Coping with DRGs: A Nursing Home's Experience

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Abstract:
The introduction of prospective payment system (PPS) based on diagnostic related groups (DRGs) has had a significant impact on hospitals. To determine the impact of PPS on nursing homes, the authors studied the activity of a Veterans Administration teaching nursing home (admissions, acute hospital transfers, and discharges) during 1 year preceding implementation of DRGs and for 3 consecutive years following implementation of DRGs. In 1983, pre-DRGs, a total of 36 patients, were admitted to the nursing home. Following implementation of DRGs, a sevenfold increase was noted in the number of patients admitted when comparing 1983 and 1986, with the monthly average of patients admitted increasing from 3 in 1983 to 9.7, 22, and 23.8 in 1984, 1985, and 1986, respectively. Associated with the increase in patients admitted following DRGs was an increase in patients requiring transfer to the acute hospital, within 30 days of admission to the nursing home. In 1986, approximately 27% of patients admitted to the nursing home required transfer to the acute hospital within 30 days of their admission. The number of patients discharged from the nursing home also increased following DRGs. None of the patients admitted to the nursing home in 1983 were discharged within 30 days of admission. Subsequent to introduction of DRGs, an average of two patients per month were discharged within 30 days of nursing home admission. The authors conclude that since introduction of DRGs there has been a significant and abrupt increase in the activity of certain nursing homes, with an increase in the number of patients admitted, the number of patients transferred to acute hospitals, and the number of patients discharged. Further studies are necessary to determine if such changes are widespread and to determine the effect of such changes on patient care.
KEY INDEXING TERMS: DRGs, Nursing Home, Changing Role.

Article:
With the emphasis on reducing medical costs during the last 5-10 years, innovative approaches to the delivery of care have been developed. One major approach has been the shortening of acute care hospital stays with the development of a prospective payment system based on diagnostic related groups (DRGs), which has been directed mainly at Medicare patients.[1,2] Under such a system, hospitals have incentives for early patient discharge, and studies have demonstrated a significant decrease in the length of hospitalizations since implementation of DRGs.[3-5] The impact of this shortening of hospitalizations on nursing homes has not been well studied. However, some reports have demonstrated the number of patients admitted to nursing homes from hospitals has increased[6-9]; patients admitted to nursing homes from hospitals are sicker[10,11]; and, in certain studies, an increase in nursing home deaths has been reported.[8-10]

In a previous study,[6] we demonstrated a change in the role of a Veterans Administration teaching nursing home since implementation of DRGs. In comparing a similar period of time, pre- and post-implementation of DRGs, we found prior to implementation of DRGs, most patients were admitted to the nursing home for long-term placement; after implementation of DRGs, the majority of patients were admitted to the nursing home for continuation of therapy started in the acute care hospital. Because the study included only a 6 month comparison period, 3 years after implementation of DRGs, we could not define the pattern of change in the nursing home activity, nor could we be certain that the change was directly related to DRGs. In an attempt to better characterize the change in the nursing home, we undertook the following study: we retrospectively

studied the nursing home activity during a 1 year period immediately preceding implementation of DRGs and 3 consecutive years immediately following implementation of DRGs.

Table 1. Number of Patients Admitted to Nursing Home

	1983*	1984	1985	1986
Total patients	36	116	264	285
Patients per month	3	9.7	22	23.8

** = pre-Diagnostic Related Groups: Difference in yearly number of patients admitted significant, $p < 0.001$.*

Methods

Study Site. The facility that was studied is a 200 bed Veterans Administration' Nursing Home Care Unit (NHCU). The nursing home is located on the 8th and 9th floors of a 10 floor, 680 bed acute Veterans Administration Hospital. The NHCU facility has multilevels of care available, but 80% of residents are in the most dependent level. The residents are predominantly male (over 90%). Both the hospital and NHCU are major teaching affiliates of the Medical College of Wisconsin, and NHCU and hospital care are provided by full time faculty of the Medical College, plus trainees. Two medical residents and one medical student are assigned a monthly rotation in Geriatrics, which is based in the NHCU. Two nurse practitioners assist the physicians in the care of the NHCU residents. During the study period, there was no change in the manner which medical care or teaching programs in the NHCU were conducted.

