Long Term Care
Resource Requirements
Before and After DRGs

by

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A Thesis

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Introduction and Statement of the Problem

The United States Congress enacted Public Law 98-21, the Social Security Amendments of 1983, in an attempt to limit the rate of increase in health care expenditures. Among other things, this law mandated a prospective payment system (PPS) for Medicare reimbursement to hospitals based on a case mix methodology which classifies patients according to diagnosis related groups (DRG). The hospital receives a predetermined rate of reimbursement according to the DRG classification regardless of what the actual cost is for providing care to that person. Unlike the previous retrospective, cost-based system which reimbursed for costs incurred, the new system provides an incentive for cost savings if facility costs are less than the amount reimbursed by Medicare for a given DRG category.

Consequent to the implementation of that system, anecdotal material began to appear in the literature describing the problems that long term care facilities were experiencing related to the DRGs. Lawlor (1984) describes the "sicker patient" (p.41) coming to nursing homes and the recent General Accounting Office (GAO, 1985) report verifies the concern on the part of the providers across the country that the earlier discharge of patients from hospitals has increased care needs in the long term care setting. As the

GAO (1985) report states "...the issues...are sufficiently important to warrant [Department of Health and Human Services] HHS studies...to analyze changes in long term care..." (p.8).

This issue has serious implications for nurses who, as primary caregivers in long term care (LTC) facilities, serve many roles. As a professional, a nurse must be concerned about accepting patients for whom she/he cannot properly care because of inadequate time, equipment, supplies, or expertise. Nurses who have chosen a specialty practice in gerontology and chronic disabilities are finding that they must practice as acute care providers because of the kind of nursing care requirements of patients now being admitted to LTC. Long term care "calls for that which is precisely and uniquely nursing - dealing with the person's total response to his altered state of health" (Schwab, 1975, pp.5-6). Will that be possible if LTC becomes more medically oriented? As patient advocates, nurses in LTC must be concerned that a patient is receiving adequate care in the most appropriate setting. In some cases patients may be inappropriately discharged from hospitals to LTC institutions when they belong in the hospital.

As administrators, LTC nurses must be concerned with the patient requirements for more nursing care in the face of rigid reimbursement structures that do not allow for increased staffing. Administrators must be concerned with

adequate bed supply to meet the need created by early discharge from the hospital. Patients are transferred to a LTC facility on an interim basis until they are ready to return home. And, finally, as administrators, nurses must help evaluate the need for another level of care between skilled nursing facility care and acute hospital care.

The DRG issue, as it effects LTC, creates many challenges to the nursing profession. Nurses in LTC must accept the challenge and begin speaking for themselves, for the patient and for the LTC system.

First, however, there is a need systematically to explore and describe the impact of the cost based reimbursement system (CBS) and the prospective payment system (PPS) on the long term care system. The purpose of this retrospective study was to explore the impact of PPS on variables associated with the resource requirements of patients in LTC. Patients admitted to LTC facilities under the cost based reimbursement were compared with those admitted under prospective payment.

Review of the Literature

Although there is a wealth of information on the effect of PPS on hospitals, there are very few references in the literature to document or describe any direct effects of that system on LTC patients, staff or facilities. The information that is available is primarily speculative and/or anecdotal in nature due, in part, to the fact that

PPS in hospitals is a relatively recent phenomenon. The effects on LTC are only now being documented.

Several authors speak to what Wennberg, McPherson and Caper (1984) referred to as an "incentive inherent in the DRG system for hospitals to reduce the length of stay as a way of cutting costs" (p. 299). Grimaldi (1985) states that "a system that pays a prospectively-determined amount per discharge encourages hospitals to avoid unnecessary days of care and excessive ancillary services" (p.8). The GAO report (1985) confirmed "Recent data on the use of hospitals under Medicare appear to show that hospitals have in fact responded by reducing lengths of stay" (p.4). The literature leaves little question that there is an incentive in the PPS to discharge as early as possible and there is some evidence to document the same.

For many patients, earlier discharge may be beneficial but for others it means discharge to another institution because they were not ready to return home. The GAO report stated that "while reducing the length of hospital stay may not affect a patient's need for follow-up care, it is possible that some patients may be discharged at a time in their illness when they have substantial needs for care" (p.4). Wilder (1984) stated that "Patients are being discharged sooner and with an increased acuity level to nursing homes that must provide a significant amount of nursing care, medical supplies, and ancillary services"

(p.6). In addition, Lawlor (1984), in a nation-wide poll of administrators and directors of nursing of LTC facilities reports "an increase in heavier care patients" (p.41). She reports that some administrators attribute this increase to DRGs while others have seen the trend develop over a period of years prior to DRGs.

Tames (1984) states that "these patients require a level of care that falls between the acute level of care in a hospital and the traditional skilled nursing facility level of care" (p.4). She defines a subacute patient as "a patient on a respirator, a patient on dialysis, a total parenteral nutrition patient, a patient in a coma and a patient needing sophisticated rehabilitative care" (p.5). She intimates that higher staffing ratios will be required and consequently higher reimbursement rates to meet the needs of this heavier care population. Tames' description is useful but needs further definition and research to determine a specific description of that population and its needs.

Meiners and Coffey's study (1985) shows that, even prior to PPS, the discharges to nursing homes "fall more frequently into diagnostic categories...: stroke (DRG 14), hip and femur procedures (DRG 210)... pneumonia (DRG 89)..." (p.366). The study looks at some of the variables that need to be considered related to length of stay for elderly patients and consequently which groups may be targeted for

early discharge from the hospital. The limitation of the study is that it reflects 1980 data which were prior to the PPS implementation as it is known today. Consequently, the data do not measure the effect that DRGs have had on the patient or the long term care setting.

In summary, the literature consistently reflects the incentive for early discharge of Medicare patients from hospitals because of PPS. In 1985, the GAO reports a decrease in the hospital average length of stay since the DRGs. Meiners' study identifies the most common DRG categories likely to be targeted for early discharge. Several articles relate anecdotal or summary statements about the change in acuity of patients in long term care facilities as a result of the DRGs. One report presents conflicting information as to whether the change in acuity is the result of DRGs or whether it is a pre-existing pattern.

Essentially, there are no studies in the literature reviewed which measure the effects of the introduction of PPS in hospitals on the LTC system and the recipients of care within that system. Studies are needed to determine: a) the effect on the patient and his/her social support system, b) the effect on the caregiver, and c) the economic impact related to resource requirements in the LTC institution.

This study is a first step in determining the effects of PPS on resource requirements in LTC. It is exploratory in nature and designed to: a) describe the changes in patients entering skilled facilities and thereby clarify the concept of "patients being 'sicker now'" and b) explore the relationship between "sicker patients" and length of stay in both the hospital and LTC facilities.

Conceptual Framework

Although various settings for delivery of health care are somewhat fragmented and uncoordinated, they do comprise the health care system. The health care system can be conceptualized in terms of its autonomous, but interdependent, subsystems. Figure 1 depicts the various subsystems of the health care system in relationship to the patient.

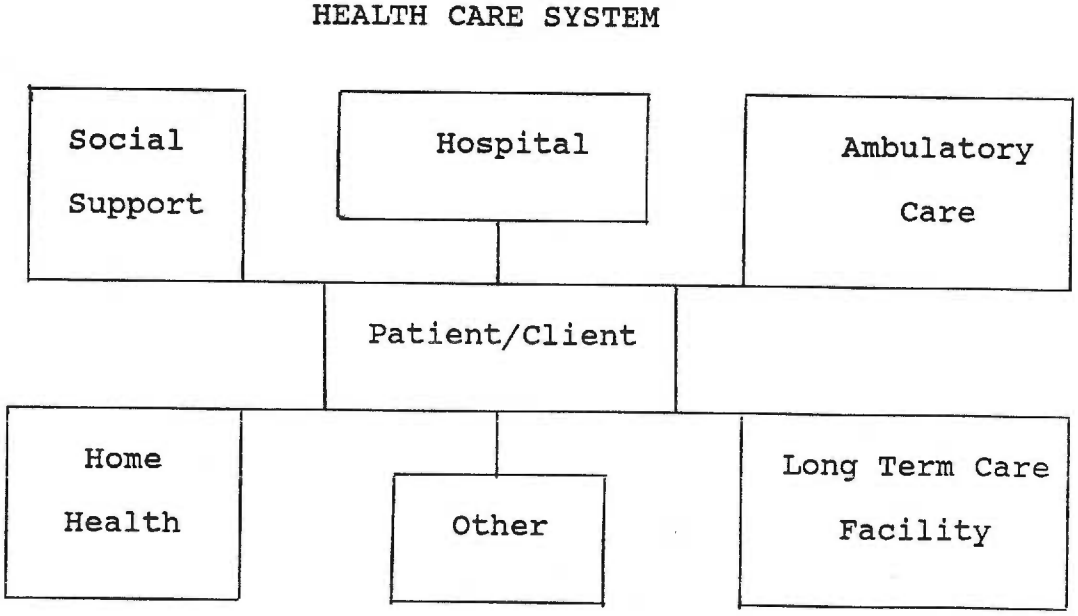

Figure 1. Components of the Health Care System.

