A PILOT STUDY OF THE IMPLEMENTATION OF A MULTI-DISCIPLINARY APPROACH TO THE EPISODIC HEALTH CARE MANAGEMENT OF ADULT ACUTE CARE MEDICINE INPATIENTS

By

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A Thesis Submitted to the Faculty of Graduate Studies in Partial Fulfilment of the Requirements for the Degree of Master of Nursing

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FACULTY OF GRADUATE STUDIES

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Abstract

In response to changes within a reformed health care system, nursing initiatives have been sought to redesign the delivery structure of inpatient care services to improve the organization and integration of episodic health care management. One such solution has been the development and implementation of the Care Co-ordinator Model (CCM) on two adult medicine, clinical teaching units within an urban tertiary care facility.

A quasi-experimental study design was used to compare the outcomes of the CCM on two experimental units with a Total Patient Care nursing system. One-hundred and nineteen subjects were recruited. Structured questionnaires, archival records and an interview schedule collected data on the following dependent study variables: patient and staff satisfaction, patient post-discharge rates of health care service utilization, and total unit operating expenditures.

Results of the study found no significant differences between the two nursing organizational systems in reported patient satisfaction or in patient rates of post-discharge health care service utilization from pre- to posttest. A significant increase in reported satisfaction with job autonomy from baseline to posttest was found for staff nurses on one of the two experimental units ($p<.02$). However, all three groups of nurses reported a significant decline in satisfaction with job worth over time ($p<.02$). Interdisciplinary staff on one of the two experimental units reported a significant increase in satisfaction with the quality of nursing care from pre- to posttest ($p<.05$). Finally, study analysis found that total unit operating expenditures on the two experimental units increased by more than 26% during the budget year following implementation of the CCM than in comparison with 1997 cost figures.

The study highlights the contemporary practice role of nurses within tertiary care centres and provides an initial contribution to our understanding of the efficacies of similar work redesign models. The implications for nursing practice and future research are made based upon these study results.

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Acknowledgements

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Dedication

To my parents for nurturing in me the "learner," and to my husband for reminding me of the joys in the moment, I thank you for your presence, support and love.

Chapter I

Statement of the Problem

Introduction

A call for systemic and fundamental reform of the provincial health care system was sounded in the late 1980s that emphasized a shift in focus away from the high-end costs of tertiary care, towards community-based, primary care (Manitoba Health, 1997). By the early 1990s, system-wide provincial restructuring was well underway to enhance the cost-effectiveness of a beleaguered health care economy. The breadth and depth of these sweeping reforms were captured in Winnipeg newspaper headlines such as: "Medicare system on Critical List" (The Winnipeg Sun, 1993).

Nearing a decade of ongoing provincial reforms that have paralleled changes to health care systems world-wide, tertiary care centres have sustained substantial reductions in bed capacities, length of patient hospital stays, labour forces, and material resources; while having witnessed a concurrent rise in patient acuity and hospital readmission rates (Fralic, 1992; Kirby & Garfink, 1991; Shindul-Rothschild, Berry & Long-Middleton, 1996; Stichler, 1994; Taft & Stearns, 1991). Not coincidentally, the advent of tightening bureaucratic, bottom-line hospital management has increased reported dissatisfaction with work environments among the majority of staff nurses who experience continued constraints on professional autonomy, participation in decision-making, and professional control over the content and context of work (Attridge & Callahan, 1990; Hinshaw, Smelzter & Atwood, 1987; McCloskey, 1990; Shindul-Rothschild et al, 1996).

In response to the current climate within tertiary care centres, nursing initiatives have been sought to redesign the delivery structure of inpatient care services which enhance professional autonomy, and improve the organization and integration of episodic health care

management. One such nursing initiative has been the development and pilot implementation of the Care Co-ordinator Model (CCM) on two adult acute care medicine units, in a large urban teaching hospital in central Canada. Membership on the CCM planning committee comprised seven general duty staff nurses, with one education inservice co-ordinator and two unit managers who served as program advisors. Formal approval for pilot implementation of the model was granted by the director of patient services, medicine, in July of 1997.

The CCM was envisioned as a unit-based nursing leadership model which integrates clinical nursing functions, discharge planning, and inpatient resource management, in order to ensure a co-ordinated, multi-disciplinary approach to total patient care. The essential features of the CCM were founded upon a modified primary nursing care model, and solidly grounded in the concept of differentiated practice which recognizes professional staff nurse expertise based on experience, education, and competence (Lyon, 1993; Verna & Oldaker, 1994). Within the research setting, the widely practised system of organizing nursing care delivery had been previously based upon a total patient care model.

As an organizational system of nursing care delivery, primary nursing has received considerable attention in the literature since the time of the concept's first inception in 1969 by innovator Marie Manthey (Manthey & Kramer, 1970). However, rigorous studies documenting the outcomes of primary nursing have with few exceptions, suffered from considerable methodological and conceptual limitations (Giovannetti, 1980; Thomas & Bond, 1991). Therefore, the aim of this study was to provide a summative evaluation of the pilot phase of implementation of the CCM with the intention to contribute substantive evidence of the outcomes of a primary nursing-based model. The research problem chosen, the purpose of the evaluative study and the significance of the research will be addressed in this chapter.

Research Problem

During the 1997 fiscal year, the research setting reported a 91.8% occupancy of the 400 adult medical-surgical beds available. The average length of stay for adult acute-care medical-surgical patients was 11.25 days for a total volume of 131,177 inpatient care days (The Centre's Annual Report, 1998). From 1991 to 1996, the average length of patient stay was reduced by 1.37 days (The Centre's Annual Reports, 1991-1996). Comparative analysis of the hospital data during the years 1994 to 1996 revealed the following trends: (1) a decline in the total number of available beds, and average patient length of stay; and (2) a concurrent rise in bed occupancy rates and total volume of inpatient care days. As discussed earlier, these trends were neither unique or peculiar to the research setting. However, concerns have abounded in the literature with regard to the relationship between shortened inpatient hospital stays, increased patient acuity, and higher readmission rates among general medicine patients.

The rates of recidivism have been found to be staggering given that American studies have estimated 17% to 38% of all medical patients will experience a non-elective readmission within six months of hospital discharge (Fethke, Smith & Johnson, 1986; Land, Wray, Friedland & Ashton, 1982; Smith, Norton & McDonald, 1985; Schroeder, Showstack & Roberts, 1979; Twaddle & Sweet, 1970). Two studies with random samples of 933 and 2,238 subjects, reported that repeated hospitalizations of patients for the same disease accounted for 47% to 60% of the total annual hospital charges, with subsequent readmissions costing on average 24% to 55% more than the initial period of hospitalization (Schroeder et al, 1979; Zook, Flanigan-Savickis & Moore, 1980).

Risk factors associated with both delayed hospital discharges and recidivism among medical patients have been cited in the literature to include: gender, age, marital status, income, personal health habits, patient compliance, severity and chronicity of illness,

inappropriate physician diagnosis and treatment, inadequate discharge planning and follow-up, and discharge location (Fethke et al, 1986; Naylor, 1990; Smith, Weinberger, Katz & Moore, 1988; Twaddle & Sweet, 1970). Fethke et al (1986) and Robinson, Robinson and Lewis (1992) have argued that given the rates and associated costs of recidivism, coupled with a scarcity of pre- and post-discharge planning resources, there is an urgent need to develop a model intended to identify and manage patients who are at high risk of re-entry into the health care system. Research has demonstrated that professional nurses who have identified, planned and co-ordinated pre- and post-discharge planning resources for tertiary care patients have effected substantial reductions in both hospital length of stays and readmission rates (Ethridge & Lamb, 1989; Marchette & Holloman, 1986; Winstead-Fry, Bormolini & Keech, 1995).

The issues of co-ordinated and integrated systems of health care service delivery are relatively new in the literature, and have arisen due to the following: (1) an unpredictable and rapidly changing practice environment, and (2) differentiation among health care team members (Allred, Arford & Michel, 1995; Stichler, 1994). The provincial movement towards system-wide integration and co-ordination of health care services was launched in 1997 with the establishment of the regional and local Health Authority Boards (Provincial Health, 1997). The CCM was conceived as a micro-level, organizational change to facilitate the integration of comprehensive inpatient services through the development of co-ordinated communication patterns among diverse team specialists.

The CCM Model

The overarching programmatic goals of the CCM were twofold: (1) to develop an organizational system of nursing care delivery that accentuated the current professional practice role of staff nurses in a tertiary care setting, and (2) to address the need to develop

a mechanism to reduce fragmentation of inpatient care, and promote timely and appropriate hospital discharges.

The CCM is defined as a unit-based, nursing delivery system in which qualified staff nurses assume the leadership role of care co-ordinators (CC) for a maximum caseload of three patients from the time of their admission to discharge, with community follow-up as needed. The CCcs are formally consulted to assess and screen patients, who at the time of admission may present with: (1) complex health care needs; (2) frequent hospital readmissions; (3) history of non-alliance to medical treatment; (4) may be at risk for problematic discharge; and/or (5) require palliative care. The CC liaisons with, and co-ordinates an inter-disciplinary approach to comprehensive patient care planning that effectively addresses present and anticipated health issues. The mechanisms for co-ordination involve: (1) direct supervision of sub-ordinates, (2) verbal communication and documentation, and (3) team and/or family planning conferences

CCs develop in conjunction with patients and team members family-centred and culturally appropriate care plans, and are held accountable 24 hours a day for nursing process outcomes, discharge planning and inpatient resource management. The CCs assume responsibility for the selection and mentoring of associate nurses who participate in the holistic care and management of the CC's assigned caseload of patients. The CC may sanction the associate nurse to perform specific liasioning and co-ordinating functions in his/her absence. The CC may choose to provide or delegate direct patient care to associate nurses, other CCs, staff nurses and unlicensed assistive personnel but, full accountability is retained for ongoing care planning, evaluation and revision. This accountability is uninterrupted from the time of patient admission to disposition of the case.

The CCM is operationalized in the following manner. The CCs may be formally consulted by any professional team member. Using an on-call roster system, CCs on each experimental unit will alternate responsibility on a weekly basis for responding to formal consults within 24 to 48 hours of receipt. Within 72 hours of the initial consult, the "on-call" CC will assess the patient and designate a CC or place the patient on a waiting list pending the availability of the unit CCs. Documentation on the patient's chart indicating the interdisciplinary plan of care will be completed in writing by the designated CC within the stated 72 hours. A label will then be attached on the front of the patient's hospital chart clearly communicating the name of the designated CC for each assigned patient. Evaluations and/or revisions to patient care plans will be assessed and co-ordinated by the CC and formally communicated as required by either the CC or associate nurse throughout the course of the patient's hospital stay. Disposition of each case will occur following the patient's transfer, hospital discharge or death. However, this does not preclude the CCs from informal, follow-up contact with the patient and/or family.

The selection criteria for CCs is founded upon the concept of differentiated practice and includes the following registered nurse characteristics: (1) a professional who exemplifies proficient or expert levels of practice, (2) demonstrates strong leadership abilities and negotiating skills, (3) exhibits "system savvy" or the ability to utilize organizational protocols and policies to effect desired patient outcomes, (4) is committed to ongoing formal education, and (5) who's employment status is not exclusive to full time.

The essential features of the CCM were based upon a modified primary nursing system, as described by Lyon (1993). Historically, the enactment of a primary nursing system required that: (1) an all registered nursing staff provided direct patient care to an assigned caseload of approximately six to eight patients; (2) primary nurses assumed 24-hour

accountability for nursing process outcomes, and (3) all patients were assigned a primary nurse upon admission (Hegyvary, 1977; Richard & Stern, 1991).

The CCM differs on four important aspects when compared to the traditional system of primary nursing: (1) unlicensed assistive personnel function as technical assistants in the provision of direct patient care, (2) the CC is accountable for nursing process outcomes, inpatient resource management, and multi-disciplinary discharge planning, (3) the CC may use discretionary powers in determining the frequency of direct patient care, and (4) all newly admitted patients are screened to determine the appropriateness of assigning a CC. Manthey (1988) and Zander (1985) have argued that the adaptation of a second generation of primary nursing to staff mix patterns will not threaten the system's integrity as long as the issue of 24-hour professional accountability remains unchanged.