Data Collection. A retrospective review of the NH-CU's log of all patients admitted and discharged between January 1, 1983 and December 31, 1986 was performed. The names of all patients who were initially admitted to the NHCU during this period were recorded. From the NHCU log, it was determined whether these patients required hospitalization or if they were discharged (alive) within 30 days of their initial NHCU admission. Patients admitted to the NHCU in the last month of the study were also followed for the 30 day period. Since prospective payment was introduced to our acute facility in October 1983, we decided to use calendar year 1983 as the basis (pre-DRGs) for comparison. The monthly frequency of events (admissions, hospitalizations within 30 days of admission, and live discharge within 30 days of admission) were determined for all months studied. Using a Poisson distribution, the monthly frequency of events for the pre-DRG period (calendar year 1983) was compared to the post-DRG period (1984, 1985, 1986). In addition, the number of NHCU patients who were hospitalized or discharged within 30 days of their NHCU admission were calculated as a percent of all patients initially admitted to the NHCU. Comparisons between pre-DRGs and post-DRGs periods were determined by using Chi-square test for homogeneity for the percentage; and Fischer's exact test was used when appropriate.. Hospitalizations and NHCU admissions were correlated for the study period.

Results

As shown in Table 1, a striking increase in the number of patients initially admitted to the NHCU occurred after implementation of DRGs. When analyzed by Poisson distribution, significantly more patients were admitted each year compared to 1983 ($p < 0.001$). A threefold increase in patients admitted to the NHCU occurred in the first year after DRG implementation and a sevenfold increase was noted in the second year. After 2 years, the increase was less marked with only 21 more patients admitted in 1986 compared to 1985. Assessing monthly admissions, we find a significant increase in the number of patients admitted during the first 3 months of 1984 compared to the number of patients admitted during the first 3 months of 1983 (Figure 1). Throughout 1983, an average of three patients per month were admitted to the nursing home, compared to 9.7, 22.0, and 23.8 patients admitted per month in 1984, 1985, and 1986, respectively ($p < 0.001$).

Associated with the increase in number of patients admitted to the NHCU, a significant increase in patients transferred to the acute hospital within 30 days of NHCU admission occurred following implementation of DRGs. Figure 2 demonstrates the number of patients per month who required hospitalization within 30 days of

their NHCU admission analyzed in 6 month increments. Compared to 1983, there was no significant increase in hospitalizations until July, 1984; thereafter, the number of patients requiring hospitalization was significantly greater than in 1983 and a steady rise in the number of patients requiring hospitalization is seen throughout the study period ($p < 0.0001$). When the number of patients admitted to the ,NHCU was correlated with the number of patients hospitalized within 30 days of their NHCU admission, a significant correlation was noted ($r = 0.68$, $p < 0.01$). This relationship was further examined by expressing the number of patients hospitalized as a percent of all new patients admitted to the NHCU for each year of the study. A significant increase in percentage of patients requiring hospitalization was noted during the study period with 27% in 1986 requiring hospitalization within 30 days of NHCU admission compared to 14% ($p < 0.56$) in 1983 and 11% ($p < 0.002$) in 1984.

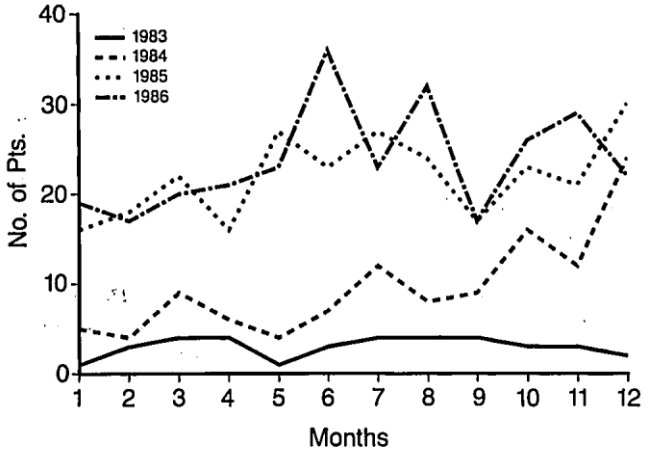

Figure 1. Monthly nursing home admissions. Difference between pre-DRGs and post-DRGs significant, $p < 0.01$.

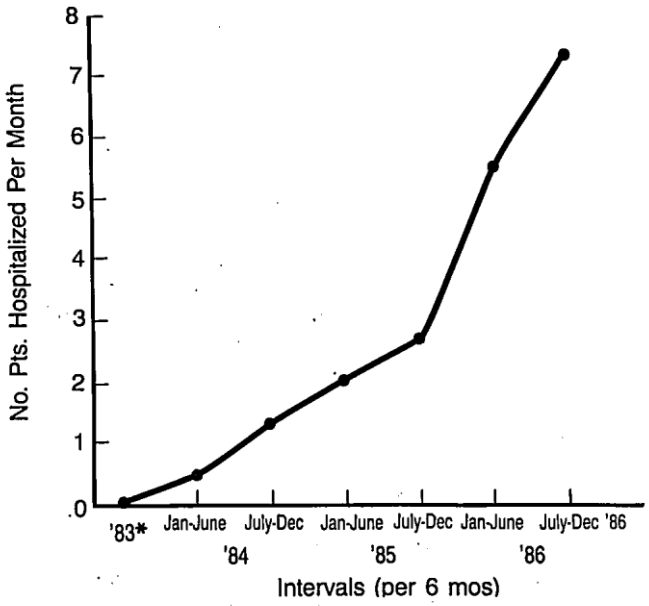

Figure 2. Patients hospitalized within 30 days of nursing home admission per month. * = pre-DRGs. Difference between pre-DRGs and post-DRGs significant, $p < 0.0001$.