Each subsystem is autonomous with respect to delivery system, reimbursement mechanism, regulatory mechanism, regulatory agencies, and, in some cases, ownership and administration. Depending upon individual needs, a patient may utilize the services of any or all of these subsystems at different times at the direction of one's physician (with the exception of the social support system which is not dependent upon physician referral). As a patient moves from one service to another, he/she moves into a new subsystem which both provides different services and places different responsibilities on the individual for payment.

While subsystems are autonomous in many respects, they are interdependent with respect to interagency referrals, information sharing, and cooperative service arrangements. A change in one subsystem causes a ripple effect or change in the other subsystems.

Prior to the PPS, hospitals cared for patients until they were ready to return home or until they were stable and strong enough for a rehabilitation program in a nursing center. Essentially, the cost of that care was covered retrospectively according to the rules of Medicare. Since PPS, the incentive is to move patients out quickly and rely on home health agencies and nursing homes to stabilize patients and prepare them for functional independence. While this saves the hospital money, it transfers the cost of that care to the other agencies. This transfer is not

recognized in the current reimbursement systems for home health or LTC institutions.

Problem Statement

The literature, though anecdotal in nature, suggests that since DRGs were implemented in the hospital system, hospital length of stay (LOSHOS) has decreased and patient acuity levels on admission to LTC has increased. This research project moved beyond anecdotal descriptions by quantifying selected relevant resource requirements identified in the literature. The specific research question was: What are the effects of the introduction of DRGs upon patients admitted to the LTC institution with

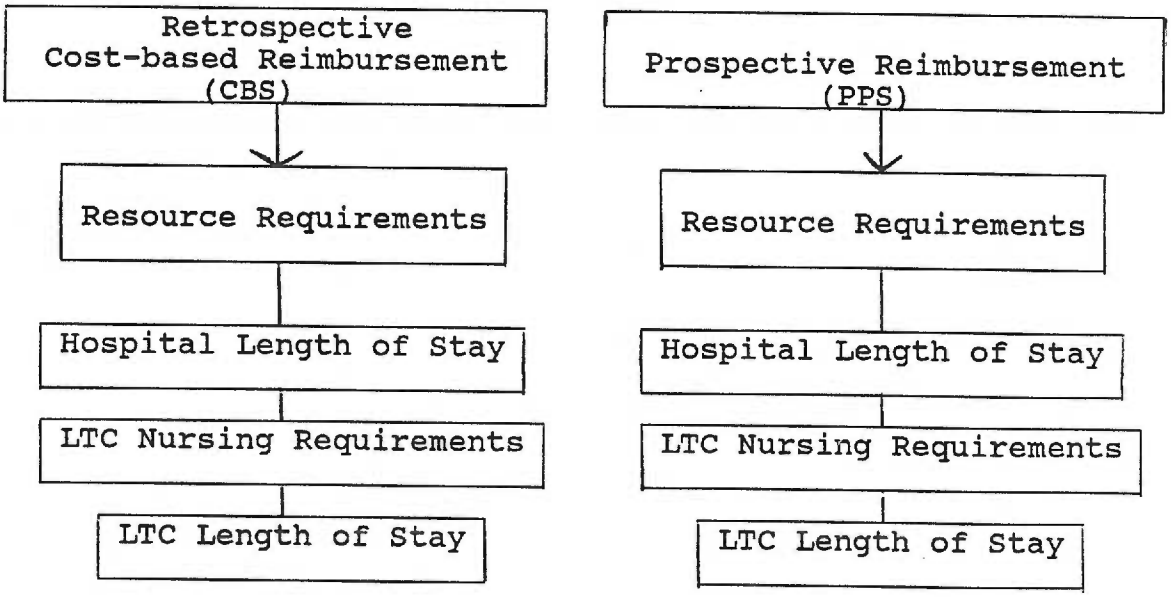

Figure 2. The impact of reimbursement systems on resource requirements in LTC facilities.

respect to hospital length of stay, nursing care requirements and LTC length of stay? Figure 2 depicts that research question.

Assumptions

The following three assumptions were accepted in order to hypothesize about the effects of health care financing upon hospital length of stay, patient acuity in LTC and LTC length of stay. First, the average age of the elderly population has not changed significantly since 1981. Second, men and women are equally affected by the new reimbursement structures. Third, family and social support structures for the elderly person have not changed significantly since 1981.

CHAPTER 2

Method

This study employed a record review of 120 records of subjects admitted to LTC after hospitalization under a cost-based reimbursement system and 120 records of subjects admitted to LTC after hospitalization under the prospective payment system. The records were evenly divided among three diagnosis categories. There were five major variables, two independent and 3 dependent. Three hypotheses provided the basis for studying the relationship between the variables.

Hypotheses

This study proposed three hypotheses in response to the research question: 1) Hospital length of stay for Medicare patients admitted to LTC facilities with hip fractures, cerebrovascular accidents (CVA), and "all other" diagnoses is significantly shorter under PPS than under CBS, 2) LTC nursing care requirements for Medicare patients admitted to LTC facilities with hip fractures, cerebrovascular accidents, and "all other" diagnoses are significantly greater under PPS than under CBS, and 3) LTC length of stay for Medicare patients admitted to LTC facilities with hip fractures, cerebrovascular accidents and "all other" diagnoses is significantly longer under PPS than under CBS.

Variables

In each hypothesis, the independent variable was the type of reimbursement mechanism for hospital care. Two types were explored in this study: a) cost reimbursement and b) prospective payment with DRGs. The dependent variables were: 1) length of stay in the hospital, 2) LTC nursing care requirements on admission to LTC facility, and 3) length of stay in the LTC facility.

The following operational definitions were used:

Cost-based Reimbursement System (CBS) was a retrospective system based on historical costs for the year end. CBS provided the basis for Medicare reimbursement to hospitals prior to 1983.

Prospective Payment System (PPS) was any system which pays a rate set for a given product before the product is delivered and regardless of the cost of the product. In this study it referred to the specific system mandated by PL 98-21 using Diagnosis Related Groups (DRG) to classify all patients and to determine reimbursement rates for each classification. For purposes of this study, PPS and DRG were used interchangeably.

Long Term Care (LTC) referred to those services provided to the frail elderly and chronically disabled in a variety of settings including home, community centers, congregate living and nursing facilities. For purposes of this study

it referred to services provided in long term care facilities licensed by the State of Oregon and certified for skilled care under Medicare/Medicaid.

Resource requirements referred to the human, technological and institutional services required by a patient's health care condition. In this study it was inferred from measurements of the following variables:

Length of Stay (LOS) was the number of days that the patient was in a facility including the admission date and excluding the discharge date.

Hospital LOS referred to the number of days for the hospital admission (including admission date and excluding discharge date) prior to admission to the LTC facility.

Long term care LOS referred to the number of days (including admission date and excluding discharge date) that a patient requires skilled, Medicare services in a LTC facility following discharge from a hospital.

Nursing Care Requirements referred to nursing services (assessment, intervention and evaluation) required in the long term care facility by a patient's medical condition (see Appendix A). Nursing Care requirements were further defined by the following characteristics of the patient:

1) Medications: total number of medications by type or route of administration (by mouth, intravenous, intramuscular, chemotherapy, topical and/or other) prescribed for the patient.

2) Requirements for auxiliary services: Presence or absence of Physical, Occupational and Speech therapies in a treatment program.

3) Psycho-social problems: confusional states or manifestations of behaviors that require nursing assessment and/or intervention.

4) Unstable condition: Those conditions which require observation and assessment by nursing staff daily and medical intervention as necessary.

5) Requirement for specialized nursing treatments: Specific nursing interventions, such as intravenous therapy (see Appendix A for complete listing), indicated for a given patient by physician order or a nursing plan of care.