William James cited by Canfield, Hansen, Rogerson, Rutte and Clauss (1996) is quoted as saying: "A new idea is first condemned as ridiculous, and then dismissed as trivial until finally, it becomes what everybody knows." Primary nursing is not a new concept. Since the concept's inception nearly 30 years ago, a myriad of descriptive reports and anecdotal evidence have suggested that the implementation of primary nursing effects increased quality and continuity of patient care, improved staff and patient satisfaction, and has been purported to be cost-effective (Binnie, 1987; Lathlean, 1988; Pritchard, 1993; Thompson, 1990). However, a review of the literature presented in Chapter three, found that limited attention has been placed on rigorous comparative and non-comparative research studies of primary nursing (Blair, Sparger, Walts & Thompson, 1982; Carlsen & Malley, 1981; Gardner, 1991; Giovannetti, 1980; Jones, 1975; Marram, 1976; Perala & Hentinen, 1989; Ventura, Fox, Corley & Mercurio, 1982). Intelligible interpretation and synthesis of these published studies has been complicated by the multiplicity of research designs,

variables, instrumentation, and settings utilized. These studies have produced widely inconsistent results and with few exceptions have suffered from methodological limitations related to small sample size, undisclosed instrument reliability and validity, and lack of study group comparability. In addition, all reviewed research on primary nursing, when disclosed by the investigator(s), was found to be based upon the traditional, rather than a modified approach to organizing primary nursing care delivery. These factors indicated a clear imperative for a more rigorous evaluation of a primary-based, nursing care delivery model.

Purpose of the Study

The changing climate within the health care system has necessitated the exploration of clinical innovations similar to the CCM which are intended to redesign the delivery of inpatient care services in a comprehensive, integrated and cost-effective manner. A review of the literature failed to yield either descriptive reports or empirical evidence related to the outcomes of a similar modified primary nursing model. Whether an applied model is borrowed or created, nursing professionals are cautioned against adopting premature innovations prior to a systematic evaluation (Armstrong & Stetler, 1991). Therefore, the purpose of this study was to provide a summative evaluation of the outcomes of the CCM on two adult acute care medicine units in comparison with a Total Patient Care nursing system on the following dependent variables: (1) patient satisfaction; (2) staff nurse satisfaction, (3) interdisciplinary team satisfaction, (4) patients' post-discharge rates of hospital readmissions, emergency room use and unscheduled physician visits, and (5) total unit operating expenditures. The data collected from the summative evaluation are intended to provide the CCM planning committee with the needed information regarding the value of the program and contribute to decision-making regarding the program's continuation, termination, expansion, or contraction (Herman, Morris & Fitz-Gibbon, 1987; Ingersoll,

Bazar & Zenter, 1993; Johnson & Olesinski, 1995).

Significance of the Study

The persistent gap in outcomes research of innovative care delivery approaches has been identified as problematic in the literature (Allred et al, 1995; Heaman & Loewen, 1996). The discipline is only now beginning to recognize this growing research imperative. In the absence of empirical evidence, the merits of any clinical innovation remain nebulous. The results of this study will not only be brought to bear on the program but, may also have implications for a wider audience in nursing administration, education and research.

Firstly, the findings of this study are intended to be utilized to evaluate and revise the CCM prior to initiating wider-scale, clinical implementation. The results may play a significant role in the re-conceptualization of the staff nurse role in tertiary health care settings. Hospital administrative practices and policies may need to be reconceived to create and enhance organizational environments that support the leadership, autonomy, and centrality of professional staff nurses in health care service delivery. In addition, hospital administrators may use the findings to spawn new and creative solutions to enhance the cost-effectiveness of service delivery through reductions in length of hospital stays and readmission rates in adult medical inpatients.

Secondly, the study findings may be incorporated by nurse educators to expand their theoretical knowledge of current professional practice models in order to better prepare future staff nurses for leadership roles in tertiary care settings. Finally, the findings of this study will be an initial contribution to the discipline's beginning endeavour to bridge the gap between innovative practice designs and outcomes research. In doing so, the study will add to our growing understanding of the efficacies of work redesign models.

The Research Hypotheses

The specific research hypotheses that guided this study were as follows:

1. Patients on the experimental versus comparison unit(s) will report greater satisfaction with aspects of their hospital stay after implementation of the CCM.

2. CCs and associate nurses will report greater job satisfaction with the content and context of their work environments, post-implementation of the CCM, than staff nurses employed on the comparison unit.

3. Interdisciplinary team members on the experimental units will report greater satisfaction with nursing practice following implementation of the CCM, than compared to team members on the comparison unit.

4. Post-implementation of the CCM, patients on the experimental versus comparison unit(s) will report significantly fewer unscheduled physician visits; emergency room visits; or hospital readmissions after hospital discharge.

5. Total unit operating expenditures on the experimental units will not vary from pre- to post-implementation of the CCM.

Assumptions Underlying the Study

There were several implied and explicit assumptions underlying this study and these included:

1. Nursing is a pivotal health care discipline that effects outcomes in patient care delivery.

2. The implementation of the CCM will produce outcomes that can be objectively observed and measured.

3. The CCM provides a visible clinical leadership role for staff nurses that formally acknowledges variations in individual competencies and aptitudes.

4. The redesign of work environments that facilitate professional autonomy and accountability will enhance staff nurse satisfaction.

5. The CCM creates a structural and process change to ensure greater integration and co-ordination of tertiary care services to effect positive patient outcomes.

6. Self-reporting data provides valid descriptions of nurses', patients' and interdisciplinary team members' views.

Limitations

The aim of this study is to determine whether the CCM provides for greater linkages and integration of inpatient care services to effect positive outcomes on variables such as patient and staff satisfaction, hospital readmission rates and total unit operating expenditures. One limitation which the author has identified is that the contributions of multiple care providers in the tertiary care setting to patient outcomes, are not distinguished in this study.

Secondly, the findings of this study are intended to reflect the perceptions of patients, nurses, and interdisciplinary team members who participated in this research endeavour. Consistent with the methods outlined in Chapter IV, generalizability of the findings is limited. The author proposes that those who read this study must make their own determinations in regards to the applicability of these findings to non-acute care, non-teaching, or rural settings.

Thirdly, the researcher of this study understands the nuances of the CCM well due to her direct involvement on the planning committee. Johnson and Olesinski (1995) caution that an internal evaluator may lack the objectivity required to ensure study rigor. Cognizant of the need to minimize bias, the involvement of the researcher was constrained by the

following self-imposed measures: (1) the researcher ensured that the thesis committee reviewed the evaluation study for potential bias; (2) the researcher focused solely upon the planning and implementation of the evaluation and was not involved in the day-to-day operations of the program; (3) the researcher removed herself from ongoing CCM planning committee meetings during the periods of pre- and post data collection; (4) the researcher was responsible for the dissemination of the study findings to the CCM planning committee but, had no direct or indirect involvement in the committee's determination of the continuation, revision or termination of the program.

Definition of Terms

The following are the operational and conceptual definitions of terms used in this study. The conceptual definitions were consensually derived by the CCM planning committee.

Operational Definitions

1. Patient Satisfaction: Patients' perceptions of how well aspects of their hospital care were provided in accordance with their expectations, as measured by the Patient Hospital Stay Rating Questionnaire.

2. Staff Nurse Satisfaction: Staff nurses' evaluations of the quality of their job properties and work environment as measured by the Work Quality Index.

3. Interdisciplinary Team Member Satisfaction: Interdisciplinary staff perceptions of the degree to which aspects of the nursing care delivery system met their expectations, as measured by the Interdisciplinary Collaboration Questionnaire.

4. Total Unit Operating Expenditures: Actual unit costs expended on non-medical base salaries and general medical supplies. Non-medical base salaries are paid for regular hours worked by registered nurses and unlicensed assistive personnel; and vary according to

staff seniority. Paid regular hours are inclusive of the actual time worked, sick time, overtime, and vacation but excludes, paid employee benefits. General medical supplies include purchased costs of dressing trays, intravenous administration sets, urinary and suction catheters, gloves, needles and syringes, and central lines.

Conceptual Definitions

1. Leadership: A process whereby the registered nurse influences one or more persons to achieve specific goals in the provision of nursing care for patients and families. Leadership is dependent upon the ability to inspire trust and confidence, to influence the efficiency and effectiveness of the health care team. Leadership involves creativity and imagination to generate alternatives and strategies in the provision of patient care services. Leadership requires motivating social and organizational transformation by cultivating an environment that encourages risk-taking and diversity in problem-solving among members of the health care team.

2. Accountability: To assume a moral and legal responsibility for the outcomes of one's ideas and actions within an interdisciplinary approach to health care. One demonstrates a willingness to participate in ongoing personal and professional performance evaluation through self-reflection, employee appraisal, and peer review. Accountability involves adherence to both provincial standards of professional practice and the Canadian Nurses Association, Code of Ethics.

3. 24-Hour Accountability: To ensure the interdisciplinary plan of care is implemented and evaluated on a 24-hour basis. This responsibility is operationalized by means of verbal communication, anticipatory reporting, and written documentation with patients, families and other members of the health care team.

4. Expert: Expertise is developed only when the clinician tests and refines theoretical and practical knowledge in actual situations. Expertise occurs through a process of comparing similar and dissimilar nuances of clinical situations with one another to develop a deeper understanding of past and paradigm cases (Benner, 1984).

5. Proficient: The proficient professional perceives clinical situations as wholes, rather than in terms of aspects. Less important nuances of the clinical situation may be selectively ignored by the proficient performer. Analytical decision-making is less laboured due to their experiential knowledge but, an intuitive grasp of the situation remains undeveloped (Benner, 1984).

6. Competent: A stage of skill acquisition that is typified by conscious, analytic, contemplation of the problem that achieves efficiency and organization in care planning. Important attributes of the current and contemplated situations are considered but, the ability to perceive situations holistically is not yet developed (Benner, 1984).

7. Associate Nurse: In collaboration with the CC, the associate nurse will participate in the holistic care and management of assigned patients from admission to discharge, with community follow-up as necessary. The associate must minimally practice at the level of a competent practitioner (Benner, 1984). The role of associate nurse is not restricted to full-time registered nurses.

Chapter Summary

Nursing leaders are actively seeking and designing clinical innovations to: (1) efficiently manage finite labour and material resources, (2) improve the comprehensiveness and cost-effectiveness of inpatient services through a co-ordinated and integrated approach, (3) enhance patient care outcomes, and (4) advance professional practice roles. The identified gap in outcomes research of clinical innovations based upon a modified primary nursing

system has necessitated the need to evaluate the pilot implementation of the CCM. The greatest importance of testing and refining work redesign initiatives may lie in highlighting the profession's unique and pivotal contribution to a reformed Canadian health care system.

