during the years of this evaluation. Consequently, we cannot conclude that changes in LTC facility financial performance were solely due to RUG-II-based alterations in the reimbursement system, because regional economic effects may have played a major role in this regard. We are, however, concerned that several features of the payment system may have contributed to the apparent financial decline of LTC facilities during the study period.

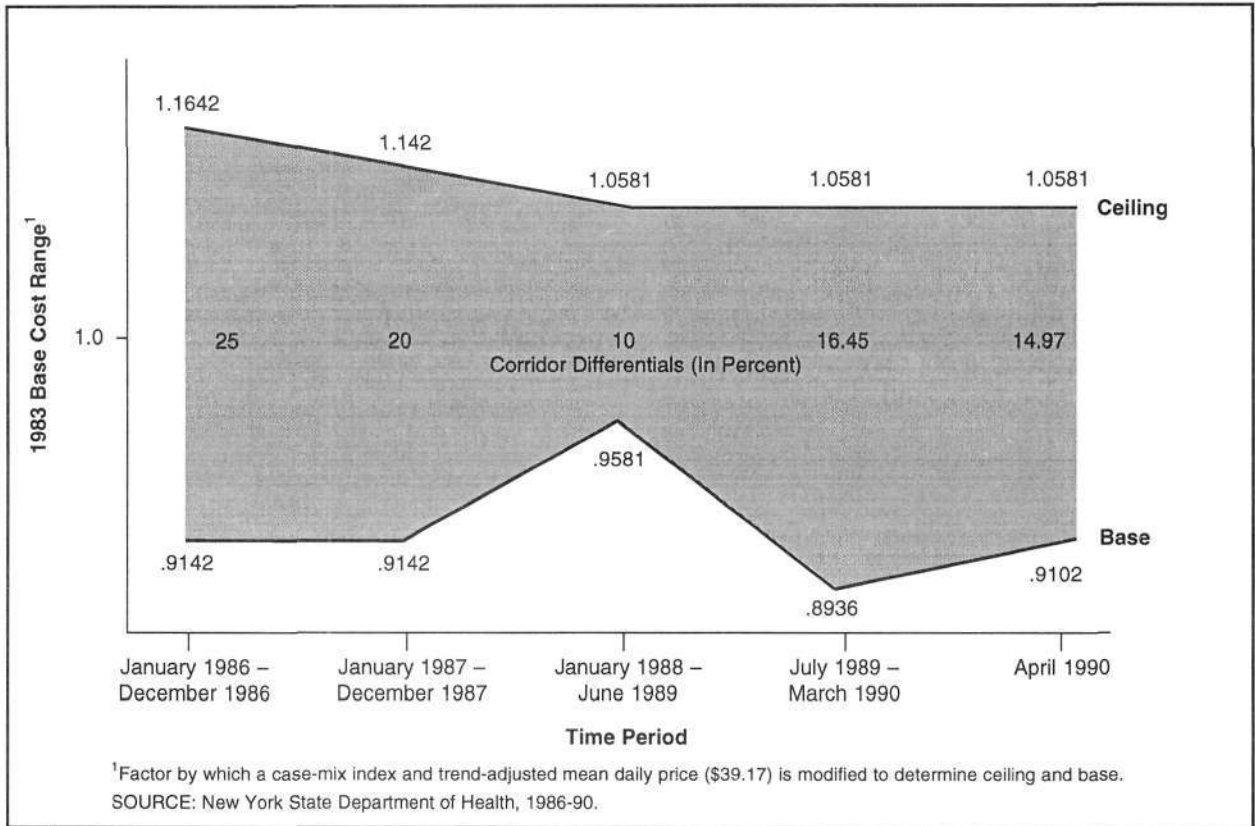
The payment corridors are one of the more prominent features of the payment system that may have had an impact on the financial performance of the LTC industry independent of the resident classification system. The payment corridors are an explicit component of the payment system designed to control cost growth and implemented at the same time as RUG-II. The corridors encourage facilities to limit spending by requiring facilities to spend an amount that falls within a range predicted by the 1983 cost base in order to receive

full cost reimbursement. Moreover, the payment corridors encourage facilities to spend less than the predicted range by offering the base amount as a minimum payment, with a resulting windfall, and discourage facilities from spending an amount above the ceiling because this would result in less than full cost reimbursement. The introduction of these fiscal pressures was intended to apprise LTC facility managers of their new roles as financial managers. The extent to which managers were able to recognize and adjust to these pressures may have contributed to the changes seen in financial performance during this period (Knickman, Ward, and Schultz, 1993).

