

# Case-mix Reimbursement for Nursing Homes: Objectives and Achievements

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SIX STATE MEDICAID PROGRAMS PAY NURSING homes on the basis of resident needs or "case mix." Several other states are implementing or considering such a reimbursement approach. Case-mix reimbursement systems have generally been conceived to meet one or more explicit policy goals: improved quality of care; improved access for residents with greater care needs; greater equity in paying facilities; and cost containment. Drawing on the experience of the states with case-mix reimbursement (CMR) systems in place, this article will discuss operational aspects of CMR systems related to these goals, with particular emphasis on quality assurance, owing to widespread interest in its relation to case-mix payment. The purpose of this analysis is to identify patterns among state experiences rather than to evaluate the effect of each state's environment on its experience.

This article is based on site visits to each of the six CMR states during 1987. Using a structured questionnaire, project staff interviewed representatives of several groups and organizations in each state. These included the Medicaid agency, the peer review organization (if it played a role in assessment or quality assurance), the nursing-home licensing agency, proprietary and nonprofit nursing homes and their associations, consumer advocates in most states, and legislative staff in one. Interviews were supplemented with review of

other information, including statutes, regulations, and policy documents, as well as any research studies conducted in each state.

The site visits and subsequent analysis were part of a larger comparative study of Medicaid nursing-home payment systems, entitled "An Analysis of Long-term-care Payment Systems," and was funded by the Health Care Financing Administration (HCFA) of the Department of Health and Human Services. The major study results are contained in three reports: Butler and Schlenker (1988), on which this article is based; Boerstler, Carlough, and Schlenker (1988), on Medicaid capital-payment methodologies; and Schlenker et al. (1988), on the major quantitative analyses of the study.

### Current Case-mix Reimbursement Systems

Before analyzing how state case-mix reimbursement systems meet their objectives, we briefly describe the CMR systems currently in use in the six states in the order of enactment: Illinois, West Virginia, Ohio, Maryland, Minnesota, and New York (Butler and Schlenker 1988). Only the cost components directly related to resident care (nursing in all states plus social, specialized therapy, and activities services in some) are adjusted according to facility case mix. Therefore, our descriptions emphasize rate setting for the direct-care component.

A short explanation of terms will facilitate a better understanding of the state descriptions. *Prospective* reimbursement systems set facility rates in advance of the payment period (usually trended forward for projected inflation), while *retrospective* systems pay an interim, estimated rate but adjust rates based on actual facility experience after the rate period. *Facility-dependent* systems set rates according to individual facility expenditures (defined as allowable), while *facility-independent* systems set rates independent of individual facility costs, based generally on aggregate cost experience in an earlier period trended forward for inflation. Rate systems (both facility-dependent and facility-independent) can also be categorized by whether they pay a *price*, regardless of actual facility costs, or pay *costs up to a ceiling*. Efficiency incentives (sharing the difference between costs and ceilings) are often paid to encourage facilities to keep costs below ceilings.

The foregoing features characterize all nursing-home rate-setting systems. Two additional design variations apply to case-mix reim-

bursement systems. States can set a single case-mix-adjusted rate for each facility or separate rates for each of a series of resident groups. These two variations are denoted in this article as, respectively, "facility-level" versus "resident-level" case-mix rate-setting characteristics. *Facility-level* systems establish a case-mix index for an entire facility and set one rate for that facility (so that a new admission receives the same rate regardless of her or his individual case-mix classification). Thus, although New York has 16 case-mix groups, it sets only one rate for each facility, based on the facility's average case-mix and pays for all residents admitted to each facility at that rate. Such an approach is distinguished from a *resident-level* system, which establishes separate rates for each individual category of resident (so that each new admission brings a separate rate according to case-mix). For example, Minnesota, with 11 case-mix groups, pays a facility a separate rate for each resident, so that there may be as many as 11 rates in the facility. Each of these design elements carries different economic incentives for facility behavior regarding resident access, as discussed below.

States adjusting payments by case-mix currently use one of two basic methodologies. The first, termed the "service-mix" approach, bases case-mix payments on the expected costs of each of a set of specific services, such as assistance with eating, turning and positioning, and catheter care. The second, termed the "resident-groupings" approach (also called the "resource-utilization group" [RUG] approach), categorizes residents according to clinically meaningful resident conditions and characteristics, such as functional ability (i.e., dependence in activities of daily living [ADL]), and the need for special nursing care. These categories are further defined so that residents in the same group have similar average expected costs of care. In both the service-mix and the resident-groupings systems, resident needs and service use must be periodically assessed by either the nursing home, the state agency, or another organization under contract with the state. This topic is discussed in more detail later in this article.

The reimbursable services in "service-mix" states (Illinois, Ohio, West Virginia, and Maryland) were chosen, based on studies and expert opinion, to account for the majority of direct nursing time for nursing home residents. (Adjustments are made in rate calculations to include actual indirect nursing time not included in direct-time

measures.) The RUG or groupings approaches used in Minnesota and New York were developed from studies of the amount of care time (and associated cost) devoted to the care of each patient. Statistical analysis and clinical experts were then used to establish the groups. The resident groupings were thus based on detailed resident assessments and staff time and wage studies. The case-mix weights resulting from the resident-groupings approach reflect relative not absolute resource use. This information must, therefore, be used with price or cost data to distribute payments. For instance, if a standard nursing cost per day is \$20 for a resident with a case-mix index of 1.0, the rate for a resident with a case-mix index of 1.5 is \$30. Case-mix-adjusted rates can be set as ceilings (based on actual facility costs in Minnesota or prices in New York) or as prices independent of facility costs (the New York system will increasingly become a price system as it moves from 1983 base-year costs).

The following paragraphs briefly summarize the rate-setting systems in the six states. As background, information from state officials on the size of the Medicaid nursing-home sector in 1987–1988 in each state is also presented. The summaries emphasize the direct-care-rate components, which cover primarily the costs of nursing staff (including aides). The treatment of support costs (e.g., laundry and linen, room and board, etc.) and administrative costs is also covered, while the treatment of capital costs (i.e., property costs such as depreciation and interest) is excluded from this discussion. Table 1 highlights selected characteristics of each state's payment system, as well as aspects of the resident-assessment and quality-assurance procedures.

### *Illinois*

The Illinois Medicaid nursing-home budget in 1988 was \$613 million, paying 775 facilities with 56,000 residents an average of \$38 per resident per day. The state's nursing-home reimbursement system is a prospective, facility-dependent system, based on costs from the previous audited reporting period. It is the oldest case-mix reimbursement system, developed to enhance payment equity and access for heavy-care residents. Nursing rates in the state have been case-mix-adjusted on a facility-level basis since 1976 (Walsh 1979). Rates are determined semiannually. Payment for support and administrative cost centers is also based on individual facility costs; if these costs

fall below the ceilings, efficiency incentives are paid on those cost centers.