Instrumentation

Resource requirements were measured using the Patient Profile Instrument (PPI). The PPI (see Appendix A) was derived from the PRI (Patient Review Instrument) and the PAI

(Patient Assessment Instrument), both of which were developed by New York State Department of Health and Rensselaer Polytechnic Institute and were designed to provide a data base on which would be built a patient classification system for LTC. These tools were the only LTC instruments reviewed which attempted to document the more technical "sicker patient" phenomenon reported in the literature. The limitation of both tools was that they required chart review, patient observation and/or staff interview and this study was based on a retrospective record review. Consequently, the tools were modified for this study.

The PPI consisted of two parts: a) administrative information and b) medical condition. Administrative information included facility code, patient number, date of data collection, dates of last hospital admission and discharge, dates of last LTC admission and discharge, date of birth, sex, primary payor, discharge status and disposition. Medical condition contained information on medical diagnoses, as well as items measuring each of five aspects of nursing care requirements: medications, specialized services, psycho-social problems, unstable medical condition and nursing treatments.

Nursing care requirements related to medications were measured by 5 items indicating the number of medications by

route of administration (by mouth, intravenous=IV, intramuscular=IM, topical, other) as well as 2 dichotomous items related to the presence or absence of chemotherapy administration and to frequent changes in medications. One item of the medication subscale (frequent changes) was recoded to the stability subscale and the remaining medications items were recoded into three subscales (medications by mouth, other medications and medications2).

Nursing care requirements related to specialized services (SPSERV) were measured by a subscale consisting of 3 dichotomous items: physical therapy, occupational therapy and speech therapy. This subscale had a range from 0 to 3 and was computed by summing the scores on the 3 items. The presence of ancillary services was important because it required 24 hour follow-up care and coordination from nursing service to reinforce and maximize treatment for the patient. It also documented the need for ancillary services and rehabilitative care mentioned by Tames (1984) and Wilder (1984).

Nursing care requirements related to psycho-social problems (PSYSOC) were measured by a subscale consisting of 2 items, each with a 3-point scale. This subscale had a range from 0 to 4 and was computed by summing the scores on the 2 items. The psycho-social subscale measured confusional and behavioral characteristics that require

specialized care from nursing staff. According to LTC nurses, confusional states were the characteristic that often determined whether a patient went home or to the nursing home from the hospital.

Nursing care requirements related to unstable (STABIL) conditions were measured by a subscale consisting of 16 dichotomous items: bruises, changes in vital signs, choking comatose, cyanosis, decubitus, dehydration, diabetes, elevated temperature, history of frequent falls, impactions, incontinence, internal bleeding, seizures, terminally ill, and concentrated urine. This subscale had a range from 0 to 16 and was computed by summing the scores on the 16 items. The presence of unstable patient conditions necessitated daily monitoring and evaluation by nursing staff to determine changes in medical and/or nursing interventions that may be required for the patient to return to a state of equilibrium.

Nursing care requirements related to specific nursing treatments (NURRX) that required technical skills were measured by a subscale consisting of 19 dichotomous items: blood draws, dialysis, drainage tubes, dressing changes, gastrostomy, isolation, intravenous therapy, naso-gastric tube, ostomies, oxygen, parenteral feeding, respirator, respiratory care, skin care, suctioning, teaching, trach care/suctioning, transfusion, and woundcare. This subscale

had a range from 0 to 19 and was computed by summing the scores on the 19 items. The nursing treatment subscale described specific treatments that authors have identified as being indicators of the "sicker patient" (Tames, 1984).

Each subscale was designed to measure a discrete aspect of nursing care such as medication management, rehabilitative nursing, behavioral management, management of unstable physical conditions and technical nursing treatments. Consequently, separate scores were obtained for each subscale with the score being the total number of conditions present in each scale (each item had equal weight in scoring). Each record had an average score on two medication subscales and an over-all score (0-46) which was the sum of all the items of the remaining subscales (MEDS2, SPSERV, PSYSOC, STABIL, NURRX). Higher numerical scores on the total nursing care requirement component indicated a "sicker patient" and lower scores, a healthier patient.

Content Validity. Content validity is defined by Hornbrook (1982) as the "representativeness and comprehensiveness of the content of the measuring instrument" (p.7). Content validity was established by asking two primary nurses from a LTC facility and the directors of nursing from three LTC facilities to describe the phenomenon of the "sicker patient". Using the nurses' feedback, the investigator's own clinical observations at

facility one and Tames' descriptors in the literature, the PPI was designed. The instrument was then reviewed for completeness by two clinical specialists, the director of nursing in a LTC facility and a gerontological nurse researcher.

Reliability. "Inter-rater reliability is the degree to which two raters, operating independently, assign the same ratings for an attribute being measured" (Polit & Hungler, p.615). It was important to establish inter-rater reliability for the PPI to assure a high degree of agreement between the two data collectors in this study. It is also important to establish inter-rater reliability so that the instrument can be used in replication studies. Procedures for obtaining inter-rater reliabilities are described under pilot testing.

Internal consistency reliabilities (Cronbach's coefficient alpha) were computed for the subscales to test for inter-item correlation. It is important to note, however, that the scales were designed to be comprehensive listings of independent items related to a particular concept such as instability or nursing treatments. Consequently, high inter-item correlations were not expected (see Table 1).

Table 1.

Internal Consistency Reliabilities For Nursing Care Subscales

	Subscale				
	Med	SpServ	Psysoc	Stabil	Nurrx
Inter-item Corr	.035	.344	.362	.028	.035
Coefficient Alpha	.023	.603	.531	.292	.302
Standardized Alph	.202	.612	.531	.312	.354
No of items	7	3	2	16	15
N	240	240	240	240	240

Pilot Test. Content validity and inter-rater reliability were established with three pilot tests. The first test included a review of 16 records by two raters using the original version of PPI. The purpose of this review was to verify the items on the PPI and to determine the presence or absence of variability on the items. The original PPI instrument included, from the PRI, a 5-point ordinal scale for activities of daily living (ADL) status. Retrospective record review did not provide enough information to measure the distinctions necessary for the 5-point scale. The scale was reduced to a dichotomous scale, which on record review, showed no variability. Consequently, the subscale was

deleted from the PPI. With the exception of the ADL scale, there was sufficient variability on the scales to proceed with reliability testing.

The second test included a review of 10 records by each of two raters for purposes of establishing inter-rater reliability and the comprehensiveness of the instrument. Test two resulted in a 93.8% agreement on the total instrument. Revisions were made in the PPI instruction to specify conditions not previously mentioned, e.g. rashes. One item (ostomies) was added to the nursing treatment scale.

The third test included a review of 18 records by each of two raters using the revised instructions and instrument for purposes of establishing inter-rater reliability on the revised tool. Test three resulted in a 95% agreement on the total instrument. Following test three, the decision was made by the investigator to proceed with data collection.

Design

This study was best represented as a separate-sample pretest-posttest design (Campbell & Stanley, 1963, p.53). Figure 3 depicts that design. In this diagram, rows represent randomly equivalent subgroups, and the parenthetical X_1 stands for a presentation of X_1 irrelevant to the PPS sample (Campbell & Stanley).

X represents cost-based retrospective reimbursement prior to PL 98-21 and X_1 represents the initiation of PPS in hospitals. For patients admitted to the hospital and LTC facility prior to PPS, (X_1) becomes irrelevant. O_1 and O_2 represent observations at a given point in time on two sets of patients (two years and 18 months respectively) prior to the advent of DRGs. O_3 and O_4 represent observations at a given point in time on a second two sets of patients (one year and 18 months respectively) post DRGs.

R	X	O_1		(X_1)	
R	X		O_2	(X_1)	
R				X_1	O_3
R				X_1	O_4

Figure 3. Separate sample pretest-posttest design.

A retrospective study was required since PPS was implemented at a given point in time and affected all sites. Likewise there was no way to assign a control group since all Medicare recipients were affected by PPS.

Setting

The following factors were considered in selecting the setting:

- accessability of information (facility access)

- adequacy of medical record system for data retrieval
- adequate numbers of Medicare admissions within three diagnostic categories to allow for random sampling.
- similarity of facility size and programs to meet individual needs of patients, e.g. staffing and rehabilitation
- representativeness of sample regarding urban-rural settings using multiple hospitals
- elimination of extraneous variables as possible, e.g. history

Two settings were selected, one rural (facility one) and one urban (facility two), which were similar in size and Medicare program capabilities. Both facilities received referrals from several hospitals in two standard metropolitan statistical areas.