It is important to note that RUG-II was implemented at a time of weakened fiscal condition for the State of New York. Consequently, the overall level of funding available for public LTC financing was constrained. The increased resident-care revenues received by LTC facilities during the first 2 years of RUG-II were only modestly limited by the payment corridors (Figure 4). However, starting in 1988, the payment corridors were "ratched" down to further limit cost growth. By placing progressive limits on the level of reimbursements to LTC facilities, the payment corridors served to constrain resident-care revenues at a time when the implementation of RUG-II was designed to introduce a financial incentive to improve the quality of care for individuals with higher resource needs. While this limitation in cost growth may have helped the State to adjust to its weakened financial condition, the constrained growth of revenues to facilities with increasingly frail resident populations (i.e., growing case mix) may have contributed to the deteriorating financial performance of the LTC industry.

Another aspect of the payment system which may have adversely affected the

Figure 4
Direct Cost Corridor: January 1986–April 1990



financial performance of LTC facilities impacted regions of the State that have strong labor unions, where the regional wage equalization factor (WEF) did not keep pace with higher wages. The WEF is a component of the reimbursement rate calculation that is designed to adjust the payments of facilities in areas of the State where wages are higher or lower than the State average.

Other factors present during the study period that may have contributed to poor financial performance included delays in payment adjustments based on changes in case mix, skipped payments, and delays in receiving payments. The time period associated with this evaluation project found LTC facilities experiencing progressive delays in the adjustment of reimbursement

rates based on changes in case mix. At its most extreme, this delay exceeded 24 months and adversely affected cash flow for many facilities. In contrast to the payment corridors, these delays were not a design feature of the payment system. Recently, NYDOH has taken steps to reverse the long lag period between changes in case mix and reimbursement adjustments. Similarly, budgetary problems resulted in two skipped Medicaid reimbursement payments for LTC facilities in New York since the implementation of RUG-II. These also have been corrected by the NYDOH.

ACKNOWLEDGMENTS

The authors wish to acknowledge the participation of Anthony Kovner, Ph.D., in

providing guidance, as well as David Cohen and Theresa T. H. Nguyen in providing assistance with data analysis and preparation of the manuscript.

REFERENCES

Knickman, J.R., Ward, D., and Schultz, B.M.: *Management and Financial Responses to Prospective Payment for Long Term Care in New York*. Health Research Program, Robert F. Wagner Graduate School of Public Service, New York University. 1993.

Kovner, A.R., Schultz, B.M., Ward, D., et al.: *Evaluation of the Impact of Resource Utilization Groups II System on Facility Management in Long-Term Care Facilities in New York*. Health Research Program, Robert F. Wagner School of Public Policy, New York University. 1993.

New York State Department of Health: *Resource Utilization Groups System: Nursing Home Reimbursement in New York State*. Office of Health Systems Management. July 1986a.

New York State Department of Health: *Initial Outcomes: Survey to Monitor Implementation of Case Mix Reimbursement System*. Long Term Care Case Mix Reimbursement Project. October 1986b.

New York State Department of Health: *Monitoring Implementation of Case Mix Reimbursement, Part II: Analysis of Expenditures and Quality of Care*. Long Term Care Case Mix Reimbursement Project. November 1986c.

New York State Department of Health: *1986 RUG-II Monitoring and Evaluation Report*. Division of Health Care Financing, Office of Health Systems Management. 1987.

New York State Department of Health: *A Report on the Impact of Updating the Base Year and Updating the Case Mix Indices Used in the Resource Utilization Groups (RUG-II) Nursing Home Payment System*. Division of Health Care Financing, Office of Health Systems Management. May 1993.

Schneider, D., Fries, B.E., Foley, W., et al.: Case Mix for Nursing Home Payment: Resource Utilization Groups, Version II. *Health Care Financing Review* 1988 Annual Supplement. Pp. 39-52, December 1988.

United Hospital Fund of New York: *Transitional Care: The Problem of Alternate Level of Care in New York City*. Paper Series 13. November 1989.

Weissert, W.G., Scanlon, W.J., Wan, T.T.H., and Skinner, D.E.: Care for the Chronically Ill: Nursing Home Incentive Payment Experiment. *Health Care Financing Review* 5(2):41-49, Winter 1983.

Reprint Requests: Barry M. Schultz, M.D., M.S., Integrated Medical Direction, 275 George Bush Boulevard, Delray Beach, Florida 33444.