Case mix is measured by assessing Medicaid residents in 6 categories of resident functioning, 4 kinds of training for independence in activities of daily living, and 17 types of services (such as decubitus care, injections, rehabilitation therapy, and catheters). State-agency staff nurses assess all Medicaid residents twice per year in conjunction with the state's inspection of care (IOC) process. An average facility case-mix is calculated semiannually. Assessors obtain information from records, fairly detailed resident observation, and interviews with resident care staff. The state has assigned time values to each of the functional levels, training areas (such as bowel and bladder training), and services, which are multiplied by wage rates for different geographic areas. The nursing-cost component of the facility's rate is facility-level, and is composed of these variable nursing costs plus fixed costs, fringe benefits, consultant fees, supplies, and training costs. Illinois has recently tightened its quality oversight of the CMR system by increased scrutiny of whether charted services are both needed and received by residents. It also has developed a new system of "quality incentive payments" (QUIP), providing bonuses for certain extra services. Both of these approaches are designed to overcome previous adverse incentives in the system and to improve quality of care.

Most Illinois nursing homes are generally satisfied with the CMR distribution of payments, although some dispute nursing time allotments. They all feel that paperwork is excessive and rates are too low in absolute terms. Pressure to increase nursing programs is reported to require facilities to apply surpluses from other cost centers to pay for needed nursing staff.

### *West Virginia*

West Virginia's Medicaid nursing-home budget in 1988 was \$86 million, supporting 120 facilities with 6,700 residents, at an average per diem rate of \$47. The nursing-home payment system is prospective and facility-dependent, based on the facility's previous six-months' costs. Nursing costs have been case-mix-adjusted on a facility-level basis since 1977, when the state adopted the system to increase payment and encourage nursing home investment. Support costs (di-

TABLE I  
 Characteristics of State Case-mix Reimbursement Systems, 1987.

Year CMR began	Nursing costs: retrosp/ prosp.	Res.- or facility level rates	Histori- cal costs/ price	Costs adjusted by CM	CMR rate ceiling	Geographic difference	CM classifications	CM recal- culated	Rates recal- culated	Quality assurance
Ill. 1976	P	F	costs	nursing wages supplies	Case-mix score (time in min.) X wages, per day	nursing wages	6 ADL, 4 training in ADL independ- ence, 17 services	semi- annually	semi- annually	—QUIP bonuses —services "needed and received" —case mgmt.
W. Va. 1977	P	F	costs	nursing wages	Case-mix score (time in min.) X wages, per day	No	5 ADL, 10 services	semi- annually	semi- annually	—10C audits —efficiency incentives for noncare costs paid only if no more than one license deficiency
Ohio 1980	R	F	costs	nursing & special therapy wages	Case-mix score (time in min.) X wages, per day	No	5 ADL, 9 services, habilitation, 5 therapies	tri- annually	annually	—don't pay for needed care not delivered —pay more for rehab. care

Md. 1983	P	R	price	nursing wages + supplies	Price; no ceiling	nursing wages	4 categories (based on 5 ADL and 3 services), 10 services	monthly	annually	—"rehab. bonus" —decubitus not paid —PRO reviews care plans (10C)
Minn. 1985	P	R	costs	nursing wages + fringes	115% of median for each rate class	nursing wages	RUG: Eleven categories (ADL + special services & characteristics)	semi-annually	annually	—10C —licensing standards for nursing hours tied to case mix —services "needed and received"
N.Y. 1986	P	F	costs- (1983 base year × inf.)	nursing, social services, activities, & rehab. wages	Case-mix rate creates ceilings & floors	nursing wages + fringes	RUG-II: 16 categories (ADL + special services & characteristics)	semi-annually or quarterly	quarterly	—pay at least floor —targeted review w/SHE —"rehab. bonus"

etary, laundry, housekeeping, maintenance, and administration) are reimbursed up to a ceiling of costs for each of seven facility groups. Facilities with no more than one licensure or certification deficiency in dietary, laundry, housekeeping, or maintenance cost centers can earn an efficiency incentive on any such cost center by keeping costs below the ceilings. Costs for medical records, taxes, fringe benefits, and insurance are paid up to the 90th percentile of costs for each of four facility groups.

Case mix is measured by resident assessment in 15 areas, including functional dependence in 5 activities of daily living and need for 10 specific services. The state calculates direct-care rate ceilings by multiplying the facility's average nursing times (from time studies) for each of the characteristics and services by wage factors, differing according to 3 bed-size groups. The facility's rate is then determined by dividing total facility costs by Medicaid days and comparing the result to the case-mix-adjusted ceiling. The state pays the lower of costs or the ceiling. Facilities assess residents as often as monthly and bill the state. The state audits all residents semiannually as part of its inspection of care (IOC) review by examining charts to determine if services were billed (as needed) and provided. Nursing-home providers in West Virginia have adapted to the case-mix system and are reasonably satisfied with it. They too, however, have expressed concern with paperwork requirements and with other administrative aspects of the system.

### *Ohio*

Ohio's Medicaid budget in 1988 was \$826.5 million, paying 1,100 facilities with 83,000 residents at an average per diem rate of \$50. Ohio's payment system is retrospective and facility-dependent. Since 1980 the nursing-personnel rate component has been case-mix-adjusted, with "facility-level" ceilings. The state's major objective in adopting a case-mix approach was to increase payments for nursing home care but to direct these payments into resident care. Interim rates are paid based on the previous year's costs trended forward for inflation. Rates are subsequently reviewed, and actual costs are paid up to ceilings. Administrative and general support costs were paid at the mean (67th percentile in 1987) with an efficiency incentive for



keeping costs below this level. Taxes and utility costs are fully reimbursed.

Case mix is measured by assessing resident dependency in 5 activities of daily living and need for 9 services. Five additional special therapy services can be reimbursed for residents on a "habilitation" plan. The ceiling on nursing rates is calculated by multiplying the times for each service (from a state time study) by the number of times it is performed and the wage factor of the relevant staff type. Facilities with costs above ceilings can request variances by showing particular facility hardship and resident needs.

The state agency assesses all Medicaid residents by examining records three times per year as part of its IOC review. If resident observation suggests inaccuracies in charting, the assessment is nevertheless based on the chart. But agency staff can refer such cases to the licensing agency, Medicaid fraud prosecutors, or a peer review process in the Department of Human Services, which can dispatch another reviewer and may eventually change the case-mix category. The state is planning to pilot a facility "self-assessment," whereby it would turn over quarterly assessment functions to facilities and audit a sample of these assessments for accuracy. Audits would be triggered by screens such as certain changes in case mix of 5 percent or more.

The resident assessment process is beginning to focus on whether care is both needed and received. The state will pay neither for unneeded care that is delivered nor needed care that is *not* delivered. The retroactive nature of the reimbursement system allows for a penalty to be assessed based on "underdelivered" care.