The number of patients discharged alive from the NHCU within 30 days of initial admission during the study period are shown in Figure 3. When analyzed by Poisson distribution, there was a significantly greater number of patients discharged in the post-DRG period compared to the pre-DRG period. ($p < 0.001$). When the number of patients discharged was expressed as a percent of the number of patients. initially admitted to the NHCU, we find that following implementation of DRGs, approximately 10% of patients were discharged alive within 30 days of their admission to the nursing home. In 1983, pre-DRG implementation, no patients were discharged. Figure 4 shows the same data expressed graphically by quarters of years. There were no patients discharged

from the NHCU within 30 days of their NHCU admission until August 1984, and then an average of two patients per month were discharged subsequently throughout the study.

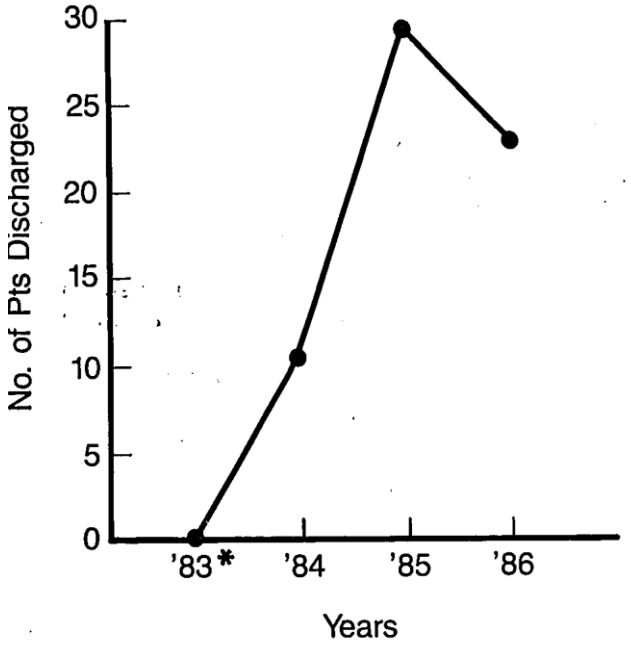

Figure 3. Patients discharged within 30 days of nursing home admission. * = pre-DRGs. Difference between pre-DRGs and post-DRGs significant, $p < 0.001$.

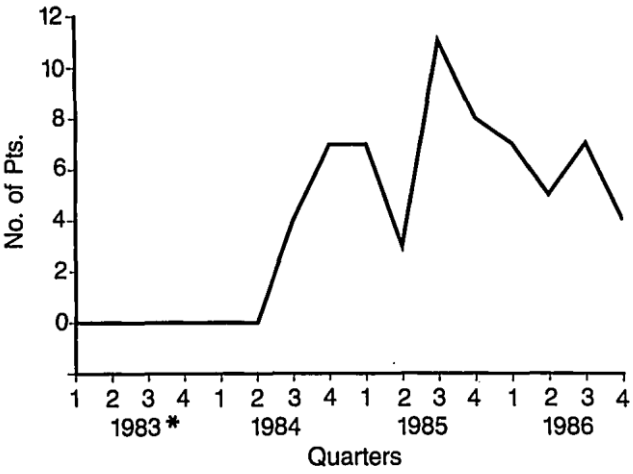

Figure 4. Patients discharged within 30 days of nursing home admission per yearly quarters. * = pre-DRGs. Difference between pre-DRGs and post-DRGs significant, $p < 0.001$.

Discussion

The results of our study corroborate the findings of other studies[6,8-11] which have demonstrated a change in the role of certain nursing homes in the delivery of medical care since the implementation of DRGs. Associated with this changing role has been a significant increase in the activity of the nursing home. Interestingly, the change in our nursing home was abrupt and has been progressive since implementation of DRGs. A threefold increase in admission was noted in the first year and a sevenfold increase occurred in the second year following implementation of DRGs. The yearly increase in admissions continued throughout the study period, although between the 2nd and 3rd years following implementation of DRGs, the increase was less marked. The average monthly admission rate increased from three patients in 1983 to 23 in 1986.