Chapter II

Conceptual Framework

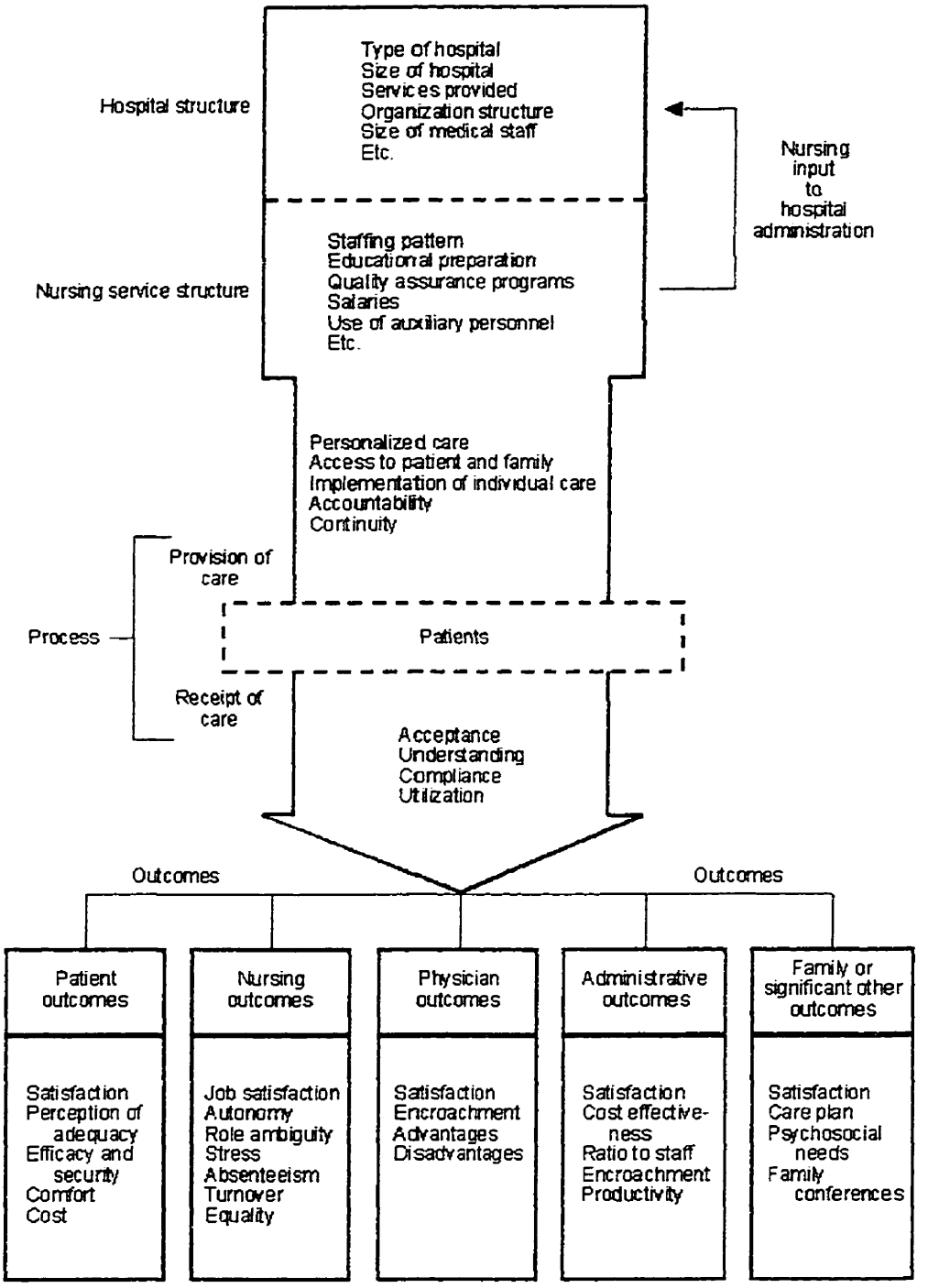
Introduction

Previous research has examined primary nursing from a variety of theoretical perspectives: (1) Change and Role Theory (Sella & Macleod, 1991); (2) Motivational Theory (Carlsen & Malley, 1981); (3) Organizational Theory (Alexander, Wiseman & Chase, 1981; Parasuraman, Drake & Zammuto, 1981; Reed, 1988); (4) Job Design Theory (Joiner, Johnson & Corkrean, 1981); and (5) Decision-making Theory (Felton, 1975). Several of these theoretical models were deemed by the researcher not to be sufficiently inclusive to allow for simultaneous consideration of the outcomes of a unit-based innovation in nursing care service delivery within the context of the larger system of health care organization.

Given the above consideration, the Evaluation Model of Nursing Care Service Delivery adapted by Evans and Brown (1981) from the earlier Starfield Model of Health Services Delivery was selected to guide this research inquiry (Figure 1). This conceptual model provided the sensitizing framework to examine the research problem and served to guide the interpretation, evaluation and integration of the study findings (Lobiondo-Wood & Haber, 1990). The conceptual framework is based upon a systems approach and was originally modified to be applied to evaluate a primary-based nursing system. The model conceptualizes that the three main components which comprise any system of nursing care delivery are structure, process, and outcomes. The nature of the relationship between these factors and the relevance of the conceptual framework to the study are further elaborated upon, in the following discussion.

Figure 1

Evaluation Model of Nursing Care Service Delivery



An Evaluation Model of Nursing Care Service Delivery

The researcher concurs with those authors who have argued that the driving force for the genesis of work restructuring in health care organizations has been the escalating costs of human and material resources (Fralic, 1992; Johnson & Olesinski, 1995). As a result of this focus on cost afford ability, unprecedented organizational changes within tertiary care centres have occurred. These changes have included service and program amalgamation, middle management flattening, licensed labour force reductions, operating budget cutbacks, contracting-out of services, bed closures, and hospital occupancy rate increases. (Taft & Stearns, 1991). Nursing departments due to their large size and corresponding expenditures, have historically been ear marked for many of these reforms by hospital administration. Organizational changes of this magnitude have directly influenced the unit-based processes of professional nursing practice. In the absence of adequate human and material resources, the predominating philosophy of having nurses work harder, do more, and accept greater responsibility for larger numbers of both auxiliary staff and acutely ill patients has resulted in less time for the provision of basic nursing care, completion of documentation, and consultation with interdisciplinary team members. A survey of 7,560 American nurses indicated that since the on-slaught of tightening economic constraints on health care organizations, these nurses have reported many detrimental outcomes that included: increased work related injuries and patient complaints; sub-standard quality and continuity of care; and unexpected patient readmissions and deaths (Shindul-Rothschild et al, 1996). Evans and Brown's (1981) conceptual framework makes explicit this inextricable link and tumultuous relationship between structure, process and outcomes of nursing care service delivery.

The chosen model to guide the research endeavour highlights the contextual variables within the larger context of health care that continue to be an impetus for new visions in the

organization of nursing care service delivery. The conceptual model postulates that the reorganization of episodic adult health care management proposed under the CCM will directly alter the staff nurse's accountability and autonomy to effect an integrated and co-ordinated process to inpatient care. The model permits delineation of the outcomes of the CCM to be uniquely discussed from the viewpoints of the intended audience (eg. professionals, administrators, patients and families). According to Evans and Brown (1981), outcome variables such as patients' perceptions of adequacy, professional satisfaction and cost-effectiveness are the ultimate test of the structure and process effectiveness of primary-based nursing systems.

This conceptual framework was chosen for two reasons. First, Evans and Brown (1981) forthrightly acknowledge the complex interrelationship between the health care climate, organizational structures, processes of unit-based nursing care, and outcomes. They argue little can be gleaned about the process of nursing care delivery if attention is solely limited to the end results. Secondly, the model highlights the centrality of professional nursing care in effecting system-wide outcomes as perceived by patients, families, inter-disciplinary team members and hospital administrators.

The major limitation of this conceptual framework is that the model assumes the effect of structure and process on outcomes is unidirectional. The CCM was developed in collective response to perceived concerns regarding observed clinical outcomes under a total patient care system of organizing nursing care service delivery. The notion that outcomes may influence the implementation of redesign initiatives, suggests that the relationship is in fact bi-directional. The National Forum on Health (1997) spotlighted the obsoleteness of health care delivery structures that are insular and unresponsive to the views of interested stakeholders. The way we conceive of, and deliver health care services is being challenged

today to be more in tuned and responsive to all interests: personal, professional and corporate.

Action Research

It has been suggested in the literature that one of the deficiencies with nursing research is that the process of inquiry often does not set out to create change or intervention in the practice settings studied (Simmons, 1995). Action research has been argued to be an authentic methodology that allows nursing to advance the profession's scientific and practical tenets while fulfilling its social contract to effect change for public health (Rasmussen, 1997). Action research has been located under the new paradigm tradition of collaborative research in which scientific inquiry is not an esoteric activity indulged in by researchers in isolation of those who are studied. Rather, the researcher sacrifices detachment and independence so as to collaborate with the corporate, profession and client systems to produce valid are useable information for contextual change (Kappeli, 1988; Simmons, 1995). A requirement of action research is that the researcher as an interventionist must be both a competent scientist and professional practitioner (Kappeli, 1988).

Nursing professionals are increasingly identifying and responding to perceived organizational issues. No longer are bureaucratically imposed policies, programs and services accepted as status quo when they are deemed not to be contextually relevant or sustainable in addressing proliferating work life issues.

In 1995, a local unit-based initiative was undertaken to explore and resolve pressing work life concerns that were informally identified by members of the CCM ad hoc planning committee. These concerns were summarized to revolve around the five following core areas: (1) lengthened and costly patient hospital stays due to discharge planning failures, (2) repeated patient admissions for the same medical problem, (3) impoverished inter-

disciplinary care planning for the complexity of patients' medical issues, (4) fractured communication patterns among team members, patients and families, and (5) a diminished profile of the professional nursing practice role in tertiary care centres.

Action research provides a legitimate framework to guide the investigation of the outlined research problem, while highlighting a two year process undertaken at a grassroots level to introduce change in the tertiary care environment. The ultimate purpose of this action research is to provide valid conclusions about the effectiveness of the CCM. In turn, this knowledge will provide a theoretical and practical basis for practitioners, administrators, educators and researchers to use in advancing our understanding of the efficacies of similar work redesign models.

Chapter Summary

Today's climate in Canadian health care has been referred to as the era of "permanent whitewater," in which the turbulent forces of change in service organizations are swift, numerous, and unpredictable (Skelton-Green, 1995). Research that fails to leave the setting more responsive to these current changes has little meaning for a practice-based discipline such as nursing. The conceptualization of the research problem within the two chosen frameworks will ultimately allow for conclusions to be drawn regarding the effectiveness of the CCM. In turn, the study outcomes may inform professional practitioners, hospital administrators, nursing educators and academic researchers to effect changes in health care organizations at a grass roots level.

Chapter III

Review of the Literature

In this chapter, the literature is reviewed to provide a context for considering the research problem, and is presented under the following two main topic areas: (1) organizational systems of nursing care delivery; and (2) an overview of primary nursing research.

Organizational Systems of Nursing Care Delivery

There are five organizational systems of nursing care delivery that have predominated in Canadian hospitals since the 1920s: (1) functional assignment, (2) case method, (3) team nursing, (4) total patient care, and (5) primary nursing (Hegyvary, 1977; MacPhail, 1991). According to Brown (1991), the delivery of nursing care under the earliest systems of functional assignment and case method was organized according to technical tasks and in the latter case, to severity of patient illness. In the 1940s, team nursing emerged as a result of the nursing shortage that occurred during World War II as an organizational system by which fewer available registered nurses (RNs) co-ordinated the efforts of a diversified skill-mix of professional and non-professional staff (Sherman, 1990).

Criticisms were levelled at these three earlier organizational models for a perceived failure to adequately provide for professional autonomy, and for a "piece-meal" approach to patient care services (Roberts, 1980). These criticisms served as the impetus for the emergence of two alternative delivery systems, beginning in the late 1960s and 1970s: total patient care and primary nursing.

Total patient care was organized on the basis that an RN assumed total responsibility for patient care during the duration of the shift worked but, the patient assignment was variable dependent upon acuity levels (MacPhail, 1991). Total patient care was also

subjected to disapproval because of the fragmentation of patient care that resulted from differing RN shift assignments (Hegyvary, 1977).

As an alternative method, primary nursing was proposed to overcome the weaknesses of previous nursing systems. The concept of professional accountability was central to primary nursing (Hegyvary, 1977). Innovator Marie Manthey grounded the organization of primary nursing in a philosophy of patient-centred professional practice that possessed four essential design elements: (1) accountability; (2) autonomy; (3) co-ordination, and (4) comprehensiveness (Manley, 1990; Manthey & Kramer, 1970; Gilbert-Mayer & Bailey, 1979). These design elements were not found to be entirely present in competing organizational systems of nursing care delivery.

The reviewed literature suggests that there is no one preferred definition of primary nursing; although there is substantial consistency among nursing authors on the concept's attributes (Anderson & Choi, 1980). Watkins (1993) provides the following definition of primary nursing: A system whereby the registered nurse assumes 24 hour responsibility and authority for planning, implementing, evaluating and co-ordinating all aspects of care of an assigned group of patients from the time of their admission to discharge.

Today, functional, case method, team, total patient care, and primary nursing systems remain the preferred modalities of organizing professional nursing services within hospitals. In recent years, these models have undergone modification to incorporate aspects of case management. Hospital-based case management utilizes critical pathways within specific diagnostic related groups (DRG) as the mechanism by which existing models of nursing service delivery enhance continuity of patient care, co-ordinate resource allocation, and ensure timely patient discharge for the expressed purposes of cost containment (Bair, Griswold & Head, 1989; Cohen, 1991; Cronin & Maklebust, 1989; Knollmueler, 1989;

Lyon, 1993; McKenzie, Torkelson & Holt, 1989; Olivas, Del Togno-Armanasco, Erickson & Harter, 1989; Rheaume, Frisch, Smith & Kennedy, 1994; Stillwagon, 1989). Despite the wide variety in hospital-based case management models, all share similar features in regards to the role of nurse case managers (NCMs). Hospital-based NCMs are responsible for monitoring, co-ordinating, and allocating resource utilization for a caseload of patients from admission to discharge to ensure specified outcomes are met within predetermined time frames (Cronin & Maklebust, 1989; Lyon, 1993). NCMs are not usually direct-care providers, and their assigned caseload spans throughout a number of inpatient care units (Lyon, 1993).

Two Key Concepts of Primary-Based Nursing Systems

Based upon the preceding discussion, professional autonomy and co-ordination of patient care have been argued to be key elements in primary-based nursing models. The literature provides empirical support of the relevance of these organizational features on both staff satisfaction and patient care outcomes.