Ohio nursing homes prefer the CMR distribution of payments compared to a flat rate or prospective system, although they feel that wage rates used to establish nursing cost ceilings are too low and that the system does not sufficiently encourage rehabilitation or restorative nursing. They also object to its paperwork burdens and are currently concerned with the state's general pressure to contain nursing home expenditures.

### *Maryland*

Maryland has 194 nursing homes participating in Medicaid with 23,000 residents, for which the state's 1988 budget was \$234 million. The state's nursing home rates are set prospectively based on the

previous year's costs. Since 1983, nursing rates have been paid as a series of "resident-level" prices, independent of facility costs, set according to resident functional levels in 4 categories plus the need for 10 special services. The state adopted the CMR system to increase overall nursing home payments, improve access for heavy-care residents, and reduce hospital patient back-up. Nonnursing care costs (food, activities, and social services) are reimbursed up to a ceiling for groups of facilities in 3 geographic areas, and an efficiency incentive is paid on this cost center. Administrative and general costs are also reimbursed up to a ceiling in 4 geographic and bed-size groups with an efficiency incentive paid.

Residents are categorized into 4 groups based on facilities' monthly reports of resident dependency in 5 activities of daily living plus the need for decubitus care, tube feeding, or turning and positioning. In addition to rates paid for each of these 4 groups, payments are made for residents needing any of 10 special nursing services (such as injections, restraints, ostomy care, and oxygen). The assessment form draws data from the state's uniform resident assessment/care planning form (Maryland appraisal of patient progress [MAPP]). The peer review organization (PRO) under contract with the state audits facility records quarterly as part of its IOC function by reviewing charts and some resident observation. Nursing care prices are based on time values for each service and annual salary surveys in 3 geographic areas of the state. The 3 higher level case-mix rates are augmented by incentive payments of 2 percent, 3 percent, and 4 percent, respectively, above the nursing rate calculated based on wages and nursing times.

Now that Maryland's CMR system is fully operational the state's nursing homes support it and report that rates are fair and paperwork is not excessive. Consumer representatives express some concern over access for residents with the lightest care needs, while generally approving of the system.

### *Minnesota*

In 1988 Minnesota spent \$490 million on 447 Medicaid-participating nursing homes with 45,500 residents, and per diem payments averaged \$55. The state's reimbursement system is prospective and is based on each facility's previous year's expenditures, adjusted for in-

flation. Since October 1985 nursing payments have been case-mix-adjusted and "resident-level" (each resident in the 11 case-mix groups carries a separate rate). The state adopted the system to enhance access for heavy-care residents and divert light-care residents to community settings. "Other care-related costs" (social services, activities, and food) are combined with the nursing costs and paid up to a ceiling based on wage levels in 3 geographic areas. Other operating costs are also paid up to 3 geographically derived ceilings, with an efficiency incentive for costs under the ceiling.

Case mix is measured by assessment of resident dependence in activities of daily living, behavior problems, and several special nursing services (such as skin care, oxygen, dressings, catheters, or ostomy care) and neuromuscular conditions. Residents are categorized into 11 groups according to their functional status and service needs. These groups were statistically derived from resident assessments, time/motion studies, and wage data from a representative sample of facilities. The groups represent residents whose resource use (cost) is statistically similar within groups and distinct from that of the other groups. Rates are set for each category of residents in the facility based on the facility's average costs, weighted according to the relative resource use (case-mix index) for each resident. A ceiling is set for both this case-mix-adjusted nursing care per diem rate and the "other care-related cost" per diem according to costs in 3 geographic areas of the state. Facilities are paid actual allowable costs for these resident care costs up to the combined ceiling.

Assessment is performed by several organizations an average of twice per year per resident. Pre-admission assessment is conducted by county pre-admission screening teams. The Department of Health assesses once per year as part of its IOC function. Facilities must assess all residents six months after IOC review each year as well as residents transferring from other nursing homes, hospitals, or other levels of care. Because Minnesota prohibits private-pay rates from being higher than Medicaid rates, it must assure that private-pay residents are assessed, so that it can set per resident ceilings on private-pay rates. Minnesota is the only state to have incorporated case-mix into its nursing home licensing standards by requiring minimum nurse-staffing standards based on the facility's case-mix index.

Nursing home providers in Minnesota favor the case-mix payment approach, although they say it does not adequately support short-

stay, subacute residents, behavior problems, and rehabilitative care. Facilities are currently concerned with overall payment levels and reimbursement for noncare cost centers. The local nursing home ombudsman feels that while the system is generally functioning well, certain residents with special needs, such as those on ventilators or with AIDS or behavior problems, do face access barriers.

### *New York*

New York spent \$2.6 billion in 1988 for 650 Medicaid nursing homes with almost 100,000 residents; per diem payments average \$98. The state's reimbursement system is a prospective "modified-pricing" system based on 1983 costs adjusted for inflation. Since 1986 nursing care, social services, activities, specialized therapy, transportation, pharmacy, and supply costs have been case-mix-adjusted and "facility-level" (a single rate paid to the facility based on average case mix; each new admission carries this rate). The state adopted its system to enhance access for heavy-care residents, discourage admission of light-care residents, and contain costs. New York also includes specialized rehabilitation therapy in its case-mix-adjusted rate. The rate paid for these direct-care costs is 1983 costs (trended forward for inflation) up to a ceiling of 105 percent of statewide mean costs, but no less than the floor of 95 percent of the 1983 statewide mean costs. Thus, the state pays such costs if they fall within this 10 percent corridor; it pays the floor if costs fall below the floor or the ceiling if they fall above the ceiling. A rate amount is also included for indirect-care costs (administration, housekeeping, laundry, etc.) based on 1983 mean costs in 6 facility groups. A 5 percent corridor (97.5 percent to 102.5 percent) is used for these indirect-care rates. Certain costs (taxes, utilities, laboratory, x-ray, dental, psychiatry, podiatry, and certain special therapies) are paid directly.

New York established a series of 16 resident groups (resource utilization groups [RUGs]) by statistically combining data on resident characteristics and service needs with time/motion and wage data from a sample of facilities. Each of the 16 RUG categories comprises residents who are more alike with respect to their cost of care and clinical characteristics than they are like residents in the other groups. Case mix is measured by assessing activities-of-daily-living depen-

dencies, certain other resident characteristics, and various special services.

Facilities assess all residents semiannually and new admissions quarterly. Rates may therefore be adjusted as often as quarterly. Only a nurse with state-approved training can perform assessments. The PRO under contract with the state audits facility assessments once or twice a year, reviewing records, interviewing staff, and observing residents. The state is moving to a targeted auditing program where facilities would be audited based on existence of key indicators of potential problems (e.g., increases in case mix or in certain types of resident conditions). About 1 percent of facilities have failed to perform adequate assessments and have been deprived of that privilege; they must contract with outside agencies to assess for one year.

Proprietary nursing homes are uniformly more pleased with the CMR system than their nonprofit counterparts, primarily since the corridor raised payments to most proprietary homes while lowering those of most nonprofits. Consumer advocates and nonprofit facilities feel that access for light-care residents has declined.