Sample

The sample for each facility, consisted of 120 Medicare patient records (see Figure 4). Using only Medicare admission eliminated variables such as pre-admission screening and relocation, which would affect the acuity level of the patients. Pre-admission screening and relocation were programs directed at keeping people out of, or relocating people from nursing homes if they did not need

that level of care. The result, in Oregon, was the relocation of some 2500 patients out of nursing homes, leaving a much heavier care population in nursing homes. These two programs only applied to Medicaid patients and consequently did not interact with the Medicare population.

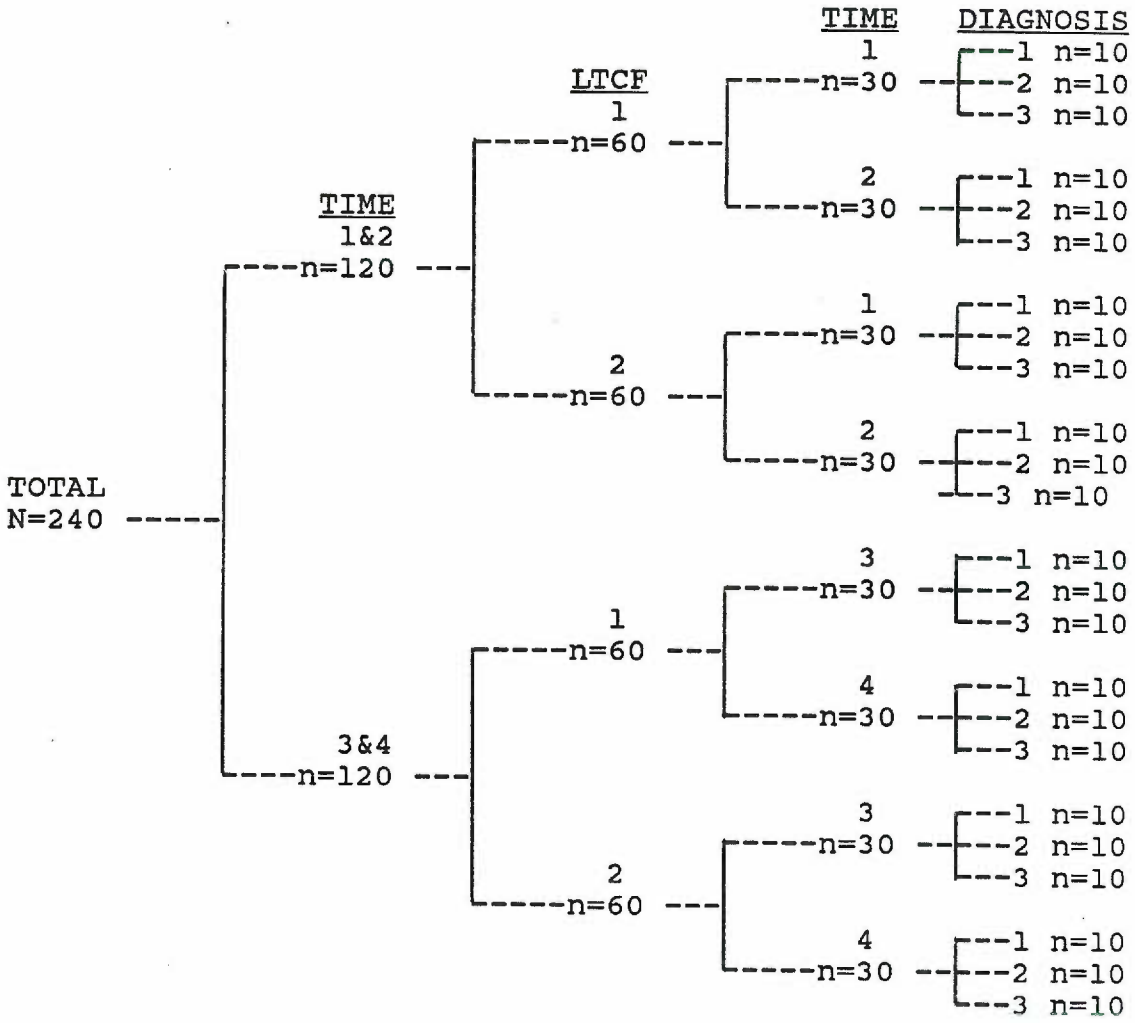

Figure 4. Number in sample by time (1,2,3,4), long term care facility (LTCF=1,2) and diagnoses (1=hip fractures, 2=CVA, 3=other).

Since the study included LTC length of stay, all patients who had not been discharged from Medicare status were excluded from the sample. Patients with previous admissions to the LTC facility were also excluded since hospital length of stay might have been artificially shortened by the readmission policies of the LTC facility.

In each facility, records were randomly selected in three categories: 40 (20 CBS and 20 PPS) hip fractures, 40 (20 CBS and 20 PPS) CVAs, and 40 (20 CBS and 20 PPS) in a third category representing all other diagnoses. Selection in three categories was an effort to control for case mix differences. A review of the utilization review records at

Table 2.

Facility 1 utilization review records (1982-85) by diagnostic categories and number/percent of cases

Year	1982-83	1983-84	1984-85
Hip fractures	41 (27%)	41 (27%)	56 (36%)
CVA	38 (25%)	44 (32%)	47 (30%)
Other Fx	3 (2%)	7 (5%)	12 (7%)
Terminal (Cancer)	25 (16%)	7 (5%)	12 (8%)
All other	47 (30%)	38 (28%)	30 (19%)

facility 1 (see Table 2) indicated a preponderance of persons admitted in the first two categories. There was not a third category that, by itself, could have provided a sample large enough for the study. Consequently a sample of "all other categories" was used which included all but hip fractures and CVAs.

Half of the sample in each of the three categories (hip fractures, CVAs, and all other) represented CBS records and half PPS records for a total n=240. The age of the subjects ranged from 58-98 years with an average age of 79.8 years for the CBS sample compared to 78.8 years for the PPS sample.

Data Collection Procedures

The following procedures refer to each of two facilities. A record of all Medicare patients admitted from October 1981 to September 30, 1982 and from October 1984 to September 30, 1985 was requested from each facility. Records were separated into three groups by diagnoses (hip fracture, CVA and all other). Using a table of random numbers, 20 of these records were selected from each of three categories for the year 1981-82 and a second 20 for the year 1984-85. To strengthen the design, 10 of the 20 records were selected from the first six months (O_1 and O_3) and 10 from the second six months (O_2 and O_4) of the designated years. The collection of separate

samples over four time periods was an attempt to control for the effect of external factors other than the independent variable. Data were collected by two raters on 30 different subjects for each of 4 time periods for a total of 120 subjects from each facility. Time 1 (Oct 1,1981 - March 31,1982) and time 2 (April 1-Sept 30,1982) represent data prior to the implementation of PPS. Time 3 (Oct 1,1984 - March 31,1985) and time 4 (April 1-Sept 30, 1985) represent data since PPS was implemented. These records were then coded by the researcher to assure confidentiality of patient and facility identity.

The following parts of the patient record were used for data collection: a) Hospital transfer record, b) initial data record (admission assessment), c) nursing notes (24 hrs), d) physician order sheet (72 hrs), and e) the admission record. One PPI was completed on each record in the sample. Length of stay (hospital and long term care) and age were calculated from the PPI for coding purposes.

Statistical Analysis

Descriptive statistics were calculated on the sample. Frequencies, mean, mode, standard deviation were calculated on age, sex, total hospital length of stay, total long term care length of stay, subscales of nursing care requirements and total of medical condition.

Hypothesis Testing

Two tests of statistical significance were applied to the total sample data for each hypothesis. A oneway analysis of variance (ANOVA) was applied to test for between and within group differences represented by an F ratio and probability (see Table 3). A planned comparison was then applied to further analyze the change by time periods. Contrast 1 ($\underline{t}_1$) compared the combined samples from times 1 and 2 (CBS) with combined samples from times 3 and 4 (PPS). Contrast 2 ($\underline{t}_2$) compared samples from times 1 and 2 and contrast 3 ($\underline{t}_3$) compared samples from times 3 and 4. The planned comparison resulted in $\underline{t}$-values and probabilities for each of the three contrasts. The importance of the contrasts was to determine that the hypothesized change represented a change between, not within CBS and PPS data. The level of significance set for all statistical tests was 0.05.

Protection of Human Subjects

The study represented a retrospective record review with no patient interaction or direct interventions. There was no identifying information on the data sheets other than a code number referencing the record and facility in case of a need to verify the accuracy of any information collected. Consequently, there was no identified risk to patients in this study.

CHAPTER 3

Results

The results of the statistical analysis are presented in terms of the research questions and the stated hypotheses. Summary tables, which include all the statistics used in the analysis have been placed in Appendix B for reference.