Professional autonomy is derived from specialized knowledge that permits initiative and independent decision-making to influence both the context and content of work-related activities (Schutzenhofer, 1987). Studies with sample sizes of 257 to 1,597 nurses have identified personal variables such as age, gender, work-related experience and education as influential on professional autonomy (Cameron, Horsburgh & Armstrong-Stassen, 1994; Hinshaw et al, 1987; McCloskey & McCain, 1988; Schutzenhofer, 1987; Sullivan-Havens, 1994). Among the various organizational features within hospitals cited; one's position, area of speciality, and rigidity of hierarchical structures have all been blamed for nurses' inabilities to control the content of their practice (McCloskey, 1990; Prescott, Dennis & Jacox, 1987; Roedel & Nystrom, 1988). Several researchers studied urban and rural hospital nurses (n=32 to 3,500) and found the inability to act upon one's knowledge and expert

judgement to control clinical practice was an influential determinant of nursing job dissatisfaction, psychological burnout, and propensity to leave the profession (Cameron et al, 1994; Hinshaw et al, 1987; Kramer & Schmalenberg, 1988; Sanger, Richardson & Larson, 1985; Wandelt, Peirce & Widdowson, 1981). Investigators have reported job autonomy to be ranked by samples of 150 to 279 staff nurses as the most important component of work satisfaction, although hospital-employed nurses have not been found to function as autonomously as their colleagues in community health nursing (Tarnowski-Goodell & Van Ess Coeling, 1994; Slavitt, Stamps, Piedmont & Haase, 1978; Wood, Tiedje & Abraham, 1986). Canadian researchers have further substantiated that professional autonomy is perceived by nurses as one internal dimension of organizations that contributes to quality work environments (Attridge & Callahan, 1990; McGirr & Bakker, 1995; O'Brien-Pallas & Bauman, 1992; Villeneuve et al, 1995).

Porter O'Grady (1987) has been an outspoken critic of rigid organizations with extensive policies, procedures and task-listed job descriptions designed to constrain the inherent behaviours of professional nursing practice. He strongly advocates for organizational models based on the principle of shared governance, which enhance the profession's practice, accountability, authority and autonomy in this new era of health care services delivery. Shared governance is defined as the arrangement by which practitioners not administrators, maintain control for practice, working conditions and professional affairs within the context of the agency's overall mission (Sullivan-Havens, 1994). Studies with sample sizes of 45 to 850 subjects have demonstrated that the restructuring of hospitals to provide staff nurses with the legitimate authority and accountability for nursing practice has increased job satisfaction, organizational commitment, professionalism, and staff retention (Bland-Jones, Stasiowski, Simons, Boyd & Lucas, 1993; Kovner, Hendrickson, Knickman & Finkler, 1994; Ling,

1996; Spence-Laschinger & Sullivan-Havens, 1996; Westrope, Vaughn, Bott & Taunton, 1995). The phenomenon of job satisfaction is complex and no one single factor can be isolated as the explanatory variable. However, the consistencies of the above findings have suggested that organizational systems which maximize professional autonomy will effect greater staff satisfaction and retention.

The second key feature of primary-based nursing systems is the co-ordination of patient care services. Co-ordination is defined as the mechanism by which a collaborative team of health care professionals develop a single patient care plan (Munson & Clinton, 1979). Singleton and Nail (1984) argue that the interfacing of nursing with a collaborative, multi-disciplinary team requires a nursing delivery system that ensures patient care is co-ordinated over the course of a hospital stay. Allred et al (1995) state that three organizational mechanisms are predominantly used by nurses to achieve co-ordination: (1) supervision of sub-ordinates; (2) informal verbal and oral communication; (3) formal team planning conferences. Empirical evidence has demonstrated that the extent to which co-ordination is achieved has dramatic effects on patient care outcomes. Knaus, Draper, Wagner and Zimmerman (1986) compared the outcomes of a convenience sample of 5,030 critical care patients at 13 different American hospitals. Multi-variate analysis demonstrated that when the type of specialized treatment was controlled for, the predicted and observed death rates of patients at three hospitals were most significantly influenced by the degree of co-ordination among professional staff ($p<.0001$). Baggs, Ryan, Phelps, Richeson, and Johnson (1992) prospectively studied a sample of 393 patients, medical residents and nurses in an urban intensive care unit. While controlling for severity of patient illness, the researchers found when nurses reported transfer decisions were co-ordinated and fully collaborative, the predicted rates of death or readmission fell from 16% to 5%. Two additional studies have

suggested that nurses, co-ordinating multi-disciplinary team discharge planning, do effect statistically significant reductions in patient length of stays. Marchette and Holloman (1986) conducted a retrospective review of 500 medical charts in a rural hospital setting. Using multi-variate analysis, the researchers compared patient diagnoses and found that the extensiveness and timing of discharge planning done by staff nurses was strongly correlated to an average decrease in patients' length of hospital stays by 0.8 days ($r = -.77$). Winstead-Fry et al (1995) prospectively evaluated the implementation of a nursing, clinical care co-ordinator program to co-ordinate inter-disciplinary discharge planning at a 188 bed regional hospital. Reported multi-variate analysis demonstrated a significant reduction of 0.6 mean hospital days for internal medicine patients, following implementation of the nursing initiative ($p>0.05$).

In an increasingly unpredictable, complex and rapidly changing practice environment, organizational systems of nursing care are being called upon to provide for professional autonomy and co-ordination of multi-disciplinary service delivery to effectively resolve patient care problems within finite time and resource parameters. The question remains: Is there empirical evidence to suggest that one system of nursing care is more responsive to meeting the current demands of patients and professionals?

Overview of Primary Nursing Evaluative Research

Since the inception of primary nursing in the late 1960s, the literature has been replete with descriptive reports touting the benefits of this nursing care delivery system in acute medical, surgical, critical care, psychiatric, and long-term care settings. Anecdotal evidence has reported primary nursing to enhance the following: (1) quality of patient care (Binnie,1987; Lathlean,1988); (2) continuity of patient care (Pritchard, 1993); (3) communication among staff and patients (Kaban & Thompson, 1990; McGreevy & Coates,

1980; Pritchard, 1993); (4) patient satisfaction (Thompson, 1990); (5) staff satisfaction (Lathlean, 1988; McMahon, 1989), and (6) to be cost effective (Binnie, 1987). Further anecdotal evidence suggests primary nursing reduces: (1) patient anxiety (Thompson, 1990); (2) nursing absenteeism (Kaban & Thompson, 1990); and (3) length of hospital stays (Lindsay, Woodrow & Lee, 1991).

Giovannetti (1986) undertook a comprehensive literature review of over 150 empirical works on primary nursing and found only 20% to be research based. This identified gap between descriptive literature and research on primary nursing was further substantiated in this chapter. For presentation, 36 research studies were included in the current literature review and grouped for discussion according to the major variables of interest under the following headings: (1) perceptual outcomes; (2) quality of care; and (3) costs of care. These studies included non-comparative and comparative studies of primary nursing.

Perceptual Outcomes of Primary Nursing

To date, the major focus of research on primary nursing has examined the satisfaction and perceptions of nurses and patients. MacGuire and Botting (1989) have suggested that given the basic tenets of primary nursing, the focus of research on the perceptual outcomes of nurses and patients is appropriate and easily amenable to psychometric evaluation. Synthesis of the reviewed literature has demonstrated a multiplicity of research designs, variables, instrumentation and settings utilized in examining this area. In only three studies were operational definitions provided of the independent variable: primary nursing (Haff, McGowan, Potts & Streekstra, 1988; Perala & Hentinen, 1989; Sella & Macleod, 1991). These variations may have partially accounted for the apparent inconsistencies in reported studies findings.

Non-Comparative Studies. Eight studies in all have evaluated the implementation of primary nursing on the perceptual outcomes of patients and/or nurses. Haff, McGowan, Potts and Streekstra (1988), and Sella and Macleod (1991) conducted non-experimental, one year long retrospective studies to evaluate the opinions of health care providers and consumers post-implementation of primary nursing. The settings included long-term and tertiary care facilities with convenience samples ranging from 37 to an undisclosed number of subjects, respectively. Data was collected using newly designed interview schedules and self-administered questionnaires. The researchers found the majority of patients, families, nurses and allied health care professionals perceived positive changes after the implementation of primary nursing. The most frequently improved areas noted by respondents were: (1) continuity of care, (2) communication, (3) awareness of patient issues, and (4) individualized, anticipatory care planning. Whether these differences were statistically significant was not disclosed.

Two ethnographic studies provided further evidence of the positive outcomes of primary nursing on the perceptual outcomes of staff (MacGuire & Botting, 1990; McCormack, 1992). These studies were conducted in medical-surgical settings six months and two years post-implementation of primary nursing. The researchers found primary nurses reported increased accountability and autonomy, greater satisfaction, and stronger personal ties with patients and families. However, Sella and Macleod (1991), MacGuire and Botting (1990) and McCormack (1992) reported that nursing staff perceived factors such as inadequate staffing patterns, insufficient time, heavy workloads, lack of teamwork and bureaucratic management styles as limitations to the fulfilment of the primary nursing role. The experimental pre- and posttest research designs of Blenkarn, D'Amico and Virtue (1988), and Perala and Hentinen (1989) provided concurrent findings related to nurses'

perceptions of primary nursing. Using convenience samples of 27 and 62 subjects respectively, bi-variate analysis demonstrated statistically significant increases in ratings of job satisfaction ($p<.001$), and greater opportunities to provide individualized, holistic patient care after the transition to primary nursing. On the other hand, the main disadvantage associated with the change to primary nursing was perceived to be the labour intensive nature of the primary nursing role. Perala and Hentinen suggested this may be due to the lack of organizational supports for primary nurses rather than the system of nursing care delivery.

Other researchers have found less favourable results. Blair et al (1982), and Ventura et al (1982) studied a convenience sample of 76 and 46 medical-surgical patients respectively, using experimental control designs. Bi-variate analysis of the data showed no statistically significant differences on pre- and post-test scores on the Risser Patient Satisfaction Scale. However, Blair et al found statistically significant reductions in patients' ratings of anxiety as measured by the State-Trait Anxiety Inventory ($p<.05$). In addition, Blair et al documented a statistically significant increase in nurses' ratings of satisfaction, measured on the Job Satisfaction/Job Dissatisfaction Questionnaire ($p<.02$). Ventura et al concluded from the limited variability in study scores that patient satisfaction may alone, be a relatively insensitive criterion to use in evaluating primary nursing.

Limitations in all of the previously discussed quantitative studies include: small sample size (Blenkarn et al, 1988; Ventura et al, 1982), undisclosed instrument reliability and validity (Blair et al, 1982; Blenkarn et al, 1988; Haff et al, 1988; Perala & Hentinen, 1989; Sella & Macleod, 1991) and lack of study group comparability (Blair et al, 1982; Blenkarn et al, 1988; Haff et al, 1988; Perala & Hentinen, 1989). The findings have suggested that the implementation of primary nursing may have an impact on specific aspects of professional practice (ie. communication). While these changes have been documented to enhance overall

staff satisfaction and reduce patient anxiety, global measures of patient satisfaction with nursing care have not been shown to be significantly improved with the implementation of primary nursing. The following section further explores perceptual outcomes by comparing primary nursing to other systems of nursing care delivery.

Comparative Studies. Fourteen studies in all have compared primary nursing with other modalities of nursing care on staff and patient satisfaction outcomes, producing mixed results. Ciske (1974) utilized a descriptive research design to compare staff satisfaction on primary units with team and functional units, while Reed (1988), Ryan, Poster, Auger, Davis and Ringdahl (1988), and Sellick, Russell and Beckmann (1983) utilized experimental designs. Interview schedules and questionnaires were administered to convenience samples of 23 to 415 subjects, with three studies having over 90 participants. Reed and Ryan et al utilized the Job Description Index while the other two studies used undisclosed tools to measure nursing job satisfaction. The settings included medical-surgical and psychiatric inpatient units. Bi-variate analysis demonstrated equivocal findings in all four of these studies. Primary nurses perceived their roles to provide greater opportunities for self-actualization (ie. accountability, independent judgement, and participatory decision-making). Staff nurses were found to have reported higher overall ratings of job satisfaction than compared to the functional and team units but, this difference was statistically significant at the $p<.05$ level in only one study (Ryan et al, 1988). In addition, Ciske found dramatically lower turnover rates on the primary versus team units but, failed to disclose whether this difference was statistically significant.

Ryan et al demonstrated that interdisciplinary staff were significantly more satisfied with professional communication and nursing services under the primary versus team system ($p<.05$). The major source of greater interdisciplinary staff satisfaction with primary nursing

was in relation to the perceived level of care planning co-ordination performed by nurses.

Carlsen and Malley (1981) found slightly less favourable results in their study of a convenience sample of 327 primary and team nurses. While these investigators reported higher overall ratings of satisfaction for primary nurses as measured by Munson and Heda's Job Satisfaction Tool, bi-variate analysis demonstrated that this difference was only statistically significant for single, older, diploma prepared nurses ($p<.05$). However, the equivalency between study groups was not addressed by the researchers.