### Quality of Care under Case-mix Reimbursement Systems

Concerns about quality of care are not unique to case-mix reimbursement systems. They transcend individual state reimbursement methods and pervade discussions of nursing home policy throughout the country (U.S. General Accounting Office 1987; Institute of Medicine 1986).

Case-mix reimbursement, however, provides some singular incentives and disincentives for quality of care. Improving quality is cited as one objective in adopting a case-mix reimbursement system. Since it pays more for residents with greater needs, CMR should not only encourage such residents to be admitted, but it should also facilitate availability of services to meet their needs. CMR can also provide a powerful set of detailed data about residents that can be used to make licensing/certification surveys more efficient and effective. On the other hand, case-mix systems can discourage rehabilitation, since more dependent residents bring a higher rate, and may encourage nursing homes to provide excess or inappropriate services to maximize revenues

(even if costs also increase) as well as to mischart resident characteristics or services.

Case-mix reimbursement creates three general kinds of adverse incentives: disincentives to rehabilitate; incentives to provide unnecessary care; and incentives to misreport resident conditions or services. These problems are not theoretical; all case-mix states have experienced some of them, although evidence is largely anecdotal. In concept, if payments were calculated so precisely that actual costs for any given level of resident need were fully paid and if case mix and rate calculations were very frequent, a CMR system would not provide these adverse incentives to economically rational providers. That is, as long as actual costs are covered but not overpaid, there would be no incentive to maintain a resident in any given category or assessment score, because there would be no profit to be gained from doing so. For two major reasons, however, this economic theory may not operate.

First, a CMR system may not be so sensitive to case-mix changes to avoid opportunities to profit from maintaining residents in certain categories, assessing them as needing certain combinations of services, or at least reporting that they need certain services when this need is doubtful or fallacious. Precise, current case-mix identification is subject to several practical weaknesses. For instance, the number of services or case-mix groupings used for payment will always be limited, allowing some variation among resource use needs within each score or group. Furthermore, although it is generally believed that nursing home case mix does not change greatly over time in the aggregate, case-mix and rate calculations will not be so frequent as to reflect changing individual needs, so that individual groupings or services will not always be up to date. Finally, assessments may not be completely accurate or correct (Willemain 1980).

Second, CMR may not provide useful incentives because it is unclear to what extent facility staff operate from an economically driven perspective. For instance, most facility representatives and agency staff interviewed believe that administrators and directors of nursing, who make admission decisions, understand incentives to admit heavy-care residents. But it is less certain that the staff who plan and deliver care comprehend and respond to the restorative stimuli in the rate system (Thorburn and Meiners 1986; Jones and Meiners 1986). Perhaps this is because facilities do not hire more staff to provide additional restorative care; perhaps it is, as discussed below, because

restorative nursing and specialized rehabilitation are not sufficiently emphasized in long-term care.

## Rehabilitation Disincentives

By virtue of paying more for sicker or more disabled residents, case-mix reimbursement can provide the subtle incentive to maintain each resident at a high level of disability. (Although one might assume that this problem would be greater in the “groupings” [resident need] states than the “service-mix” states, it was recognized as an issue in states with both types of systems. Although case mix in the two systems is differently derived, both systems include both services and resident characteristics and, therefore, create the same general incentives.) It is often theorized, for instance, that by paying more for the most dependent residents, CMR discourages rehabilitation or restoration of function and encourages deterioration. This hypothesis has not been well tested, and nursing home industry representatives in CMR states doubt that such behavior occurs overtly. Some state agency officials have observed, however, that where residents requiring assistance with, for instance, eating or dressing bring a higher rate, facilities do provide such care, even when the residents are capable of being taught and encouraged to perform these activities on their own.

The extent to which discouraging independence in this way is driven by reimbursement policy is unclear. It probably occurs most often at the level of the direct-care giver, the nurse’s aide, whose expedience may be due to limited time rather than being mandated explicitly by the administrator or director of nursing in order to maximize payment (Willemain 1981). A management decision not to hire more or well trained staff, however, can limit the ability of existing staff to take the time necessary to restore or maintain resident function. Lack of rehabilitation, restoration, or maintenance (rather than deterioration) of function may result from a much broader problem of nursing home facility staff being unfamiliar with or unwilling to acknowledge the potential of many residents to improve their levels of functional independence and lack of knowledge and skill in rehabilitative nursing. Staff may not appreciate an elderly resident’s capacity to improve functioning. An incentive-payment experiment

in San Diego suggests greater restorative potential in even skilled level residents than facilities seemed to acknowledge or address (Thorburn and Meiners 1986).

A concern expressed regarding all the state CMR systems is payment for decubitus ulcer care. Decubiti occur due to pressure and impaired circulation, and are especially prevalent in immobile persons with underlying nutritional, hydration, circulation, and posture problems. Turning and positioning, use of chair and bed padding, periodic removal of restraints, exercise, proper diet and fluids, and skin cleaning and lubrication can prevent decubiti in most persons at risk of bed sores. Caring for ulcers once they develop is important to reduce the danger of infection and involvement of deeper tissue. Decubitus treatment has been estimated to cost as much as three times more than prevention (Silberman and Arnold 1987). Such care poses a legitimate nursing cost and is, therefore, reimbursed directly in all the "service-mix" states. It is also one of the discriminators used in Minnesota and New York to place residents into a case-mix group. By paying explicitly for such care, it is argued that nursing home staff might be less anxious to prevent decubiti, since they are paid for treating them. While it may be hard to imagine a facility adopting such a callous attitude, it is possible that paying explicitly for such care at least sends a signal that it is acceptable to have residents with such ulcers.

To overcome possible disincentives and encourage restoration, a CMR system must pay for the reasonable costs of restorative and preventive/maintenance care, inform providers about these payments and their incentives, and monitor to determine whether incentives are effective. For example, Maryland and Illinois expressly prohibit paying for decubiti obtained while in the nursing home. In Maryland PRO auditors must determine if payment should be disallowed. No other states have adopted such a proscription. Maryland also explicitly pays for turning and positioning as a means of preventing decubitus ulcers. The quantitative analyses conducted in another component of this study (Schlenker et al. 1988) found higher rates of turning and positioning and lower decubitus ulcer rates (even after adjusting for case mix) in Maryland compared to the 6 other states studied, including the case-mix states of Ohio and West Virginia. The same differences applied to Medicaid compared to non-Medicaid patients in Maryland nursing homes, whereas no such differences were found for the other states.



A similar response occurred in Illinois. Six months after Illinois introduced payment for decubitus prevention, its incidence of decubiti decreased 38 percent following years of stability. State agency officials also believe that paying for care that is both "needed" and "received" has improved independence in such activities as eating and dressing.