Hospital length of stay (LOSHOS)

> Research question 1: What are the effects of the introduction of PPS upon patients admitted to the LTC facility with respect to hospital length of stay?

Results of the statistical analysis showed a significant decrease in hospital length of stay under PPS as compared to CBS. The mean scores for subjects in the CBS sample reflecting times 1 and 2 were 16.60 days and 19.30 days respectively. The mean scores for subjects in the PPS sample reflecting time periods 3 and 4 were 13.82 days and 11.40 days respectively. The analysis of variance applied to these data showed an F ratio of 5.745 significant at the .008 probability level. The *t*-test applied to these data to contrast time periods 1 and 2 with time periods 3 and 4 showed a *t*-value of 3.743 significant at the .000 probability level. There were no significant differences between the CBS time periods or between the PPS time periods.

The results of the application of analysis of variance and *t*-tests to contrast times 1 and 2 with times 3 and 4, supported the following hypothesis:

Hypothesis 1: Hospital length of stay for Medicare patients admitted to LTC facilities with hip fractures, cerebral vascular accidents and other diagnoses, is significantly shorter under PPS than under CBS.

Nursing Care Requirements

Nursing care requirements were measured using the following subscales: medications, special services, psych-social, unstable conditions and nursing treatments.

Research question 2: What are the effects of the introduction of PPS upon the patients admitted to LTC facilities with respect to nursing care requirements.

One way ANOVA and t-test contrasts were applied to each of the subscales and the total score, the results of which are reported in Table 3.

Medication by mouth (MEDPO). Results showed a statistically significant increase in the number of medications by mouth prescribed for patients at the time of admission to LTC under PPS as compared to CBS. The mean scores for subjects in the CBS samples reflecting times 1 and 2 were 4.25 medications and 4.25 medications, respectively. The mean scores for subjects in the PPS samples reflecting times 3 and 4 were 4.85 medications and 5.23 medications, respectively. The ANOVA applied to the data showed an F ratio of 2.352 which is not a significant value. However, the t-test applied to the data to contrast CBS and PPS time periods reflected a t-value of -2.513 with a probability level of .007. The negative t-value indicated

the significant difference was in the hypothesized direction (increase in the mean).

Table 3.

Mean Scores (Times1-4), F Ratio/probability and t-value/probability for Nursing Requirement Subscales

		MEDPO	MEDS	MEDS2	SPSERV	PSYSOC	STABIL	NURRX	TOTAL
M	1	4.25	0.90	0.17	1.58	1.12	1.97	1.68	6.52
	2	4.25	1.08	0.18	1.68	0.87	1.93	1.68	6.35
	3	4.85	1.27	0.23	1.72	0.63	2.03	2.15	6.77
	4	5.23	1.15	0.22	1.93	1.38	2.02	2.43	7.99
F		2.35	2.66	0.27	1.35	3.85	0.06	4.48	3.35
p		.07	.05	.85	.26	.01	.98	.00	.02
t_1		-2.51	-2.30	0.86	-1.51	-0.10	-0.40	-3.48	-2.33
p		.01	.01	.39	.07	.46	.34	.00	.01
t_2		0.00	-1.38	-0.20	-0.56	1.08	0.13	0.00	0.29
p		.50	.09	.84	.29	.14	.45	.50	.39
t_3		-0.86	0.88	0.20	-1.21	-3.22	0.06	-1.15	-2.13
p		.20	.19	.84	.11	.00	.48	.13	.02

Note. Values to the nearest hundredth (see Appendix B for complete values). df=236 for F, 76 for t.

Planned comparisons=$t_{1,2,3}$.

Medications (MEDS). The results on the MEDS subscale showed a significant increase in the number of "all other" medications (intramuscular, intravenous, topical, other and chemotherapy) prescribed for the patients at the time of admission to LTC under PPS as compared to CBS. The mean scores for subjects in CBS samples reflecting times 1 and 2 were 0.90 medications and 1.08 medications, respectively. The mean scores for subjects in the PPS samples reflecting times 3 and 4 were 1.27 medications and 1.15 medications, respectively. The ANOVA applied to these data showed an F ratio of 2.656 significant at the .0491 probability level. The t-test applied to these data to contrast time 1 and 2 with time 3 and 4 reflected a t-value of -2.303 significant at the .011 probability level.

Psych-social (PSYSOC). The results showed a significant difference in the scores on this subscale across the four time frames. However, the significant increase as shown in contrast 3 reflects a difference within PPS scores (times 3 and 4). While there has been a change in psycho-social requirements over the time period of the study, it does not reflect a difference in PPS data compared to CBS data.

Nursing treatments (NURRX). The results showed a significant increase in nursing treatments under PPS as compared to CBS. The mean scores for subjects in the CBS sample reflecting times 1 and 2 were 1.68 treatments and

1.68 treatments, respectively. The mean scores for subjects in the PPS sample reflecting times 3 and 4 were 2.15 treatments and 2.43 treatments, respectively. The ANOVA applied to these data showed an F ratio of 4.478 significant at the .0044 level. The t-test applied to these data to contrast time periods 1 and 2 with times 3 and 4 showed a t-value of -3.481 significant at the .0005 probability level.

Total. The results showed a significant increase in the total scores under PPS as compared to CBS. The mean scores for subjects in CBS sample reflecting time 1 and 2 were 6.52 and 6.35, respectively. The mean scores for subjects in the PPS sample reflecting time 3 and 4 were 6.77 and 7.99, respectively. ANOVA applied to the data showed an F ratio of 3.349 significant at the .0198 probability level. The t-test applied to the data to contrast time periods 1 and 2 with time periods 3 and 4 showed a t-value of -2.330 significant at the .0105 probability level. A second t-test applied to the data to contrast time period 3 with 4 showed a t-value of -2.129 significant at the .017 probability level.

In summary, the nursing care requirements were measured by an instrument consisting of three medication subscales, four other subscales which indicate nursing care requirements and a total score. The total score increased

significantly under PPS as compared to CBS. The following subscales also showed a significant increase: medications by mouth, medications, and nursing treatments. Three of the subscales (SPSERV, PSYSOC, STABIL) showed no significant increase. Since the total score represented the cummulative score on nursing care requirements, the following hypothesis was supported:

> Hypothesis 2: LTC nursing care requirements for Medicare patients admitted to LTC facilities with hip fracture, cerebral vascular accidents and "all other" diagnoses are significantly greater under PPS than under CBS.

Long term care length of stay (LOSLTC)

> Research Question 3: What are the effects of the introduction of PPS upon patients admitted to the LTC facility with respect to long term care length of stay.

The results on the LTC length of stay variable showed no significant differences in LTC length of stay under PPS as compared to CBS. The mean scores for subjects in the CBS sample reflecting times 1 and 2 were 33.75 days and 32.88 days, respectively. The mean scores for subjects in the PPS sample reflecting time periods 3 and 4 were 32.07 days and 32.90 days, respectively. No significant differences in length of stay led to the rejection of the following hypothesis:

> Hypothesis 3: LTC length of stay for Medicare patients with hip fractures, cerebral vascular accidents and "all other" diagnoses is significantly longer under PPS than under CBS.

In summary, the results of statistical analysis showed a decrease in hospital length of stay and an increase in LTC nursing care requirements under prospective payment as compared to cost-based payment. Long term care length of stay has remained constant under both reimbursement systems.

CHAPTER 4

Discussion, Conclusions and Recommendations

The discussion, conclusions and recommendations were organized in terms of the three dependent variables and reflect clinical concerns, as well as a review of the literature. In addition to hypothesis testing for the nursing care requirements, discussion focuses on those elements most descriptive of change and those elements that clarify the concept of patients being "sicker".

Hospital Length of Stay

Statistical analysis on the total sample (120 CBS and 120 PPS) reported a significantly shorter length of stay under PPS as compared to CBS. This finding supported Wennberg et al.'s contention that there is an "incentive inherent in the DRG system for hospitals to reduce the length of stay as a way of cutting the cost per case". The GAO study of February 1985 documented a decrease in the over-all hospital length of stay since the advent of DRGs. The results of this study, while specific to length of stay for those discharged to a skilled nursing facility, concur with shorter length of stay as reported in the GAO study.

One excraneous factor that must be addressed in the discussion of these findings is the presence of health maintenance organization (HMO) providers. An HMO encourages

use of the least resource intensive setting for treatment of an individual. That may result in shorter hospital length of stay. The study did not control for HMO other than specifying Medicare patients and it is conceivable that the number of referrals to LTC from HMOs may differ in the samples. HMOs existed prior to PPS, however, and it is reasonable to expect that the influence of that variable on length of stay would remain constant across the four time periods.