Seven other researchers have not substantiated the above findings related to nursing satisfaction. Alexander et al (1981), Betz (1981), Giovannetti (1980), Joiner et al (1981), Parasuraman et al (1981), Steckel, Barnfather and Owens (1980), and Wilson and Dawson (1989) employed descriptive and experimental research designs with convenience samples of 51 to over 600 subjects from tertiary and long-term care settings. Bi-variate statistics were used to summarize data collated from a multitude of self-administered questionnaires and interview schedules. Six of these seven studies failed to find any statistically significant differences on reported levels of nursing job satisfaction among the various care modalities examined (Alexander et al, 1981; Betz, 1981; Joiner et al, 1981; Parasuraman et al, 1981; Steckel et al, 1980; Wilson & Dawson, 1989). One study reported lower levels of overall job satisfaction among primary versus team nurses as measured on the Job Description (Giovannetti, 1980). Contrary to earlier findings, Alexander et al (1981), Betz (1981), Giovannetti (1980), Joiner et al (1981), Steckel et al (1980), and Wilson and Dawson (1989) found either no differences or increased rates of nursing absenteeism and turnover on the primary study units in comparison to team, functional and total patient care units.

Three studies offer an explanation for these contradictory findings on job satisfaction (Betz, 1981; Joiner et al, 1981; Parasuraman et al, 1981). These researchers documented that

primary nurses have perceived their role responsibilities to accompany increased psychological job stress and work demands in the absence of an adequate compensatory system of wages, promotions, and acknowledgements. The investigators concluded that the intrinsic rewards nurses have reported to experience under primary nursing were overshadowed by general dissatisfaction with financial compensation, resulting in reduced overall ratings of job satisfaction, higher absenteeism, and increased turnover rates. Another plausible explanation can be offered. The notable lack of congruency in instrumentation, methodology, and failure to provide operational definitions of primary nursing may have accounted for the spurious findings within the literature.

Several of the aforementioned studies, in addition to the empirical works of Watson (1978), have examined patient perceptions and satisfaction outcomes among care modalities with equally contradictory results. Ciske (1974), Sellick et al (1983) and Watson (1978) found statistically significant greater ratings of patient satisfaction on primary units than compared to team and functional units on items related to the information-giving, empathy, individualized care, and discharge planning of nursing staff ($p<.05$). Ryan et al (1988) failed to find any reported differences in patient satisfaction between the primary and team nursing units These researchers suggested that the personal qualities of the practitioner may be the strongest determinant of patient satisfaction. Therefore, measures of patient satisfaction may be relatively insensitive to changes in the model of nursing care service delivery.

Researchers have also documented differences among various care modalities regarding the perceived importance, duration and frequency of nurse-patient contact. Giovannetti (1980) and Reed (1988) found team nurses view direct patient care time as more important than do primary nurses and subsequently, spent more time engaged in direct patient care activities. These findings have not been replicated by other researchers. Alexander et

al (1981), Hamera and O'Connell (1981), and Ryan et al (1988) found no statistically significant differences between study units in terms of the patterns of direct nursing activities, or the frequency and duration of nurse-patient contact. In contrast, Watson (1978) found primary patients reported statistically significant longer durations of contact with nurses ($p<.004$).

Thirteen of the fourteen aforementioned comparative studies are weakened by methodological issues arising from unreported instrument reliability and validity (Betz, 1981; Ciske, 1974; Giovannetti, 1980; Joiner et al, 1981; Reed, 1988; Ryan et al, 1988; Sellick et al, 1983; Steckel et al; 1980; Watson, 1978; Wilson & Dawson, 1989), non-addressed equivalency of study groups (Carlsen & Malley, 1981; Ciske, 1974; Hamera & O'Connell, 1981; Joiner et al, 1981; Parasuraman et al, 1981; Reed, 1988; Ryan et al, 1988; Watson, 1978; Wilson & Dawson, 1989), and small sample size (Hamera & O'Connell, 1981; Reed, 1988). In light of the non-comparative and comparative studies' findings, there is limited evidence to suggest that primary nursing does enhance professional autonomy and accountability and this is perceived by staff and patients to effect improvements in information-giving, continuity of individualized care, and discharge planning. As suggested earlier, global measures of nurse and patient satisfaction may be relatively insensitive criteria to evaluate primary nursing. However, given the numerous limitations and inconsistent findings, further empirical evidence is warranted before definitive conclusions can be drawn.

Quality of Primary Nursing Care

Non-Comparative Studies. The second category of research to be explored concerns the effect of primary nursing on the quality of nursing care outcomes. Two experimental studies examined the quality of nursing care pre- and post- implementation of primary nursing during a two year period (Culpepper, Richie, Sinclair, Stephens & Betz, 1986;

Eichorn & Frevert, 1979). The settings for data collection included 22 units in an adult tertiary care centre and two medical-surgical units in a pediatric hospital, with convenience samples that ranged from an undisclosed number of participants to 66, respectively.

Culpepper et al (1986) utilized the Medicus Nursing Productivity and Quality Assessment Tool (NPAQ) to compare pre- and post-implementation quality assurance mean scores and found a statistically significant increase ($p<.05$) across all primary study units on five of the eight minor categories measured: patient orientation during admission, wellness teaching, respect for privacy and civil rights, social courtesy, and communication The categories which improved but, failed to yield significant results included care planning co-ordination, documentation, and family inclusion. Extraneous variables such as average census, standard acuity, staff mix, and percentage of nurse vacant positions were not found to be predictive of quality scores.

Similar findings were reported in the earlier study conducted by Eichorn and Frevert (1979). These researchers compared mean pre- and post-implementation scores obtained on the Quality of Patient Care Scale (QualPaCS) and found statistically significant increases in quality of care ratings for pediatric medical and burn patients ($p<.01$). The increase in quality of care scores for surgical patients was not found to be significant. The researchers postulated that due to the longer hospitalization period of medical patients greater time is allowed for the primary nursing process to be reflected in the quality of care.

These studies suggest that the implementation of primary nursing may effect improvements in the quality of nursing care provided. However, Kent and Larson (1983) have suggested from their descriptive study that simply implementing a primary nursing structure may not in and of itself effect quality of care. Multiple regression analysis demonstrated a strong, positive correlation between the degree to which the standards of

primary nursing care are met and the quality of patient care ($p<.04$). In other words, when the primary nursing structure is functioning well, the quality of nursing care is improved. These researchers also found that when the quality of nursing care is high, nursing staff report greater job satisfaction ($p<.05$).

Comparative Studies. Ten comparative studies in total have produced mixed results related to the reported differences in the quality of nursing care among primary, team and total patient care units (Chavigny & Lewis, 1984; Daeffler, 1975; Felton, 1975; Gardner, 1991; Giovannetti, 1980; Hegedus, 1980; Howard, 1981; Shukla & Turner, 1984; Reed, 1988; Steckel et al. 1980). Sample sizes of the six previously unreported studies ranged from an undisclosed number to over 1,200 with four studies having enlisted over 50 subjects. The instrumentation for data collection was varied and included settings in pediatric, adult tertiary care, and long-term care centres.

Two experimental studies examined quality of nursing care through comparison of patients' reported omissions in nursing care received. Daeffler (1975) employed the Checklist for Patients Questionnaire, a self-administered, closed and open-ended questionnaire to compare a convenience sample of 82 medical-surgical patients' reported omissions in nursing care on primary and team units. Bi-variate analysis of collated data demonstrated that patients on the primary unit reported fewer numbers of omissions in nursing care but, this difference was only statistically significant on the item related to dietary needs ($p<.01$). Daeffler also reported that although patients on the primary versus team units were generally more satisfied with the nursing care received, only the category of information-giving was statistically significant ($p<.01$).

Shukla and Turner (1984) replicated the above study with a random sample of 60 patients while controlling for nursing competencies, staffing levels and workload variables.

These researchers failed to substantiate the earlier findings of Daeffler (1975). On three of the seven categories related to dietary needs, reaction to therapy, and contact with nurses, patients on primary units were found to have reported significantly more omissions in nursing care ($p<.05$). In addition, the investigators failed to find statistically significant differences in patient satisfaction ratings between units. The researchers asserted that the greater frequency of omissions on primary nursing units may be attributable to fewer support systems that are traditionally found in team nursing. With less opportunity to delegate responsibilities to others, primary nurses may inadvertently overlook or give a low priority to such items as the dietary needs of patients. In addition, the investigators failed to find statistically significant differences in patient satisfaction ratings between units. They concluded that nurses' clinical and interpersonal skills are more influential determinants of patient satisfaction than the structural organization of nursing care.

Felton (1975), Howard (1981), Reed (1988), and Steckel et al, (1980) conducted experimental studies using convenience and/or random samples of subjects to compare the quality of nursing care performance on primary units with team and total patient care units. The variety of instruments used to measure quality of care were: the Quality Patient Care Scale (QualPaCS) by Wandelt and Ager, 1970; the Slater Nursing Competencies Scale by Slater, 1967; and the Phaneuf Nursing Audit (PNA) by Phaneuf, 1974. Bi-variate data analysis indicated statistically significant higher ratings of the quality of nursing care and care plan documentation on the primary nursing units ($p<.05$). In contrast, Chavigny and Lewis (1984), Gardner (1991), and Hegedus (1980) found no significant differences between QualPaCS or PNA scores between primary, team and functional study units. Gardner (1991) controlled for nursing competencies across study units.

Nine of the ten above cited studies, suffer from limitations around a lack of comparability of staff and patients between units (Chavigny & Lewis, 1984; Daeffler, 1975; Felton, 1975; Giovannetti, 1980; Hegedus, 1980; Howard, 1981; Reed, 1988; Steckel et al, 1980), undisclosed instrument reliability and validity (Chavigny & Lewis, 1984; Daeffler, 1975; Hegedus, 1980; Howard, 1981; Reed, 1988; Shukla & Turner, 1984; Steckel et al, 1980), and small sample sizes (Daeffler, 1975; Felton, 1975; Reed, 1988). In addition, none of the studies offered conceptual definitions of the dependent variable. In light of the research inconsistencies, an explanation for these discrepancies is needed.

Several investigators have suggested from their findings that enhanced continuity of care under primary nursing results in greater quality of nursing care (Hegedus, 1980; Felton, 1975). However, Gardner (1991), and Shukla and Turner (1984) provided the evidence to suggest that the competencies of nursing staff, as opposed to the organization of nursing care delivery are the strongest determinant of the quality of patient care. The failure of eight studies to control for this variable is presumed to have created the spurious results.

The final question that will be addressed in this chapter is that of cost. Is there evidence that primary nursing is a cost-effective organizational system? This is the focus of the remaining area of examination.

Primary Nursing Care Costs

Comparative Studies. The one area of research on primary nursing that has historically received little attention is related to operating costs. Earlier research has eluded to increased staff orientation costs associated with primary nursing as a result of higher professional absenteeism and turnover rates (Betz, 1981). Three previously cited experimental studies conducted by Felton (1975), Gardner (1991) and Giovannetti (1980) compared "nursing costs per patient day" between primary and team nursing units. Costs per

patient day were calculated by dividing the average monthly total staff salary expenditures, by the average monthly unit occupancy rate. Giovannetti demonstrated the actual costs per patient day were higher on the primary study unit, although this difference was not reported to be statistically significant. In contrast, Felton and Gardner reported lower nursing costs per patient day on the primary versus team units. However, in all cases, the researchers failed to control for standard patient acuity when nursing costs were tabulated and compared. Chavigny and Lewis (1984) have substantiated that the influence of patients' diagnoses and need for physical care are more predictive of costs than the organization of nursing services.

Only four comparative studies had primary objectives aimed to investigate the question: is primary nursing more cost effective than team nursing? Among the numerous variables that Jones (1975) examined, the investigator compared length of stay, cost of hospitalization and post-operative complication rates among 19 randomly assigned renal transplant patients. The findings were dramatic. Primary patients experienced 21.8 fewer mean days of hospitalization and an average of 3.2 fewer post-operative complications which resulted in a total cost savings of $61,084 dollars. Other researchers have failed to demonstrate similar findings regarding post-operative complication rates (Chavigny & Lewis, 1984). Despite the positive results, Jones' (1975) study is plagued with methodological limitations regarding undisclosed statistical tests, a lack of study group comparability, and small sample size.

With similar results, Marram (1976) demonstrated that the six month total operating expenditures including salaries, supplies, and maintenance repairs on a medical-surgical primary unit was $7,780 dollars less than compared to a team unit. When the total operating expense of each unit was divided by the number of beds, the "per bed cost" was found to be $850 dollars less than the primary unit during the study period. The study units did not differ

on master staffing patterns, nor on patient and staff characteristics. Marram (1976) also found 261 hours less spent on the primary unit for "extra nursing hours" (overtime, sickness, vacation and holidays). Inservice and educational costs for staff was not found to differ between units. Osinski and Powals (1980) concluded from their study that compared total staffing costs of surgical units in 35 hospitals, an all RN primary study unit was comparable to the median costs incurred with all other nursing care modalities and staff mixes.