Ohio's system has two features designed to encourage rehabilitation. First, the state increased the weights of nursing times for restorative care, such as supervision of hygiene and eating. Second, the state pays for needed care and imposes financial penalties for both unneeded care delivered and needed care not delivered. In 1984 and 1985, 7 percent of facilities were subject to penalties (which had been waived in early years of the system in partial settlement of litigation over confusion about documentation requirements). While these design elements are conceptually appealing, consumer advocates in Ohio have expressed concern about whether the incentives are translated into behavior changes by direct-care staff. A state agency official reported, however, that the underservice penalty did contribute to removing some of the state's worst providers from the Medicaid program. To place greater emphasis on restorative care as well as setting and meeting rehabilitation goals, Illinois revised its CMR system in 1986. In both Illinois and Ohio, state agency staff now actively monitor needs assessment, care planning, care delivery, and needs achievement. It is unclear, however, whether the Ohio penalty or the oversight in either state actually encourages restorative care.

The New York CMR system attempts to foster rehabilitation of residents by paying for specialized rehabilitation in 2 of its case-mix groups that bring the highest payment rates: residents requiring physical or occupational therapy at least 5 days per week. An evaluation of the first 6 months of experience under the RUGs system revealed that overall facility costs increased 2 percent (while case mix increased 11 percent), but that specialized therapy costs increased almost 17 percent in all facilities, 25 percent in the facilities that increased costs, and almost 8 percent in those that decreased overall costs (New York Department of Health 1986b). This evidence of increased resources for specialized rehabilitation is heartening, but it does not necessarily establish that facilities will provide care to improve independence in activities of daily living through more routine restorative nursing.

New York, Minnesota, Illinois, and Maryland also provide bonuses for improving resident functioning. New York's and Minnesota's bonuses are implicit in the assessment design. Since residents are gen-

erally assessed only twice per year, facilities may keep up to 5 months of higher payments if a resident improves sufficiently to fall into a lower-paying case-mix category. (Conversely, this approach discourages deterioration, since greater needs may not be reflected in a higher rate for up to 5 months.) There is no evidence on whether this incentive has encouraged more restorative care. Maryland pays up to 2 months at the higher rate for every resident whose improvement brings her into a higher ADL functional (lower-payment) level. This payment is both a reward for improving outcomes and recognition of the cost of adjusting staffing levels to correspond to reduced resident needs. Although the state pays those bonuses regularly, industry representatives do not think that the existence of the bonus is an incentive to restore functioning. The San Diego outcome-incentive reimbursement experiments showed little improvement in selected conditions or in discharge resulting from bonus payments (Thorburn and Meiners 1986; Jones and Meiners 1986). Therefore, it is not surprising that bonuses in New York, Minnesota, and Maryland appear to have a minimal influence on restorative care.

New York has taken the most far reaching approach to monitoring quality of care through its RUGs program. For several years, the state has employed a targeted IOC/licensure survey system called "sentinel health events" (SHEs). SHEs are 10 key resident conditions that indicate potentially poor care (decubiti, contractures, accidents, behavior problems, weight loss, poor ambulation, catheterization, resident transfer, tube feeding, and grooming). If facilities exceed a certain threshold of incidence of any of these conditions, state survey staff examine a sample of residents to determine the reasons for these problems, looking at processes of care and underlying structural requirements, such as staffing levels. If facilities fail to comply with a given score for compliance with these standards, the state may take corrective action.

The SHEs were originally developed by clinical experts as a set of easily identified and defined outcomes or current resident conditions that are likely to discriminate good from poor nursing care. The objective of this survey approach is both to target scarce survey resources to facilities with greater likelihood of problems and to focus on outcomes of care, allowing facilities flexibility in process and structure if they achieve good results (Institute of Medicine 1986). Threshold scores were set statistically to be both sensitive and specific

(i.e., to point to facilities with overall quality problems without requiring excessive survey time on facilities with acceptable care) (New York Department of Health 1985).

Because the state has had good experience with its targeted surveys (New York Department of Health 1985), it is conducting a demonstration project to use RUGs data to tie into the SHEs survey system to monitor lack of restoration, incentives to allow deterioration, and unnecessary care. Under the new system, called NYQAS (New York Quality Assurance System), the state will have at least semianual data on prevalence and incidence of decubiti and tube feeding, which can be used to target more frequent surveys to facilities with potential problems. It is also refining its SHEs system to coordinate directly with RUGs (New York Department of Health 1987). For example, since urinary tract infection is a discriminator for reimbursement, the state will have regular incidence data from all facilities and could include urinary tract infection as one of its SHEs. Another means of using RUGs information is to monitor changes in case mix over time. Significant increases in a facility's case mix might raise questions of its capacity to care for residents with greater needs, such as subacute residents, or possibly suggest inflation in case-mix documentation.

In addition to facility-level data, case-mix information allows examining categories of residents, either those falling into certain high-risk groups or those who may change in some predefined way over a given period. For instance, due to the incentive to admit residents with rehabilitation needs, it is important to assure that they are receiving care. Disincentives could also be monitored. In the preliminary CMR system designed for Colorado, behavior/mental problem residents would receive lower rates, which might discourage facilities from identifying those problems or meeting those needs (Schlenker et al. 1987). Although the proposed rate methodology was altered to remove this incentive, it will also be important for the quality assurance system to review care for persons with such problems to assure that their needs are addressed.

In addition to focusing on specific resident problem groups, CMR data offer a powerful research tool. Over time, data can be generated to establish outcome norms for restoration of function or amelioration of deterioration and to monitor both substandard and exceptional results, which may be related to poor or good care. New York is also

considering adjusting its SHE thresholds by case mix, so that, for instance, facilities with mostly independent residents (low ADL scores) would be expected to have fewer SHEs than facilities with higher ADL scores (New York Department of Health 1987; Schneider and Foley 1987). Some of these monitoring activities require sophisticated design and development, but tracking overall facility case mix and incidence of certain resident conditions that indicate potential quality problems appears to be quite feasible.

### Incentives for Unnecessary Care

Aside from the possible incentive of discouraging rehabilitation and restoration, CMR systems can encourage provision of unnecessary services by paying explicitly for those services. Thus, it is argued that paying more for tube feeding than spoon feeding and more for spoon feeding than assistance in self-feeding will induce the use of the higher rate services. There is some anecdotal evidence that inappropriate care, for instance tube feeding, catheterization, or unnecessary assistance with activities of daily living, has occurred in facilities in some CMR states. In addition, West Virginia's higher explicit payments for catheterized patients (relative to other case-mix systems) were associated in the empirical component of this study with higher rates of catheterized Medicaid patients in West Virginia than in Maryland or Ohio (Schlenker et al. 1988).