Nursing Care Requirements.

Nursing care requirement subscales included the following: medications by mouth, other medications, medications2, special services, psychosocial, stability, and nursing treatments. The total score represented a sum of the medications2 subscale (IV,IM,Chemo), special services, psych-social, stability and nursing treatments.

It appeared, from the findings, that patients in the total sample had more medications prescribed under PPS as compared to CBS. More medications do not necessarily mean sicker patients but it may indicate a need for more nursing time to administer those medications. It may also indicate multiple pathologies affecting the elderly person's health condition. The type of medication, e.g. IV, IM or chemo, may indeed correlate with a "sicker" patient. Further study is needed to determine the answers to these questions. It does appear from the analysis, that the results on the MEDPO

and MEDS variables are an important factor in determining nursing care requirements of the patient.

The special services, psychosocial and instability subscales did not show any significant differences under PPS as compared to CBS. While the findings on special services (SPSERV) address Tames' (1984) description of "the patient needing sophisticated rehabilitative care", the results on the total sample do not support SPSERV as an indicator of change in nursing care requirements.

The psychosocial (PSYSOC) subscale did not show significant changes between the CBS and PPS samples. However, results did show significant findings within the PPS sample. These findings may simply relate to a change in record keeping procedures on patients (e.g. admission assessment) or they may indicate actual changes in the psycho-social needs of patients being admitted to LTC facilities. From a clinical view, confusional states and behavioral problems have a significant impact on nursing care time and skills required of nurses. This is an area of great concern to LTC nurses and an area where LTC is pioneering new nursing management efforts. These very efforts may be drawing attention to the psych-social needs of the patient and consequently influencing the documentation of those needs. In any case, the findings

identified an area of concern to LTC nurses which needs further research.

The stability subscale did not show significant differences. The fact that there were no significant findings raised two questions. Are unstable conditions a reliable indicator of nursing care requirements? Logic would support the concept that unstable conditions are connected with nursing care requirements. If that is true, then one would question the content validity of the subscale. Either, patients being admitted to LTCF under PPS were more stable or the subscale was not adequately measuring conditions of instability. Further testing of the stability subscale is necessary to determine its usefulness to the instrument.

Nursing treatments increased significantly for the total sample. Since the treatments measured were measures requiring direct nursing intervention, the results on this subscale clearly supported the concept that patients are "sicker" now. The findings on this subscale correlated highly with the total score on nursing care requirements and appeared to be the best indicator of nursing care requirements.

Total scores on nursing care requirements increased significantly for the total sample. As defined by this study, higher total scores indicated sicker subjects while

lower scores indicated healthier subjects. This study was one attempt to quantify what Lawlor calls "a sicker patient". It confirmed the GAO's contention that early hospital discharge may result in "substantial needs for care" (p.4). Wilder speaks of "an increased acuity level to nursing homes that must provide a significant amount of nursing care" (p.6).

The study sample included "patients on dialysis, patients in comas and patients needing sophisticated rehabilitative care" (Tames, p.5). Tames called these patients subacute yet they were being cared for in LTC facilities along with others.

One can conclude from these data that subjects have greater nursing care requirements under PPS than CBS. One can further conclude that nursing treatments are a major determinant in describing the sicker patient.

Long term care length of stay

Long term care length of stay (LOSLTC) has not increased significantly. On the average, LOSLTC has remained constant for the total sample, over the last five years. An increase in subjects with short lengths of stay would tend to lower the over-all average length of stay which may account for the findings on length of stay. Further study is needed to determine whether or not additional samples would reflect the same findings. There were no changes in

utilization review practices or Medicare guidelines during those years which might have affected the LOS.

Conclusions

The following conclusions can be drawn from this study: a) hospital length of stay for Medicare patients admitted to the LTC facility is significantly shorter under PPS as compared to CBS; b) nursing care requirements of the Medicare patients admitted to the LTC facility has increased significantly under PPS as compared to CBS; and c) LTC length of stay has not increased under PPS as compared to CBS. The fourth conclusion that can be drawn from this data is that the over-all hospital length of stay decreased while the over-all nursing care requirements increased under PPS as compared to CBS.

Limitations

One issue that the study did not address was that of case-mix. The sample included three diagnosis categories most frequently admitted to two Medicare LTC facilities. Equal numbers in each category were selected in an attempt to measure the differences within similar groups of patients. That is not to say that a facility has an equal mix of those patients at any one time. It is conceivable that a facility, at any given time, has a mix of those categories or a preponderance of one category which may considerably change the nursing care requirements. That is

an important consideration in interpreting the findings in this study.

Recommendations for Further Research

This study has provided important information on the effects of PPS on the LTC patient and has identified areas for further research. Further studies are needed to: a) explore the relationships between medication requirements, diagnostic categories and nursing care requirements; b) determine how the rehabilitation needs of patients admitted to LTC have changed; c) explore the relationship of psycho-social needs to nursing care requirements, and d) describe changes in the stability of patients admitted to LTC.

Replication of this study needs to be conducted with similar groups in other samples and settings, to verify the findings of this study, to refine the descriptors of care needs and to determine what the economic and social impacts are of increased care needs in the LTC facility.

References

Campbell, D.T., & Stanley, J.C. (1963). Experimental and quasi-experimental designs for research. Boston: Houghton Mifflin.

General Accounting Office.(1985). Information requirements for evaluating the impacts of medicare prospective payment on post-hospital long-term-care services: Preliminary report (GAO/PEMD-85-8). Washington, D.C.:U.S. General Accounting Office.

Grimaldi, P. (1985). DRGs and long term care. American Health Care Association Journal, 11(1), 6,8-9.

Hornbrook M.C. (1982). Hospital case mix: its definition, measurement and use: Part 1. The conceptual framework. Medical Care Review, 39(1), pp. 1-43.

Lawlor, A. (1984, November). Reader roundup: Sicker patients trigger staff alterations. Today's Nursing Home, 5(11), pp.1,41-42.

Meiners, M. R. & Coffey, R. M., (1985). Hospital DRGs and the need for long-term-care services: An empirical analysis. Health Services Research 20(3), pp. 359-384.

Schwab, Marilyn R. (1975, April). Issues in long term care and implications for the profession of nursing. Prepared for:Office of Nursing Home Affairs, USPHS, HEW.

Tames, S., (1984, September 27). Subacute care: New nursing home distinction. Long Term Care Management, pp. 4-5.

Wennberg, J.E., McPherson, K., & Caper, P. (1984). Will payment based on diagnosis-related groups control hospital costs? The New England Journal of Medicine, 311(5), 295-300.

Wilder, R.S., (1984, October 25). The effects of hospital DRGs on nursing homes. Long Term Care Management, 13(24), p.6.

APPENDIX A

Patient Profile Instrument

PATIENT PROFILE INSTRUMENT (PPI)

ADMINISTRATIVE DATA

Facility Code
1 BNC
2

Patient Number _____

Date data collection __ __ __ mo da yr

Date of last hospital: Admission __ __ __ mo da yr Discharge __ __ __ mo da yr

Date of LTC: Admission __ __ __ mo da yr Discharge __ __ __ mo da yr

Date of birth: __ __ __ mo da yr Sex: 1 male 2 female

Primary Payor: 1 Medicaid 2 Medicare 3 Other

Discharged from LTC facility: 1 no 2 yes
If yes, then proceed to next question

Discharged from LTC facility to:

1 Home 2 Hospital 3 Other LTC facility
4 Expired 5 Other

MEDICAL CONDITION:

Primary Diagnosis _____

Secondary Diagnoses _____

_____

_____

_____

Medications: (all meds ordered on admission and 72 hrs after)

Number

_____ P.O. (by mouth including sublingual)

_____ I.M. (intramuscular and subcutaneous)

_____ I.V. (intravenous)

_____ Topical (creams, solutions)

_____ Other (LES prn, eye and ear gtts, suppositories-vag & rectal, inhalers)

0=no 1=yes Chemotherapy

0=no 1=yes Frequent Changes

Specialized Services: 0=no 1=yes

0	1	Physical therapy
0	1	Occupational Therapy
0	1	Speech Therapy

Psycho-social problems: 0=no 1=moderate 2=severe

0	1	2	Confusion
0	1	2	Anxious and/or disruptive behavior

Unstable Conditions: 0=no 1=yes

1.	0	1	Bruises	9.	0	1	Elevated Temp
2.	0	1	Changes Vital Signs	10.	0	1	Falls Hx
3.	0	1	Choking	11.	0	1	Impaction
4.	0	1	Comatose	12.	0	1	Incontinence
5.	0	1	Cyanosis	13.	0	1	Intern Bleed
6	0	1	Decubitus	14.	0	1	Seizures
7.	0	1	Dehydration	15.	0	1	Terminal Ill
8.	0	1	Diabetes	16.	0	1	Urine Concent