Although Marram (1976) attempted to match study units according to the usual levels of nursing care required, in no case was the actual daily patient acuity level controlled for in comparing nursing costs. This discrepancy prompted the following researchers to explore the effect of patient acuity on nursing care costs. Wolf, Lesic and Leak (1986) compared direct nursing care costs between primary and team medical-surgical units across specific patient diagnostic-related groups (DRGs). Direct nursing care costs were defined as total unit salary expenditures, inclusive of staff nurse and unlicensed assistive personnel costs. A convenience sample of 190 patients representing 34 DRGs was used with the average length of stay, acuity and direct nursing costs calculated according to each DRG. These investigators found a 28% greater acuity level across DRGs on the primary study unit with a corresponding 24% increase in patients' length of stay ($p<.01$). Despite these differences, Wolf et al did not find any statistically significant difference between units in direct nursing care costs per patient DRG . Multi-variate analysis demonstrated that patient acuity levels and length of stay were the strongest predictors of direct nursing care costs accounting for 76% of the variance in expenditures ($p<.05$).

Within the current context of health care reform, the viability of a newly implemented nursing care delivery system will undoubtedly be threatened without adequate empirical support to demonstrate cost-effectiveness. The above studies contribute to this

discussion but, further research is warranted.

Chapter Summary

The chapter has provided a context for the current study through examination of the empirical evidence on primary nursing. Primary nursing was founded upon the tenets of accountability, autonomy, co-ordination and comprehensiveness, and was designed to: (1) enhance the profession's decision-making authority, and (2) facilitate patients and families through a complex, fragmented and often confusing inter-disciplinary, hospital setting. The widespread acceptance of primary nursing has been largely based upon anecdotal reports as the empirical evidence has been demonstrated to be limited in number, and weakened by methodological limitations. Giovannetti (1986), and Thomas and Bond (1991) argue that with few exceptions primary nursing studies are flawed by failure to appropriately operationalize the independent variable, and by use of inadequate instrumentation. The studies reviewed in this chapter are neither conclusive nor convincing of a clear relationship between primary nursing and increased staff and patient satisfaction, quality of care, or cost-effectiveness. In view of the inconsistencies, the lack of substantive evidence, and the need for more rigorous research, the present study was undertaken to evaluate the implementation of a modified primary-based nursing system on two adult, acute-care medical units.

Chapter IV

Methodology

Introduction

Polit and Hungler (1995) have argued that the most essential methodological decision made by the researcher in conducting a study is in determining the research design: "From the research design, the essential form of the study is stipulated" (pp. 139). This chapter outlines the study design, sampling techniques, data collection methods, and data analysis plans undertaken by the researcher to evaluate the CCM model.

Design

A quasi-experimental design, non-equivalent control group with pre- and posttest was undertaken to measure the outcomes of the CCM model in comparison with a total patient care nursing system on the following dependent variables: patient, staff nurse, and interdisciplinary team member satisfaction; post-discharge patient rates of unscheduled physician visits, emergency room visits, and hospital readmissions; and total unit operating expenditures.

The goal of quasi-experimental research is to test cause and effect relationships when true experimentation is impractical (Massey, 1995). The hallmark properties of quasi-experimental research designs include the manipulation of an independent variable to observe for effect, in the absence of either a control group or random selection of subjects (Mateo & Kirchoff, 1991).

Quasi-experimental research designs have three notable strengths: (1) the design is conducive to the clinical setting, (2) engages the direct involvement of the researcher, and (3) allows for limited generalizability of the findings (Massey, 1996). On the other hand, the major weakness of this research design has been cited in the literature to be the investigator's

restricted ability to exercise "control of variance," or control over confounding factors due to the absence of randomization and/or a control group (Dempsey & Dempsey, 1992). As a result, the researcher cannot draw inferences about cause-and-effect with certainty; thus necessitating exploration of alternative explanations for study outcomes.

Setting

The study facility is a 800 bed, urban tertiary care medical centre located in Central Canada (The Centre's Annual Report, 1998). During the 1997 fiscal year, the facility admitted 20,609 adult patients (The Centre's Annual Report, 1998). The three units selected for this study are all clinical teaching units (CTUs) with a staff mix of registered nurses and unlicensed assistive personnel (UAPs) that serve an adult acute care medicine patient population. The units do not differ significantly related to bed capacity. The comparison unit has a total bed capacity of 36, and the experimental units have a total of 33 and 34 beds respectively (J. Malcolm, C. Rodstrom & S. Sanders, personal communication, December 17, 1997). The three study units each have 28 beds that are designated as clinical teaching beds with the remainder (5-8 beds) that are used for non-clinical teaching patient admissions.

The master staffing rosters of registered nurses on the three units are not substantially different, ranging from a total of 26 to 30 nurses per unit The comparison unit employs a total of 10 full-time, 14 part-time and 4 casual staff nurses (S. Saunders, personal communication, January 12, 1998). Of the two experimental units, Unit A employs a total of 11 full-time, and 15 part-time staff nurses; while Unit B employs 12 full-time and 18 part-time staff nurses (J. Malcolm & C. Rodstrom, personal communication, February 09, 1998). Neither of the experimental units employ casual staff nurses.

During the 1996 fiscal year, these three units collectively admitted or transferred in 2,583 patients, who accounted for a total of 49,573 inpatient hospital days, with an average

length of stay of 19.2 days (D. Wiebe, personal communication, January 13,1998). Of the total number of admissions and transfers received by the CTUs during the 1996 fiscal year, 1,682 patients or 65% were discharged home (D. Wiebe, personal communication, January 13, 1998). The typical age of adult patients hospitalized on these units is between 55 and 75 years of age (J. Malcolm, C. Rodstrom, & S. Sanders, personal communication, September 16, 1997). The five most common admitting diagnoses of the CTU general medical patient population during the 1996 fiscal year were: congestive heart failure, pneumonia, acute myocardial infarction, unstable angina, and acute cerebrovascular accident (D. Wiebe, personal communication, January 13,1998). Although these three units admit comparable patient populations in terms of age and medical diagnoses, the comparison unit is the only hospital ward to admit patients for the purposes of renal transplantation. Therefore, these patients were excluded from the study sample as outlined in the eligibility criteria.

Sample

A total sample size of 119 participants were enrolled in this study from three adult acute care medicine teaching units: patients (n=49); staff nurses (n=41); and interdisciplinary staff (n=29). The researcher obtained compiled lists of eligible staff nurses and interdisciplinary team members from the respective unit managers. The patient census list from each unit was reviewed in consultation with the unit managers to determine patient eligibility. From these lists, a combination of probability and non-probability sampling techniques were utilized to obtain the desired number of participants.

A non-probability sampling technique (eg. convenience sampling) was chosen for the practicality, feasibility and inexpense. However, this method is considered to be less rigorous and less representative than probability sampling methods (Brink & Wood, 1983). The inclusion of a probability sampling method (eg. simple random sampling) strengthened

the generalizability of the findings by controlling for the influence of extraneous variables (Cook & Campbell, 1979).

Pretest Phase. The pretest phase of data collection involved a simple random sample of 32 adult acute care medicine patients from the two experimental units (n=21) and one comparison unit (n=11). Four patients were later excluded for non-returned questionnaires, resulting in a final data-generating sample of 28 subjects or 88% of the original sample.

A total of 41 staff nurses were recruited into the study using a convenience sample from the experimental units (n=26), and a simple random sample from the comparison unit (n=15). The convenience sample of staff nurses recruited from the two experimental units were pre-designated as care co-ordinators (n=6) and associate nurses (n=20) for pilot implementation of the CCM. Three nurses were later dropped from the study due to non-returned questionnaires, resulting in a final study sample of 38 subjects or 93% of the original sample.

A convenience sample of 29 interdisciplinary team members was recruited from the experimental units (n=19) and the comparison unit (n=10). No subjects from this original sample were excluded during pretesting.

Posttest Phase. A fresh sample of 17 adult acute care medicine patients was recruited using a convenience sample from the two experimental units (n=7), and a simple random sample from the comparison unit (n=10). Due to patient death, three respondents were dropped from the study resulting in a final data-generating sample of 14 subjects or 82% of the original sample.

From the original pre-test samples, 82% of staff nurses (n=31), and 83% of interdisciplinary team members (n=24) participated in the posttest phase of data collection. The reasons for subject attrition during the posttest phase of data collection included leave

of absence from the workplace, job reassignment, and non-returned questionnaires.

Eligibility Criteria. For purposes of this study, the eligibility criteria for adult medicine patients were based upon the following: (1) mentally alert and oriented as evaluated by the researcher in consultation with nursing staff, (2) eighteen years of age or older, (3) able to read and write English, (4) admitted to the study unit at least 48 hours prior to recruitment; (5) admitted for any reason other than for renal transplantation, and (6) scheduled to return home, post-discharge. In addition to meeting the above criteria, adult patients recruited from the experimental units during posttesting were required to have been assigned a care co-ordinator during their hospital stay. Staff nurses from the two experimental units were pre-designated as either care co-ordinators (CC) or associate nurses prior to the pilot implementation of the program, based upon the criteria outlined in Chapter one. Therefore, the eligibility criteria for staff nurses from the comparison unit were as follows: (1) a minimum of one year of professional nursing experience, (2) employed on their present unit for at least six months, and (3) employed on either a full or part-time basis.

The study's eligibility criteria for interdisciplinary team members were outlined as the following: (1) employed in their present position for a minimum of six months at the study facility, (2) affiliated with one of the three study units for a period of at least 4 weeks, and (3) by virtue of their position, they were not limited to exclusively interacting with the nursing staff on any one of three inpatient study units.

Instrumentation

Three methods of data collection were selected by the researcher to be used in this study: structured questionnaires, interview schedule, and archival records. Questionnaires and archival records are noted for administrative efficiency in terms of time, energy and expense. However, the literature has cited the main disadvantage of questionnaires and interview

schedules is the reliance upon self-reporting data (Massey, 1995). Self-reporting data has historically been viewed with cynicism by researchers due to concerns related to "respondent bias" or the tendency for participants to favourably distort their answers (Solso & Johnson, 1984). Respondent biases are subtle and difficult to detect but, the literature has suggested carefully worded questions and an atmosphere of anonymity may successfully combat the problem (Polit & Hungler, 1995).

In total, eight instruments were utilized in this study for data collection: (1) Patient Information Form (Appendix H); (2) Patient Hospital Stay Rating Questionnaire (Appendix I); (3) Chart and Kardex Data Collection Form (Appendix J); (4) Telephone Follow-up Questionnaire (Appendix K); (5) Nurse Information Form (Appendix L); (6) Work Quality Index (Appendix M); (7) Interdisciplinary Collaboration Questionnaire (Appendix N) and (8) archival records. These instruments are briefly discussed below.

1. Patient Information Form (PIF): The literature has suggested that risk factors associated with both delayed hospital discharges and recidivism among medicine patients include gender, age, education, marital status, income, and discharge location (Fethke, Smith & Johnson, 1986; Naylor, 1990; Smith et al, 1988; Twaddle & Sweet, 1970). The eight-item, self-administered PIF ascertained information related to the above sociodemographic variables. The PIF was administered to patients to be completed on the day of their scheduled discharge.

2. Patient Hospital Stay Rating Questionnaire (PHSR): The 10-item, self-administered instrument was developed by Deatrich and Frost (1997) from the Quality Resource Department at the study facility (J. Deatrich, personal communication, October 02, 1997). The instrument was designed to measure patients' perceptions of how well aspects of their care were provided during their hospitalization (J. Deatrich, personal communication,

October 02, 1997). These aspects of hospital care included the technical skills, interpersonal manner, and information-giving of the staff. Content validity of the instrument was established through: (1) A review of the literature, and (2) a pilot study, with a sample of 30 adult patients that ascertained what aspects of hospital care were ranked as most important to them (J. Deatrich, personal communication, October 02, 1997). The PHSR Questionnaire continues to be pilot tested at the study facility in a variety of inpatient care settings. However, preliminary data analysis on 55 completed questionnaires has found the tool to be reliable, with a reported Cronbach's alpha of .89 (J. Deatrich, personal communication, December 12, 1997).

The PHSR Questionnaire was provided to patients to be completed on the day of their discharge home. Patients were instructed to read each statement carefully and then select with an X, their rating of the hospital care received. Patients' ratings were chosen on a Likert scale of (5) being excellent to (1) being rated as poor. All items were weighted equally in calculating a final PHSRQ score.