From our earlier study and the work of others[6,8-11] we assume this change in NHCU activity, since implementation of DRGs can be attributed to a change in physicians' practice patterns and a change in the perception of the role of the NHCU by physicians, nurses, and hospital and nursing home administrators. Prior

to implementation of DRGs, most patients were admitted to NHCU for long-term placement. Due to chronic illness, these patients were considered to require chronic institutionalization, which would probably be necessary for the remainder of their lives. Following implementation of DRGs, with emphasis on shortening length of acute hospitalization, many patients are now transferred from the acute hospital to NHCU for continuation of therapy started in the acute hospital. Final patient disposition depends upon the patient's response to the continuing therapy received in the NHCU with many patients eventually returning home. In 1983, prior to implementation of DRGs, none of the patients admitted to the NHCU were discharged home within 30 days of their NHCU admission, however, in 1986 an average of two patients per month were discharged from within 30 days of their admission.

The possibility that other factors, such as an increase in NHCU personnel or the development of new NHCU programs, influenced the changing NHCU role need to be considered. However, during the study period there were no significant changes in NHCU personnel, the number of available nursing home beds remained unchanged, and no new programs, such as a hospice or respite center, were developed. A 4 bed geriatric assessment unit was established in 1985, but we do not think this change would be responsible for the drastic increase in patients admitted to the NHCU, as only 13 patients were admitted to these units during the study period.

In addition to this new role in which nursing homes function as an extension of an acute hospital providing therapy started in the acute hospital, it has been suggested by some studies that since implementation of DRGs, nursing homes are now being used to care for terminally ill patients. In our study, we did not assess nursing home deaths, but in a recent survey of Wisconsin nursing homes, Sagar[8,9] found not only a significant increase in nursing home admissions, but also a significant increase in nursing home deaths since implementation of DRGs, which occurred simultaneously with declines in inpatient hospital deaths. He conjectured that changes in location of deaths from hospital to nursing homes may represent a less aggressive use of hospital resources by physicians. Seriously ill elderly patients are transferred out of hospitals into nursing homes for terminal care.

We think the implications of this change in the role of nursing homes are significant to both physicians and patients. The use of a nursing home as an extension of the acute care hospital where patients, who are not acutely ill but still require therapy, can be transferred, is valuable to the physician who is encouraged to shorten the patient's acute hospital stay. Such a nursing home is especially valuable in the delivery of care for the elderly. Elderly patients are known to manifest multiple diseases, have prolonged convalescent periods, and often require extensive rehabilitation services, all factors that lengthen hospital stay and result in increased hospital costs. Unfortunately, the use of a nursing home, in such a manner, may be associated with undesirable results. Patients may be inappropriately transferred to nursing homes before the patient's acute problem has been resolved or before therapy has been adequately evaluated. Nursing homes could be forced to provide care for which they are not equipped to deliver. Along with the emotional and physical burdens on nursing home personnel and the inappropriate use of nursing home resources, many of these patients may require readmission to the hospital due to the inability of the nursing home to deliver the necessary care. In our study, 27% of patients who were admitted to the NHCU in 1986 required readmission to the acute hospital within 30 days of their admission to the NHCU compared to 14% in 1983. Another problem intrinsic to transferring patients to nursing home for continuation of therapy, is the possibility of the nursing home becoming the patient's permanent residence. In two recent studies,[12-13] one from a municipal teaching hospital and the other from a large community hospital in which therapy for hip fracture was assessed pre-DRGs and post-DRGs, it was found that following implementation of DRGs acute hospital stay for treatment of hip fracture significantly decreased whereas, nursing home admissions following treatment of hip fractures increased. Furthermore, associated with this increase in nursing home admissions was a decrease in the number of patients returning home, i.e. following implementation of DRGs compared to before DRGs, more patients following therapy for hip fractures remained institutionalized in nursing homes. It is unclear if this inability of patients to return home following hospitalization for hip fracture reflects inadequate nursing home rehabilitation services, or whether it reflects patient's or patient's family attitudes associated with entering a nursing home.

In conclusion, we think the results of our study demonstrate what appears to be a changing relationship between certain hospitals and certain nursing homes. Whether the changes seen in this specific Veterans Administration teaching nursing home are widespread and are occurring in community nursing homes is not known. The uniqueness of this specific nursing home (government controlled, hospital based, 24 hour on-site physician coverage) allowed for a rather easy transition in changing roles. Without this type of setting, the transition would be extremely difficult and probably impossible in certain nursing homes. Further studies are necessary to determine if the changes seen in our study are widespread and to determine if such changes are actually cost effective and truly advantageous in delivering quality care.

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