Nursing Treatments: 0=no 1=yes

1.	0	1	Blood Draws	11.	0	1	Paren Fdg
2.	0	1	Dialysis	12.	0	1	Respirator
3.	0	1	Drainage Tubes	13.	0	1	Resp Care
4.	0	1	Dressing Changes	14.	0	1	Skin Care
5.	0	1	Gastrostomy	15.	0	1	Suction (n/o)
6.	0	1	Isolation	16.	0	1	Teaching
7.	0	1	I.V. Therapy	17.	0	1	Trach Cr/Suct
8.	0	1	Naso-Gastric Fdg	18.	0	1	Transfusion
9.	0	1	Ostomies	19.	0	1	Wound Care
10.	0	1	Oxygen (daily)				

INSTRUCTIONS: PATIENT PROFILE INSTRUMENT (PPI)

GENERAL CONCEPTS

1. USING THESE INSTRUCTIONS.These instructions should be read before completing the PPI. These instructions should be kept with the PPIs during the completion of the same. FREQUENT REFERENCE TO THE INSTRUCTIONS WILL BE NEEDED TO ACCURATELY COMPLETE THE PPI.

2. ANSWER ALL QUESTIONS USING THE NUMERIC CODES PROVIDED. DO NOT LEAVE ANY QUESTIONS TOTALLY BLANK.

3. CORRECTIONS. Cross out any responses which are incorrect and re-enter clearly to the right of the original response.

ADMINISTRATIVE DATA:

1. Facility Code. Circle the code number for the LTC facility from which the record is obtained. e.g. 1=BNC 2=other .

2. Patient Number. Enter the code number for the medical record from which the PPI information is to be obtained. Researcher will designate code number on PPI and patient record.

3. Date of data collection. Enter the month/day/year (in that order) of the actual record review.

4. Date of last hospital: Admission-month/day/year obtained from the LTC admission record.
Discharge-month/day/year obtained from the LTC admission record.
**Information may also be available on hospital transfer record. If dates differ, use hospital transfer record.

5. Date of long term care: Admission-month/day/year obtained from the LTC admission record.
Discharge-month/day/year obtained from the LTC admission record.
**Information may be available from nursing progress notes if necessary. In case of difference, use progress notes for day of admission and discharge or utilization review records which indicate last day of Medicare coverage.

6. Date of birth: month/day/year obtained from LTC admission record or hospital transfer record.
**If there is a difference, use hospital transfer record.

7. Sex-check one.

8. Primary Payor-check only one. Obtain from LTC admission record or hospital transfer record.
**If records differ, use LTC admission record.

9. Discharge from LTC facility. Circle appropriate response. If answer is yes, proceed to next section. If answer is no, skip next item, and resume with medical condition. DISCHARGE DATE IS THE LAST ELIGIBLE MEDICARE DAY.

10. Discharged to: indicate destination on discharge from LTC facility. If other, indicate what "other" means by writing in the destination.

MEDICAL CONDITION

1. Diagnoses: list diagnoses in order in which they appear on hospital transfer record.
Primary diagnosis-first listed diagnosis.
Secondary diagnoses-list all that are recorded on transfer record.

2. Medications. Indicate number of medications ordered per route of administration for PO, IM, IV, topical and other. Physician order on hospital transfer record or physician order sheet (72 hrs).
Chemotherapy. Treatment of carcinoma through IV and/or oral chemical agents, as ordered by a physician (72 hrs).
Frequent changes. Physician order to monitor and adjust. Tranfer record or physician orders (72 hrs).

3. Specialized services. Indicate a no/yes response to each item. Documentation needed is physician order for services obtained from hospital transfer record and physician orders (72 hrs).

4. Psycho-social problems: Use transfer record, initial data sheet, nurses notes (24 hrs). Scan for all possible descriptors and record. Material will then be coded into confusion and behavior categories according to guidelines in Appendix C.

5. Unstable condition. Circle a no/yes response FOR EVERY ITEM. The following definitions may be helpful in determining a "yes" response.

Bruises. Record of same on intial data record or within first 24 hrs nursing notes.

Changes in vital signs. Documentation of v.s. checks every shift for first 24 hr nurses notes or orders for same on transfer record or physician order sheet.

Physician orders for more frequently than once a day. Order for continuous monitoring of various conditions. Daily weights.

Choking. Indication in nursing notes of tendency toward the same. Swallowing difficulty.

Comatose. Unconsciousness, cannot be aroused, and at most can respond only to powerful stimuli. Notation of same.

Cyanosis. Documentation of bluish coloring about the mouth, nose or eyes. Mottling of extremities as noted on admission assessment or 24 hrs nurses notes.

Decubitus. Reddened skin, potential breakdown; blushed skin, superficial layer of broken or blistered skin; subcutaneous skin is broken down; necrotic breakdown of skin and subcutaneous tissue which may involve muscle, fascia and bone. Documented on initial data record or nurses notes 24 hrs. (Excludes skin rashes, blisters or abrasions that are not located on pressure points: coccyx, hips, shoulders, elbows, bony prominences). If yes, then skin care yes.

Dehydration. Noted on transfer record, physician order (72 hrs) or on the nurses notes. Concentrated urine, pushing fluids.

Diabetes. Diagnosis on transfer record or documentation in initial data sheet or nurses notes of same. (Includes insulin chemstrips or diastix). If yes, then skin care.

Elevated temperature. Temperature of 100 degrees F or greater within the first 24 hrs as documented on the initial data record or nurses notes.

Frequent falls. History of the same noted on initial data record or nurses notes as reported by patient or family.

Impaction. Documentation of same in nurses notes or initial data record.

Incontinence. (Urine or feces). Documentation on transfer record or nurses notes. Excludes catheters. If catheter and incontinent of stool, then incont.

Internal bleeding. Blood loss stemming from a subacute or chronic gastrointestinal, respiratory or bladder condition. Noted on transfer record, physician order (72 hrs), or on nurses notes (24 hrs).

Seizures. Seizure activity noted in first 24 hrs on nurses notes or order for seizure precautions on hospital transfer record.

Terminally ill. Professional prognosis is that patient is in final stages of illness. Documented on transfer record or physician order sheet (72 hrs).

Urine concentrated or cloudy, fowl smelling. Documentation in nursing notes or on initial data record.

6. Nursing Treatments. Circle a no/yes response to EVERY ITEM. The following conditions must be met for a "yes" response.

Blood draws. Physician order for lab work requiring venous sticks. Transfer record. Excludes chem strips.

Dialysis. May have to go to hospital for this. Noted in physician orders.

Drainage tubes. Documentation of any drainage tubes, e.g. naso-gastric suction, chest tubes, foley catheter, wound drains, etc. Documented on transfer record, initial data record or nurses notes.

Dressing changes. Order for dressing change or documentation in nurses notes (24 hr). Not necessarily wound care.

Gastrostomy. Documentation in transfer record, initial data record or nurses notes of feeding and/or skin care requirements.

Isolation. Physician order or documentation of isolation procedures (any level) in the nurses notes.

IV therapy. IV route for medication administration noted on physician orders.

Naso-gastric feeding. Physician order on the transfer record, initial data record, or nurses notes.

Ostomy. Notation of colostomy, ileostomy etc. If ostomy yes, skin care yes.

Oxygen. Order for continuous oxygen or documentation of use within first 24 hrs of nursing notes.

Parenteral feeding. IV route for the administration of fluids used to maintain nutritional intake,

hyperalimentation. Documentation of physician orders first 72 hrs.

Respirator. Indication of respirator on transfer record or initial data record.

Respiratory care. Physician order or documentation in nurses notes (24 hrs) of percussion of cupping, postural drainage, positive pressure machine, or respiratory precautions related to rales or congestion.

Skin care. Documentation of orders for special skin treatment e.g. rashes, breakdowns, blisters, uncomplicated decubitus care, scabs, casts, irritated areas.

Suctioning. Physician order on transfer record, physician order sheet or documentation in nursing notes.

Teaching. Physician orders or documentation in nurses notes of the need for any type of teaching, e.g. ostomy care, bowel and bladder training, training care-givers, etc.