3. Chart and Nursing Kardex Data Collection Form: The risk for recidivism among general medicine patients has been found to be related to the following factors: (a) severity and chronicity of disease, and (b) discharge planning failures (Fethke et al, 1996; Naylor, 1990; Smith et al, 1988; Twaddle & Sweet, 1970). The literature has suggested that the principal medical diagnosis, surgery, comorbidity, age, length of stay, and nursing intensity measures are used as indicators of the severity and chronicity of illness (Bostrom & Mitchell, 1991; Horn, Chachich & Clopton, 1983; Mion, McClaren & Frengley, 1988). The study centre has utilized the PRN system (Progress for Research in Nursing) for measuring nursing intensity. The instrument lists over 214 indicators or tasks that nurses complete on behalf of patients during a 24-hour period. Indicators are rated on a daily basis and given a point value

that reflects the length of nursing care time required; each point is equated to five minutes. A higher point value indicates greater amounts of nursing care.

The 10-item tool was developed and used by the researcher to record information from the patients' charts and nursing kardexes pertaining to the above variables. In addition, the number and type of post-discharge health care services required by each patient were also recorded. Patient records were initially accessed and reviewed by the researcher following written consent by participants and again on the day of the patient's scheduled discharge.

4. Telephone Follow-Up Questionnaire (TFQ): The literature has estimated that 17% to 38% of all medicine patients will experience a non-elective readmission within six months of hospital discharge (Fethke et al, 1986; Land et al, 1982; Smith et al, 1985; Schroeder et al, 1979; Twaddle & Sweet, 1970). The TFQ was developed by Franklin, O'Rourke and Loschiavo in 1995 and utilized by staff nurses to evaluate the effectiveness of discharge planning on one of the experimental units (C. Franklin, personal communication, October 02, 1997). For this study, the original 36-item TFQ was modified by the researcher into a 12-item interview questionnaire to ascertain the frequency and reasons for patients' utilization of unscheduled physician visits, emergency room visits, and readmissions, three months post-hospital discharge. Each item was read by the researcher over the telephone, and patients were asked to respond "yes" or "no" to each statement. Completion of the interview schedule required approximately 10 minutes. There was no available data on the reliability or validity of the instrument.

5. Nurse Information Form (NIF): Research has found that the inability to act upon one's expert judgement, participate in institutional policy making, and obtain adequate monetary recognition were influential in determining overall nursing job dissatisfaction. (McCloskey, 1990; Prescott et al, 1987; Roedel & Nystrom, 1988; Wandelt et al, 1988).

Personal variables such as age, gender, work-related experience and education have been noted to influence perceptions of nursing job satisfaction (Hinshaw et al, 1987; McCloskey & McCain, 1988; Tarnowski-Goodell & Van Ess Coeling, 1994). The NIF was completed by subjects before, and four months post-implementation of the CCM.

6. Work Quality Index (WQI): The original 96-item WQI was developed by Peddicord-Whitley and Putzier (1994) based upon focus group discussions and an extensive literature review. The original WQI was piloted in a large tertiary care facility using a sample of 245 acute care nurses and subsequently distilled by the researchers into a 38-item, self-administered instrument. The WQI was designed to measure the satisfaction of nurses with the quality of their work and work culture on six subscales: work environment, autonomy, work worth, relationships, role enactment, and benefits. Peddicord-Whitely and Putzier (1994) reported the Cronbach's Alpha of the overall tool as .94; with the six subscales ranging in reported reliability of .72 to .89. Factor analysis was used to establish the construct validity of the WQI.

Participants completed this form prior to, and 4 months post-implementation of the CCM. Subjects were asked to indicate with a circle the corresponding number on a seven-point Likert scale, with (1) being extremely satisfied and (7) extremely dissatisfied, that best reflected their present level of satisfaction with each statement read. All items were weighted equally in arriving at a final WQI score.

7. Interdisciplinary Collaboration Questionnaire (ICQ): Joy and Malay (1992) designed and utilized this instrument in a study with an undisclosed sample size to elicit interdisciplinary staff evaluations of the outcomes of professional nursing practice in an inpatient care setting. The ICQ contains a total of seven-items that reflect several core concepts of primary-based, nursing care delivery systems. The specific components of

professional practice evaluated by the ICQ include collaboration, authority, accountability, and continuity of patient care. Bethel and Ridder (1994) used the ICQ with a sample size of nine in a replication study. However, there is no reported instrument reliability or validity available.

Respondents completed this form both pre- and four months post-implementation of the CCM. Subjects were asked to carefully read each statement. Two-items required the respondent to check the most appropriate answer. The five remaining items asked participants to circle the best answer to each statement. Of these five remaining items, four were scored on a three-point Likert scale: (1) always to (3) never. The last item asked respondents to rate the overall quality of nursing care on a four-point Likert scale: (1) excellent to (4) poor. The ICQ required approximately five minutes to complete.

8. Archival Records: The study facility has compiled monthly Cost Centre Summary Reports that contain the budgeted and actual operating expenditures on a unit-by-unit basis. Operating expenditures are itemized according to salaries, employee benefits, medical/surgical supplies, drugs, chemicals and lab supplies, linen services, repairs and maintenance, and office supplies. The Cost Centre Summary Reports provide monthly cost figures from the previous budget year for comparative purposes. These reports were collected from January 01 to September 31, 1998 from the two experimental units, and later used by the researcher to compare total unit operating expenditures from pre- to post-implementation of the CCM.

Data Collection Protocol

Final approval from the University of Manitoba, Faculty of Nursing, Ethical Review Committee was granted on December 09, 1997 (Appendix O). Access approval from the study facility was formally obtained on December 19, 1997 (Appendix P). Participant

accrual for the pre-test phase of data collection began on January 05, 1998. The pre-test phase of data collection terminated on February 23, 1998. Pilot implementation of the CCM model was initiated on the two experimental units on March 01, 1998. The posttest phase of data collection commenced four months later, on June 24, 1998 and was completed by September 30, 1998.

A third party utilized scripted dialogues to recruit patients (Appendix A), staff nurses (Appendix D), and interdisciplinary team members (Appendix F). The third party obtained verbal permission from potential participants for release of their names to the researcher. Patients who were agreeable to having their names released were left a written letter of invitation from the researcher that contained additional study information (Appendix B). The researcher met at a mutually convenient time with the patients, staff nurses and interdisciplinary team members to explain the project, and answer any questions. Patients were asked to sign a written consent form (Appendix C) to provide the researcher with access to their hospital chart and nursing kardex; and to secure permission to contact them 12 weeks post-discharge to participate in a telephone interview. Following a review of the appropriate written disclaimers, staff nurses and interdisciplinary team members were requested to provide verbal consent to participate in both the pre- and posttest phases of data collection (Appendices E & G).

Patient records were initially accessed once written consent was obtained, and the data recorded on the Chart and Nursing Kardex Data Collection. This form was completed in it's entirety on the final day of the patient's hospital stay. The researcher provided the Patient Information Form and the Patient Satisfaction Questionnaire to participants with the instruction that the forms be completed on the day of their hospital discharge. The length of time required by patients to complete these instruments was approximately ten minutes.

Twelve weeks post-discharge, the researcher contacted the patients to administer a telephone survey to ascertain the frequency, and reasons for unscheduled physician visits, emergency room visits, and/or hospital readmissions. This protocol was repeated as outlined above with a fresh sample of 17 patients during the posttesting phase of data collection.

Following verbal consent from staff members, the researcher administered the Nurse Information Form in January 1998, and the Work Quality Index in January and June of 1998 to participating staff nurses. Interdisciplinary team members completed the Interdisciplinary Collaboration Questionnaire in January and June of 1998. The time required by participants to complete these forms did not exceed 20 minutes on the two occasions.

Throughout the study period, monthly cost centre reports were provided by the unit managers from the two experimental units at the researcher's request. These reports were stored and analysed at the end of the study to compare pre- and post-implementation total unit operating expenditures.

Data Analysis

Quantitative methods of data analysis were used in this study. The computer software chosen for data analysis was the Statistical Package for the Social Sciences. Preliminary data analysis examined the data for skewness, kurtosis, and outliers. Descriptive statistics were used to summarize the samples of patients and staff nurses according to sociodemographic variables, and to summarize the means, medians, standard deviations and variances of the items on the questionnaires. Cronbach's Alpha Coefficient assessed the internal consistency reliability of the Patient Hospital Stay Rating Questionnaire and the Work Quality Index.

Determination of two or three group comparisons was dependent upon the sample sizes, and homogeneity of the experimental groups of patients, nurses and interdisciplinary staff on demographic variables and satisfaction measures. Non-parametric statistical testing

was conducted based upon the results of the preliminary screening of the data. The Mann-Whitney U and Kruskal-Wallis Tests compared differences between sample groups in the mean rank ordering of pre- and posttest satisfaction scores. The Mann-Whitney U and Friedman Tests were used to test for statistically significant differences within sample groups in the mean rank satisfaction scores from baseline to posttest measures. The Chi Square test was planned to be utilized to examine the relationship between categorical variables, such as patient rates of post-discharge health care service utilization and the type of nursing care delivery system. The level of statistical significance was set at the $p<.05$ level.

For purposes of this study, total unit operating expenditures for the two experimental units were calculated for a nine month period inclusive of the dates January 01 to September 31 for the 1997 and 1998 budget years. The actual budget costs for each experimental unit within the two major cost categories of non-medical base salaries and medical/surgical supplies for 1997 and 1998 were tabulated and compared. The percentage of change in total unit operating expenditures between the 1997 and 1998 budget years was calculated according to the following formula:

$$\frac{\text{Time 2 Number - Time 1 Number}}{\text{Time 1 Number}} \times 100 = \text{Percent of Change.}$$

The total unit operating costs were divided by the total number of patient admissions and transfers in during each budget year to render an average cost per patient on each unit. The percentage of change for each unit in average costs per patient from the 1997 to 1998 budget years were then compared.

Ethical Considerations

Patients, staff nurses and interdisciplinary team members were informed of the voluntary nature of their participation, and the right to withdraw from the study at anytime. Assurances were provided that non-participation would in no way influence: (1) the care

patients received during their hospitalization, nor (2) the employment status of staff nurses and interdisciplinary team members.

Written consent for study participation and permission to access medical information was obtained from patients. Verbal consent for participation was secured from staff nurses and interdisciplinary team members. Copies of the signed patient consent forms were stored in a locked drawer, accessible only to the researcher. All participants were assured of confidentiality. Information forms and questionnaires were coded by number and not by name to ensure the anonymity of respondents. The only known risk to study participants was a perceived loss of privacy. There was believed to be no direct benefit incurred by respondents as a result of their study participation.

Identifying data was stored separate from participant responses and only the researcher and her thesis chair had access to this information. The data was intended to be stored in locked drawers for seven years and then destroyed. All subsequent written or oral reports that emanated from this study were based solely upon aggregated data.

Ethical consideration of the researcher's position of power over potential participants arose as result of the researcher's involvement as: (1) a member the CCM planning committee; (2) a part-time general duty registered nurse on one of the experimental units; and (3) a part-time Clinical Education Facilitator, whose teaching assignment was within the study facility. The process of planning an useful evaluation requires rapport, trust, and frequent interaction with the program administrators (Herman, Lyons-Morris & Fitz-Gibbon, 1987). However, these authors argue that internal evaluators must devise viable means to maintain the integrity, objectivity, and an appropriate sense of differentiation. Therefore, the researcher was voluntarily compelled to take numerous measures to circumvent the perceived position of power vis-a-vis the participants: (1) participation in CCM planning committee

meetings was suspended during the duration of the study, (2) involvement on the study unit during pre- and post data collection periods was confined exclusively to research endeavours, (3) assignment of clinical teaching was confined to a non-study unit within the facility, (4) recruitment of participants was performed by a third party to minimize perceived or actual coercion, and (5) patients previously known to the researcher were excluded from the study.

Chapter Summary

"Step-by-step chain of reasoning" is a term that has been used to characterize the process of scientific inquiry that proceeds from the problem statement to the communication, and utilization of the study findings (Dempsey & Dempsey, 1992). This chapter has outlined one facet within this systematic process: the research methodology.

The essential features of quasi-experimental designs have served to probe causal hypotheses about substantive issues in both basic and applied research (Cook and Campbell, 1979). The design typology utilized in this study is considered appropriate given the problem statement, and the design's amenability to limitations within the clinical setting. The intent of this research methodology is to achieve confidence in the genuineness and interpretability of the effect of the CCM model on the dependent variables of interest. In the end, the generation of this knowledge will be directly relevant, usable and applicable within the professional practice setting.