The overprovision of such services may induce dependency, as discussed above, and discourage restoration or maintenance of functioning. It may also be unnecessarily costly to the state's budget. Furthermore, some unneeded care may be poor care. Encouraging use of urinary catheters rather than a bladder training program, for instance, is not only antithetical to a goal of independent functioning, it may lead to increased rates of infection (Smits 1984). Using physical or chemical restraints for behavior problems may also be inappropriate and produce unfortunate long-term side effects. Most states rely on the integrity of the attending physician, who must order such care to assure that services are necessary. Unfortunately, since some physicians are unwilling to attend their nursing home patients actively (Solon and Greenwalt 1974; Kane, Hammer, and Byrnes 1977; Rango 1982), it is possible for facility staff to advocate physician orders that

may be in the facility's rather than resident's best interests. Conversely, physicians may be unfamiliar with the advantages of rehabilitative therapy and may not prescribe it, tying the hands of facilities that would provide it if ordered.

Some states have addressed these adverse CMR incentives directly. To guard against adverse incentives to use services such as tube feeding (with its dependency inducement), intermittent positive pressure treatment (that has questionable clinical benefit), catheters, chemical restraints, or other potentially needless or harmful care requires a quality monitoring system to evaluate appropriateness of care. Illinois evaluates care through its extensive IOC process, which deploys state agency nurses to all nursing homes several times per year. The state has recently amended its CMR program to require that services be both "needed" and "received," in order to prevent the negative charting discussed below and inappropriate care provided to maximize reimbursement. If services charted are not both needed and received, Illinois will not pay for them. In May 1987 Ohio also tightened its case-mix definitions to permit state assessors to inquire into appropriateness of services; it anticipates increasing penalties for underdelivered services due to these changes.

## Misreporting Resident Conditions of Services

One of the most frequently noted problems with case-mix reimbursement systems is their incentive for inflated documentation through mischarting or "charting for dollars." Illinois's original "point-count system," the grandfather of CMR programs, was widely criticized for inducing such behavior (Walsh 1979). But industry representatives and state officials in Ohio, Maryland, West Virginia, Minnesota, New York, and Illinois agree that a certain amount of mischarting occurs in all states, ranging from modest inflation of the needs of residents on the margin of one group or need level to rare but real incidents of fraud. The extent of fraud or serious incompetence appears small, based on evidence from New York's revocation of delegated status and Maryland's fraud prosecutions. The degree of marginal need or service inflation is unknown but its potential must be considered in designing CMR systems.

It is argued that some of the incentive to "chart for dollars" to

maximize reimbursement that is acknowledged to occur in all the "service-mix" systems is less evident in the RUGs systems. However, to the extent that the existence of certain dependency levels or services places residents in higher-paying categories, this payment approach has similar incentives to chart unneeded services or higher disability levels. Large jumps between the moderate- and heavy-care groups in Maryland or between some of the RUGs groups in New York can also induce stretching descriptions of marginal residents to fall into the highest-paying category.

Pricing systems would seem to encourage mischarting more than systems paying costs, since facilities can keep the entire payment under a pricing system, whereas in a cost-payment system if a facility does not actually spend money on care, its next year's cost base is reduced and it does not benefit in the long run from inflating resident needs. Nevertheless, all CMR states have reported that charting for dollars has occurred, even those paying actual facility costs.

Mischarting raises two problems: excess cost to state budgets, and misrepresentation of resident conditions that can lead to inappropriate care. While the first problem may be of greater concern to state Medicaid agencies, the second is more pernicious. Residents charted as needing and obtaining care that they do not actually require pose the problems noted above of receiving unnecessary, possibly harmful or dependency-inducing care. Residents charted as needing care that is not provided can also be harmed. The care plan and medical record should form the framework that all care givers use to provide services. Its completeness and accuracy are particularly necessary in light of the large turnover of nursing staff and the use of temporary agency personnel for whom the record should guide care activities. Since staff must rely on records for identifying resident needs and services to be provided, if charting unnecessary services occurs, it will likely result in their provision. Perhaps more seriously, it can result in labeling residents as more dependent than they are, thereby reinforcing stereotypes about the restorative capability of the elderly and undermining residents' restorative potential.

Monitoring for charting errors must involve direct resident observation. Some discrepancies can be revealed through careful review of the variety of care documents—such as physician orders, resident assessment, various care plans, and the progress notes of different disciplines. But sophisticated attempts at inflated charting can best

be uncovered by observing resident conditions and behavior. Yet, few states rely extensively on resident observation in their audit or assessment procedures for at least two reasons.

First, it appears to be more costly. Illinois, for instance, employs about 5 times as many staff per facility as Ohio and many more than other CMR states and is, therefore, able to observe residents more closely. Illinois state agency officials believe that this investment is warranted by savings it generates through detecting charting errors. Second, since the assessment or audit is generally retrospective, the resident's current condition may be irrelevant to the review. Ohio officials, for example, believe that it is possible for residents to improve in 3 to 6 months, so that the record is considered accurate and prevails for retrospective-payment purposes when in conflict with a resident's observed state, except in extraordinary disparate cases. Ohio's situation is somewhat aberrant, however, since under the retrospective-payment system the state determines which care and services were previously provided, not which should be paid for in the future. Prospective-payment systems assess current resident conditions and pay for care expected to be rendered in the future.

In states where facilities assess residents, audits are always retrospective and may, therefore, be limited in their ability to detect fraud or charting errors. It is difficult to determine through an audit whether documentation inconsistent with observed resident condition is merely out of date or seriously in error. More regular and sophisticated audits would appear necessary to guard against incorrect charting, but it is theoretically possible to obtain a fairly accurate picture of resident functioning levels and service needs by combining chart review and direct observation. If discrepancies between charting and observation exceed some threshold, the state could conclude that charting is either incompetent or fraudulent.

## Conclusions Regarding Quality and Case-mix Reimbursement

In view of the difficulty of defining quality of care (Institute of Medicine 1986) and the dearth of evaluations of quality under case-mix systems, it is not possible to conclude that CMR systems have clearly improved or worsened care. Only New York has studied this

issue. In its first 6 months under RUGs, New York found that the per facility average number of licensing and certification deficiencies (total numbers, as well as deficiencies believed to relate most closely to resident care and to quality-of-life issues) declined from 1985 to 1986 (New York Department of Health 1986b). These improvements occurred in lower-cost facilities (whose payments were raised to the floor of the rate corridor), higher-cost facilities (whose payments were lowered to the ceiling), and facilities with the greatest number of deficiencies in 1985. The more-detailed documentation required by RUGs could, in itself, contribute to reducing the number of deficiencies. Data from the program's first 6 months are too limited to draw broad conclusions about quality improvements. It appears, however, that the introduction of the CMR system in New York did not decrease quality of care and may have improved it.

The adverse incentives inherent in CMR systems do operate in some cases, although evidence is anecdotal and sporadic. But even without dramatic signs of serious quality problems, case-mix reimbursement systems should explicitly include quality-monitoring features. Monitoring the appropriateness of individual residents' care, as performed in Illinois, is effective but may be costly. Data generated from CMR assessments could be used to target review of facility case-mix changes, residents with certain conditions, or residents at risk of not receiving needed care. Uniform assessments provide a powerful data base with which to focus the entire nursing home quality-assurance process, not only to assure that adverse CMR incentives do not operate but also to promote improvement in the overall quality of nursing home care through a more efficient and effective regulatory system (Willemain 1981; Institute of Medicine 1986).