Tracheostomy care/suctioning. Indication of trach on transfer record or initial data record.

Transfusion. Blood or blood components. May have to go to the hospital for treatment. Noted in physician order.

Wound care. Subcutaneous lesions resulting from surgery, trauma or open cancerous ulcers. Physician orders (72 hrs) or nurses notes (24 hrs). Removal of sutures or order for same. Infected stitch. Drainage noted from wound.

APPENDIX B

Results of Statistical Analysis

Results of oneway ANOVA applied to dependent variables for Total Sample (n=240). F=F ratio, p=probability, df=degrees of freedom, SS=sum of squares, MS=means squared.

ONE WAY ANALYSIS OF VARIANCE

SOURCE TOTAL	df	SS	MS	F/p
LOSHOS				
Between Grps	3	2105.91	701.97	5.745/0.0008
Within Grps	236	28834.38	122.18	
Total	239	30940.30		
MEDPO				
Between Grps	3	42.01	14.00	2.352/0.07
Within Grps	236	1404.88	5.95	
Total	239	1446.90		
MEDS				
Between Grps	3	4.23	1.41	2.656/0.0491
Within Grps	236	125.37	0.53	
Total	239	129.60		
MEDS2				
Between Grps	3	0.17	0.56	0.272/0.8457
Within Grps	236	48.23	0.20	
Total	239	48.40		
SPSERV				
Between Grps	3	3.91	1.30	1.353/0.2579
Within Grps	236	227.48	0.96	
Total	239	231.40		
PSYSOC				
Between Grps	3	18.77	6.26	3.852/0.0102
Within Grps	236	383.23	1.62	
Total	239	402.00		
STABIL				
Between Grps	3	0.38	0.13	0.061/0.9804
Within Grps	236	492.58	2.09	
Total	239	492.96		
NURRX				
Between Grps	3	24.61	8.20	4.478/0.0044
Within Grps	236	432.35	1.83	
Total	239	456.96		
TOTAL				
Between Grps	3	98.45	32.82	3.349/0.0198
Within Grps	236	2312.35	9.80	
Total	239	2410.80		
LOSLTC				
Between Grps	3	85.03	28.34	0.065/0.9783
Within Grps	236	102752.57	435.39	
Total	239	102837.60		

Results of planned comparisons (contrast) applied to dependent variables for total sample (n=240). t=t-value and p=probability, df=236.

PLANNED COMPARISONS

SOURCE	TOTAL	MEAN	SD		CONTRAST 1	2	3
LOSHOS							
Time	1	16.60	9.43	t	3.743	-1.338	1.198
	2	19.30	14.58	p	0.000	0.091	0.116
	3	13.82	12.06				
	4	11.40	6.46				
MEDPO							
Time	1	4.25	2.50	t	-2.513	0.000	-0.861
	2	4.25	2.60	p	0.007	0.50	0.195
	3	4.85	2.54				
	4	5.23	2.08				
MEDS							
Time	1	0.90	0.68	t	-2.303	-1.378	0.877
	2	1.08	0.72	p	0.011	0.085	0.191
	3	1.27	0.76				
	4	1.15	0.76				
MEDS2							
Time	1	0.17	0.38	t	-0.857	-0.202	0.202
	2	0.18	0.39	p	0.392	0.840	0.840
	3	0.23	0.53				
	4	0.22	0.49				
SPSERV							
Time	1	1.58	0.96	t	-1.512	-0.558	-1.209
	2	1.68	1.03	p	0.066	0.289	0.114
	3	1.72	0.98				
	4	1.93	0.95				
PSYSOC							
Time	1	1.12	1.33	t	-0.101	1.075	-3.224
	2	0.87	1.19	P	0.460	0.142	0.0005
	3	0.63	1.12				
	4	1.38	1.44				
STABIL							
Time	1	1.97	1.29	t	-0.402	0.126	0.063
	2	1.93	1.49	p	0.344	0.450	0.475
	3	2.03	1.60				
	4	2.02	1.37				
NURRX							
Time	1	1.68	1.13	t	-3.481	0.000	-1.147
	2	1.68	1.36	p	0.0005	0.500	0.127
	3	2.15	1.62				
	4	2.43	1.25				
TOTAL							
Time	1	6.52	2.90	t	-2.330	0.292	-2.129
	2	6.35	3.13	p	0.0105	0.3855	0.017
	3	6.77	3.34				
	4	7.99	3.14				
LOSLTC							
Time	1	33.75	21.37	t	0.309	0.227	-0.219
	2	32.88	23.84	p	0.379	0.410	0.414
	3	32.07	17.86				
	4	32.90	19.94				

APPENDIX C

Coding Guide for Psychosocial Subscale

GUIDE FOR CODING PSYCHOSOCIAL RESPONSES:

The following responses were rated with a "0" value:

Alert
Cheerful
Cooperative
Oriented
Pleasant

The following responses were rated with a "1" value:

Angry
Anxious Daughter
Calling out
Confused at times
Depressed
Emotionally labile
Flat affect
Frightened-fearful
Hallucinations
Mental health consultation
Nervous
Not alert
Paranoid
Resistive
Slightly confused
Spitting at staff
Takes gown off
Talking non-stop
Talks incoherently
Tense and lonely
Unable to make decisions
Unhappy
Withdrawn

The following responses were rated with a "2" value:

Aggressive
Agitated
Anxious
Belligerent
Combative
Confused
Disoriented
Extremely agitated
"Feel like I'm going to die"
Getting out of restraints
Hitting
Moaning
Noisy
Not cooperative
Pulling dressing off
Restless
Scratching the staff
Tearful-weepy
Upset
Very anxious

AN ABSTRACT OF THE THESIS OF

SISTER LUCIA GAMROTH

For the MASTER OF SCIENCE IN NURSING

Date of Receiving this Degree: June 13, 1986

Title: LONG TERM CARE RESOURCE REQUIREMENTS BEFORE AND AFTER DRGS

APPROVED:_____

Carol A. Lindeman, R.N., PhD., Professor,
Thesis Advisor

The study was a retrospective comparison of 240 patients admitted to long term care (LTC) facilities following hospitalization under two different hospital reimbursement systems (retrospective, cost-based and prospective payment). The literature, though anecdotal in nature, suggested that since prospective payment system (PPS) was implemented in the hospital, there has been an effect on the hospital length of stay and patient acuity levels on admission a LTC facility.

This study tested three hypotheses about the effects of PPS: 1) Hospital length of stay for Medicare patients admitted to LTC facilities with hip fractures, cerebrovascular accidents, and "all other" diagnoses is significantly shorter under PPS than under the cost based system (CBS), 2) LTC nursing care requirements for Medicare patients admitted to LTC facilities with hip fractures,

cerebrovascular accidents, and "all other" diagnoses are significantly greater under PPS than under CBS, and 3) LTC length of stay for Medicare patients admitted to LTC facilities with hip fractures, cerebrovascular accidents and "all other" diagnoses is significantly longer under PPS than under CBS.

The study was best represented by a separate-sample pretest-posttest design. The sample included 240 patient records from two LTC facilities similar in program and case mix. The sample from each of the two facilities consisted of 120 Medicare patient records, randomly selected in three categories: 40 hip fractures, 40 CVAs and 40 "all other" over four time periods (2 representing CBS and 2 representing PPS).

The independent variables were hospital cost-based reimbursement and hospital prospective payment or DRGs. The dependent variables were hospital length of stay, nursing care requirements in long term care and long term care length of stay.

Resource requirements were measured using the Patient Profile Instrument (PPI). The PPI consisted of administrative information and medical information including 5 subscales, the purpose of which were to describe indicators of nursing care requirements.

Using two tests of statistical significance (one way ANOVA and planned comparison t-tests), each hypothesis was tested. The level of significance was set at .05. Findings supported the hypothesis that hospital length of stay for the sample was significantly lower under PPS than under CBS (F ratio=5.745, p=.0008; t-value=3.743, p=.000). Long term care nursing requirements were significantly greater under PPS than under CBS (F ratio=3.349, p=.0198; t-value=2.330, p=.0105). LTC length of stay remained constant under PPS and CBS (F ratio=0.065, p=.9783; t-value=0.309, p=.379).

In summary, hospital length of stay was shorter and LTC nursing care requirements were greater under PPS. LTC length of stay has not changed significantly since the advent of PPS. Replication studies are needed before generalizing the findings to other LTC settings. However, this study is a first attempt to document the reports in the literature of the "sicker patient" now admitted to long term care facilities.