A more subtle and pervasive problem of quality may be that both "service-mix" and "resident-groupings" CMR systems rely on current practice patterns in establishing rates. This emphasis may result in a mechanized performance of a series of functions implicitly prescribed by time/motion studies (Willemain 1981). It may also stifle innovation in developing new and improved practice in long-term care. Thus, quality of both care and life for nursing home residents could suffer if state systems are not regularly reviewed to be sure that they are consistent with the state of the art in nursing home care. To deal with such issues, Ohio and Maryland undertook new time and cost studies in 1987 to update their reimbursement approach. As a result,



Maryland added a special services payment to accommodate the extra cost of AIDS patients. Data collection needed to revise groupings systems is complex, requiring detailed questionnaires on resident characteristics and time studies drawn from a sample of nursing homes and statistical and clinical analyses to develop revised or new groups (Grimaldi and Jazwiecki, 1987). Thus, service-mix states may be more able to adapt quickly to changing service needs or practice standards, since it is likely to be easier to revise cost estimates for individual services.

### Incentives for Access

Improving access for residents with the heaviest care needs is often the primary goal of states adopting case-mix reimbursement systems. An associated objective is decreasing the incentives to admit residents with lighter care needs, many of whom could be cared for in other institutional or community settings. These admission incentives appear to operate well in most states, which is consistent with the results of the San Diego incentive-reimbursement research.

In the San Diego study, an admission incentive was paid based on the amount of nursing staff time and cost estimated to be required to care for residents categorized into several ADL and special-nursing need groups (Meiners et al. 1985). Researchers found this bonus successful since facilities admitted more residents from the heaviest-care categories (requiring care for tube feeding, decubiti, or coma) and fewer from the lightest-care group (which carried a negative payment). This is similar to the practice in Maryland, New York, and Minnesota, where states pay for fewer nursing hours for the lowest-care groups than the state licensing standards require. Moderately heavy-care residents (dependent in all ADLs) were not admitted more frequently in the San Diego experiment, however, despite higher than average payments for them. Researchers theorized that the highest-care categories were easiest to identify as bringing a high bonus. Unfortunately, facilities did not hire more staff to care for the heavier-care admissions.

State officials and provider groups in CMR states generally believe that CMR systems have improved access for heavy-care residents. Maryland, which pays for administrative hospital days pending nursing

home admission, reported saving \$2.5 million (over 1 percent of its nursing home budget) in the first year of operating its case-mix system due to increased nursing home admission of heavy-care residents and reduced hospital stays (Health Facilities Association of Maryland 1984). Improved access for heavy-care patients was also found in a study of the Maryland system by Feder and Scanlon (1989). Other states did not study this issue, since they do not pay for hospital back-up days under Medicaid or have not had a problem with hospital back-up.

In the first 6 months of the New York system, overall nursing home case mix increased 11 percent (based on the resource-use index) due to admission of residents with greater care needs in the rehabilitation and special nursing needs categories (New York Department of Health 1986a). State officials do not believe this is due to inflated charting. The general impression in Ohio and Illinois is also that access for heavy-care residents improved under the CMR systems (Holahan and Cohen 1987).

Some admission problems remain, however. Discharged hospital patients with subacute needs, such as chemotherapy, dialysis, or ventilators, may have difficulty finding nursing home placement, since few of the CMR systems were designed to pay for these kinds of care. New York includes some of these special services in RUGs, and Illinois pays extra fees for some subacute needs. Ohio intends to examine subacute care as part of its new time study, and Minnesota plans to pay extra for ventilator-dependent residents. Owing to the technical nature of these services, states do not want to encourage a facility to accept such residents unless it is clearly capable of addressing their needs.

An access problem also exists for some residents requiring extra personal care and supervision, such as those with dementia or Alzheimer's disease (Wolff 1987), or other behavior problems. Maryland has recently provided extra payment to train staff to care for residents with behavior problems. New York is also considering such bonuses.

In addition to the types of care reimbursed, a CMR systems's design can influence admission patterns. Prospective rates are generally thought to provide less incentive to accept heavy-care residents than retrospective rates because the higher cost of heavy-care residents will not be incorporated into the facility's rate until the next prospective rate-setting round. If interim rates in a retrospective system are much

below cost and adjustments are made infrequently, however, the situation will be similar and cash flow limits may discourage heavy-care admissions. Ohio's retrospective system for direct care has occasionally paid lower final rates than interim rates, and some facilities report that this uncertainty has disrupted their planning. Retrospective systems do not, therefore, necessarily provide all the incentives attributed to them.

Another CMR system design feature is whether rates are resident-level or facility-level. Theoretically, a resident-level reimbursement system would more directly induce heavy-care admissions than a facility-level system. That is, a heavy-care resident should be a more attractive admission in a state where each resident carries a separate rate than in a state with a facility-level average rate, since in states with facility-level systems a heavy-care admission does not increase the rate directly but only at the point that rates are changed. (To address this problem, rates for new admissions are adjusted semiannually in Illinois and West Virginia and quarterly in New York.) One might, therefore, expect states with facility-level payments to experience more problems with heavy-care access than states with resident-level systems. According to state agency staff, residents with skilled-nursing needs do face some access barriers in West Virginia, but this may be due to the apparently disproportionately high nursing time assigned in the reimbursement system to less skilled services, such as assistance with activities of daily living, rather than to the facility-level reimbursement system design. In fact, this subtlety in design may have little impact on nursing home behavior. Provider representatives in New York asserted that facilities expressed eagerness to admit heavy-care residents, even though they might not receive an actual rate increase for several months, because they knew they would eventually receive the higher rate.

While increasing the admission of residents with greater care needs is a goal of most CMR systems, decreasing access for lightest-care residents is also an explicit objective in some. For instance, the rate for the lightest-care category in New York is based on ICF rather than SNF costs in order to discourage admissions, and light-care admissions have decreased (New York Department of Health 1986a). Rates for the lightest-care category in Minnesota and Maryland cover fewer nursing hours than the minimum required under licensing standards, which also discourage admitting the lightest-care group.

Such persons, therefore, sometimes face difficulty in getting admitted to nursing homes. Of concern in all these states is limited availability of alternative placement in supervised settings or noninstitutional care arrangements. A consumer advocate in New York also criticized the segregation of nursing home residents into heavier-care facilities, arguing that to enhance quality of life, facilities should maintain a broad resident case mix (Wolff 1987).

### Cost Containment and Equity

Most states adopting CMR systems have expressed the desire to distribute payments among facilities more equitably according to resident needs rather than just facility costs. Under other payment systems, facilities with a large share of heavy-care residents may receive lower reimbursement (relative to cost) than counterparts with lighter-care residents. New York intended to reduce the disparity in payments between high-cost and low-cost facilities, which nursing homes had tried to justify on the basis of case mix. The RUGs research revealed that few of the higher-cost facilities had a higher case mix to the same degree, and the modified pricing-system payments now align payment more in accord with resident need and services. Because of the wide variation in cost among facilities in New York, some industry representatives dislike the RUGs distribution system. In most states, however, even when nursing homes take issue with some aspects of their CMR system, they are generally satisfied with its distributional equity.

A few states, such as Ohio and West Virginia, intended expressly to increase their Medicaid nursing home budgets in adopting a case-mix payment system. Minnesota and New York, however, designed their payment systems to be budget-neutral. This objective is easier to achieve with a case-mix grouping than a service-mix approach, since the case-mix index generates relative weights that can be applied to any Medicaid budget and can be based on a price (New York) or individual facility costs (Minnesota).

It appears likely that other features of a rate-setting system, such as ceilings, prospective versus retrospective design, frequency of rate adjustments, and the absolute payment levels for all services (not just the nursing component) have more impact on cost containment than

whether the system pays based on case mix (Holahan and Cohen 1987).

Although case-mix payment in itself may not contain overall state nursing home costs, states can minimize direct administrative costs through the system's design. Administering a case-mix reimbursement system will add some costs to the state's Medicaid budget, particularly in assessment procedures and data processing. Ohio estimated, for instance, that administering CMR tripled the administrative cost of its former nursing home rate system (Shaughnessy and Kurowski 1982). Even in states with the most extensive agency assessment (like Illinois), however, administrative costs are less than 1 percent of the Medicaid nursing home budget. In order to limit the CMR fiscal impact even further, New York and Maryland require facilities to conduct assessment, and the states contract out the audit function to PROs. New York also imposes on facilities the cost of training facility nurse assessors. To the extent that these mandates are ultimately reflected in reimbursement rates, they are borne by the state budget, but they are not seen as a direct administrative cost. A further means to cut assessment costs is to combine this activity with other related state functions, such as inspection of care (IOC) (for which the federal government pays 75 percent of some costs), and avoid duplication. Ohio, Minnesota, and Illinois link these activities. Maryland estimated that appending assessment audit responsibilities to its IOC added only about 25 percent to its IOC budget.

## Discussion

Despite the varied experience of case-mix states and the different stages of development of case-mix reimbursement systems, experience thus far provides several useful lessons for states considering developing a CMR system. Most of the CMR states encountered start-up problems with their data collection and data processing procedures, and it is, therefore, important to allow a reasonable period of time for setting a CMR system in place and to anticipate some administrative difficulties despite the best advance planning. Any system of auditing assessments carried out by facilities must also provide prompt feedback in order to address problems early. Uniform nursing home documentation facilitates state assessment or auditing of facility assessment.

But any documentation requirements should be coordinated to the greatest degree possible among Medicaid, licensure/certification, and IOC agencies. Different formats or one form using different scales are costly and unnecessarily confusing to facility staff. (Feder and Scanlon [1989] reached similar conclusions in their study of the Maryland system.)

Some of the more subtle design features, such as the resident- versus the facility-level approach or rehabilitation bonuses integrated into payment may not be obvious enough to induce the desired behaviors. In general, it would appear that admission incentives are likely to be more effective than outcome incentives, since staff making admission decisions, such as the administrator and director of nursing, are likely to understand and respond to the economic factors associated with admission decisions. While outcome incentives, such as rehabilitation bonuses, may send politically appropriate signals to the industry, this symbolic advantage should be balanced against the cost of outcome incentives, since they have not yet been proven very effective.

For outcome incentives to operate, they must not only be designed to pay at least the costs of achieving the desired outcome, but also be clear and understandable to nursing home personnel making budget, staffing, care planning, and training decisions. It may be unnecessary for nursing aides to understand case-mix payment. But supervisory personnel should hire additional staff or improve staff training and more clearly emphasize the importance of restoring (or retarding deterioration of) resident function. While CMR systems are capable of monitoring outcomes through extensive resident-specific data, they do not yet appear to have devised behavioral incentives to accomplish the goal of improving outcomes by payment alone.

Quality of care can be both enhanced and jeopardized by case-mix reimbursement. There is limited direct evidence to substantiate the theoretical concerns that CMR encourages providing unneeded care or allowing residents to deteriorate. Even isolated incidents, however, are disturbing, and states should monitor them through a quality-assurance system. Lack of restorative nursing in CMR states seems to derive at least in part from a larger problem of long-term-care orientation rather than exclusively reimbursement disincentives. Misreporting services or needs, however, is acknowledged to have occurred in most CMR states. While this phenomenon may only involve pushing the margins of the definitions of dependency, it can lead to labeling

residents as more dependent than is actually the case. To monitor for the operation of these adverse incentives requires not only a commitment to observe residents directly, rather than just review records; it also requires a sophisticated oversight protocol and coordination with the licensing agency that has enforcement authority. Considering the importance of such coordination, it is surprising how few states do so explicitly. The recent change of the federal survey process (*Federal Register* 1987) to focus more directly on outcomes, as well as the related nursing home reform provisions of the Omnibus Reconciliation Act of 1987 (OBRA) (P.L. 100-203), are likely to encourage collaboration between payment and licensing agencies and a more targeted survey approach.

Since nursing home representatives report that they respond primarily to the overall financial "bottom line," rather than to incentives in components of their payment rate, states should not expect too much from a case-mix reimbursement system. Facilities will look at payment for capital, administrative, direct care, and other care costs as a whole. When one part of the rate is seen as inadequate, they attempt to increase revenues in other areas. Certainly, facility satisfaction with payment systems depends upon their evaluation of the overall rate, considering their expected costs and profit. While case-mix payment may be a more rational means of distributing direct-care payments, its acceptability to the industry depends upon the actual level of overall payment, to the state upon the ease of administration, and to consumers and their advocates upon the implicit and explicit incentives for access and oversight of quality under the system. Furthermore, as nursing home residents' needs and gerontological practice change, states should refine their CMR systems to encompass the evolving technology and care delivery.

This study suggests the need for additional research on such issues as more meaningful measures of nursing home quality, more data on the relation between quality and payment system type, including case-mix reimbursement, and more precise measurement of the impact of CMR on resident access and facility costs. The following are specific suggestions.

The analysis of resident care outcomes over time under different payment systems is recommended as an important component of such research. In particular, outcomes for residents requiring rehabilitation services and those with behavioral problems under various payment

systems should be examined. Further, a thorough examination of the access issue would include information on the distribution and flow of residents by payer across different long-term-care modalities, including nursing homes, rehabilitation units, transitional care units, swing beds, hospices, home- and community-based care, and related settings. Research along these lines would provide needed information for the development of reimbursement and related long-term-care policies.

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