Chapter V

Presentation of the Findings

The presentation and statistical analysis of the study's findings have been organized under the following main headings:

I. Description of Sample Characteristics:

(1) Patients

(2) Nurses

(3) Interdisciplinary staff

II. Statistical Analysis of Pretest Findings:

(1) Patient satisfaction with hospital stay.

(2) Patient utilization of post-discharge health care services.

(3) Nurse job satisfaction.

(4) Interdisciplinary staff satisfaction with nursing care delivery.

III. Statistical Analysis of Posttest Findings

(1) Patient satisfaction with hospital stay.

(2) Patient utilization of post-discharge health care services.

(3) Nurse job satisfaction.

(4) Interdisciplinary staff satisfaction with nursing care delivery.

IV. Statistical Analysis of Pre- and Posttest total unit operating expenditures.

The study samples of patients, nurses, and interdisciplinary staff will be discussed collectively, and as groups in relation to demographic and outcome variables.

I. Description of Sample Characteristics

1. Patient Demographics

Pretest Sample. The random sample of patients (N=32) recruited into the pre-test phase of the study was comprised of equal numbers of men [n=16(50%)] and women [n=16(50%)]. The mean age of respondents was 56.81 years, with a range of 18 to 78 years (Mdn=58.50, SD=15.50). The majority were reported to be married [n=16(50%)], having attained less than high school education [n=11(34%)]. Eighty-one percent of the total sample (n=26) resided in an urban centre, versus a rural or northern community. The largest proportion of subjects [n=13(41%)] reported their annual gross income as less than $15,000. The demographic characteristics of the patient sample are illustrated in Table 1.

Table 1

Demographic Characteristics of the Pretest Patient Sample

Demographic Characteristics	Total Sample (N=32)		(Experimental Units) Unit A (N=11)		Unit B (N=9)		Comparison Unit (N=8)	
	N	%	N	%	N	%	N	%
Gender								
Male	16	50%	5	45.5%	5	55.5%	3	37.5%
Female	16	50%	6	54.6%	4	44.5%	5	62.5%
Column Total	32	100%	11	100%	9	100%	8	100%
Age								
18-27	1	3.1%	0	--	0	--	1	12.5%
28-37	2	6.2%	0	--	1	11.1%	1	12.5%
38-47	3	9.4%	1	9.1%	1	11.1%	1	12.5%
48-57	5	15.6%	2	18.2%	2	22.2%	1	12.5%
58-67	9	28.2%	6	54.5%	1	11.1%	2	25.0%
68-77	6	18.8%	0	--	4	44.5%	2	25.0%
78-87	2	6.2%	2	18.2%	0	--	0	--
Unknown	4	12.5%	--	--	--	--	--	--
Column Total	32	100%	11	100%	9	100%	8	100%

Table 1 Continued

Demographic Characteristics	Total Sample (N=32)		(Experimental Units) Unit A (N=11)		Unit B (N=9)		Comparison Unit (N=8)	
	N	%	N	%	N	%	N	%
Marital Status								
Never Married	6	18.8%	0	--	2	22.2%	3	37.5%
Common Law	1	3.1%	1	9.1%	0	--	0	--
Married	16	50.0%	8	72.7%	3	33.3%	3	37.5%
Divorced	6	18.8%	2	18.2%	3	33.3%	0	--
Widowed	2	6.2%	0	--	1	11.2%	1	12.5%
Unknown	1	3.1%	0	--	0	--	1	12.5%
Column Total	32	100%	11	100%	9	100%	8	100%
Level of Education								
< High School	11	34.4%	5	45.4%	2	22.2%	4	50.0%
High School	7	21.9%	3	27.3%	2	22.2%	2	25.0%
Technical/Trade	5	15.6%	2	18.2%	2	22.2%	1	12.5%
Some University	3	9.4%	0	--	3	33.4%	0	--
University Grad	1	3.1%	0	--	0	--	1	12.5%
Unknown	5	15.6%	1	9.1%	0	--	0	--
Column Total	32	100%	11	100%	9	100%	8	100%
Residence								
City	26	81.2%	8	72.7%	6	66.7%	8	100%
Town	3	9.4%	1	9.1%	2	22.2%	0	--
Rural/Northern	3	9.4%	2	18.2%	1	11.1%	0	--
Column Total	32	100%	11	100%	9	100%	8	100%
Annual Income								
<$15,000	13	40.6%	5	45.4%	4	44.5%	4	50.0%
$15,000-$19,999	3	9.4%	1	9.1%	1	11.1%	1	12.5%
$20,000-$24,999	1	3.1%	0	--	1	11.1%	0	--
$25,000-$29,999	1	3.1%	1	9.1%	0	--	0	--
$30,000-$34,999	2	6.2%	0	--	1	11.1%	1	12.5%
$35,000-$39,999	0	--	0	--	0	--	0	--
>$40,000	2	6.2%	0	--	0	--	2	25.0%
Unknown	10	31.4%	4	36.4%	2	22.2%	0	--
Column Total	32	100%	11	100%	9	100%	8	100%

The length of hospital stay for the entire sample ranged from five to 76 days, with a mean of 17.38 days (Mdn=12.50, SD=14.73). The three most common admitting medical diagnoses among respondents were congestive heart failure [n=5(16%)], pneumonia [n=5(16%)], and acute renal failure [n=3(9%)]. A total of 26 patients (81%) had a past history of the current admitting medical diagnosis. Only 12.5% of the total sample of patients (n=4) underwent a surgical procedure during their hospital stay. These surgical procedures

included arteriovenous fistula insertion; toe amputation and debridement of foot ulcer; bowel resection; and carpal tunnel repair. Admitting medical diagnoses and frequencies of surgical interventions among the patient sample are displayed in Table 2.

The level of patient acuity, or severity of illness was measured by PRN points. Admission PRN points for the entire sample ranged from 60 to 250 with a mean of 110.63 points (Mdn=104.50, SD=39.33). At the time of discharge, the mean PRN points for the patient sample was 79.13 with a range of 46 to 114 points (Mdn=80.00, SD=16.19).

Table 2

Admitting Medical Diagnoses and Surgical Interventions

Patient Characteristics	Total Sample (N=32)		(Experimental Units) Unit A (N=11)		Unit B (N=9)		Comparison Unit (N=8)	
	N	%	N	%	N	%	N	%
Admitting Diagnoses								
Congestive Heart Failure	5	15.6%	2	18.2%	1	11.1%	2	25.0%
Pneumonia	5	15.6%	3	27.2%	0	--	1	12.5%
Acute Renal Failure	3	9.4%	1	9.1%	1	11.1%	0	--
Cancer	2	6.2%	0	--	1	11.1%	1	12.5%
Pulmonary Embolus	2	6.2%	0	--	1	11.1%	1	12.5%
COPD	2	6.2%	1	9.1%	1	11.1%	0	--
Crohn's/Colitis	2	6.2%	1	9.1%	1	11.1%	0	--
Diabetic Ketoacidosis	2	6.2%	2	18.2%	0	--	0	--
Unstable Angina	2	6.2%	0	--	1	11.1%	1	12.5%
Hypersensitivity	2	6.2%	1	9.1%	1	11.1%	0	--
Adb pain NYD	1	3.2%	0	--	0	--	1	12.5%
Cystic Fibrosis	1	3.2%	0	--	0	--	1	12.5%
Asthma	1	3.2%	0	--	0	--	0	--
Seizures	1	3.2%	0	--	0	--	0	--
Diabetic Foot Ulcer	1	3.2%	0	--	1	11.1%	0	--
Column Total	32	100%	11	100%	9	99.9%	8	100%
Past History of the Admitting Diagnosis								
Yes	26	81.2%	7	63.6%	9	100%	8	100%
No	6	18.8%	4	36.4%	0	--	0	--
Column Total	32	100%	11	100%	9	100%	8	100%
Surgical Procedure								
Yes	4	12.5%	1	9.1%	3	33.3%	0	--
No	28	87.5%	10	90.9%	6	66.7%	8	100%
Column Total	32	100%	11	100%	9	100%	8	100%

Of the total sample, 28% of patients (n=9) received community-based health care services during the last two weeks, prior to their hospital admission. The most frequent pre-admission services were: Victorian Order of Nurses [n=2(22%)], Home Care [n=2(22%)], or multiple services [n=2(22%)]. At the time of discharge, 44% of the total sample (n=14) were to receive community-based health care services with the majority of these patients requiring multiple services [n=8(57%)]. Multiple services was defined as two or more types of health care services. The "other" category under post-discharge services refers to subjects who had been transferred from the study facility to rural health care institutions for further convalescence prior to home discharge. Pre-admission and post-discharge community-based services received by the patient sample are summarized in Table 3.

Table 3

Community-Based Health Care Services

Type of Health Care Services	**Total Sample (N=32)**		**(Experimental Units)**					
			Unit A (N=11)		**Unit B (N=9)**		**Comparison Unit (N=8)**	
	N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Pre-Admission Services								
VON	2	22.2%	1	50.0%	1	20.0%	0	--
Home Care	2	22.2%	0	--	1	20.0%	1	50.0%
Mental Health Worker	1	11.1%	1	50.0%	0	--	0	--
Social Worker	1	11.1%	0	--	1	20.0%	0	--
Dialysis	1	11.1%	0	--	0	--	1	50.0%
Multiple Services	2	22.2%	0	--	2	40.0%	0	--
Column Total	9	99.9%	2	100%	5	100%	2	100%
Post Discharge Services								
Home Oxygen	1	7.1%	1	20.0%	0	--	0	--
VON	1	7.1%	1	20.0%	0	--	0	--
Home Care	2	14.3%	0	--	1	20.0%	1	33.3%
Multiple Services	8	57.2%	2	40.0%	3	60.0%	2	66.7%
Other	2	14.3%	1	20.0%	1	20.0%	0	--
Column Total	14	100%	5	100%	5	100%	3	100%

Although 32 patients were recruited into the study, four subjects were later dropped due to non-returned satisfaction questionnaires, resulting in a final sample of 28 subjects. The

respondents who failed to complete the pretest phase of the study were mostly men [n=3(75%)], married [n=2(50%)], and all resided within an urban centre [n=4(100%)]. Using the Mann-Whitney U Test, no statistically significant differences were found between these subjects and the remaining data-generating sample in regards to the level of patient acuity, length of stay, or age.

Comparative analysis by study units revealed a relatively homogenous group of patients (N=28) on several of the sociodemographic variables. However, statistically significant differences were found in relation to respondents' length of hospital stays, and acuity levels. Using the Kruskal-Wallis Test, a statistically significant difference at the $p<.05$ level was found in patient length of stay between Experimental Units A and B. The mean length of hospital stay on Unit A was 12.27 with a range of five to 29 days (Mdn=10.00, SD=7.55), compared with a mean of 23.11 days and a range of nine to 43 days on Unit B (Mdn=19, SD=11.37). The comparison unit's length of stay varied from five to 76 days, with a mean of 19.88 days (Mdn=12.50, SD=23.15).

In addition, a statistically significant lower level of patient acuity ($p<.01$) was found on the comparison unit (M=83.00, Mdn=85.00, SD=15.04) in relation to the experimental units: Unit A (M=112.73, Mdn=106.00, SD= 17.91); and Unit B (M=122.33, Mdn=112.00, SD=41.70). Consistent with the above finding, discharge PRNs were significantly higher ($p<.01$) on the experimental units A (M=90.09, Mdn=90.00, SD=10.43) and B (M=84.00, Mdn=83.00, SD=11.61) when analysed against the comparison unit (M=59.75, Mdn=57.50, SD=11.39).

Posttest Sample. A total of seventeen patients were recruited during the posttest phase of the study using a combination of probability and non-probability sampling techniques. The sample was comprised of 10 men (59%) and seven women (41%), ranging

in ages from 30 to 84 years (M=61.30; Mdn=65.00, SD=16.24). The majority resided in an urban centre [n=13(77%)] with the largest proportion reported to be either widowed [n=6(35%)] or married [n=4(24%)]. Of the total sample, 53% (n=9) reported having attained less than high school education, with 35% (n=6) of respondents having reported their annual gross income as less than $15,000. The demographic characteristics of the patient sample are illustrated in Table 4.

Table 4

Demographic Characteristics of the Posttest Patient Sample

Demographic Characteristics	Total Sample (N=17)		Experimental Units (N=7)		Comparison Unit (N=10)	
	N	%	N	%	N	%
Gender						
Male	10	58.8%	4	57.1%	6	60.0%
Female	7	41.2%	3	42.9%	4	40.0%
Column Total	17	100%	7	100%	10	100%
Age						
18-27	0	--	0	--	0	--
28-37	1	5.9%	0	--	1	10.0%
38-47	2	11.8%	2	28.6%	0	--
48-57	1	5.9%	0	--	1	10.0%
58-67	5	29.4%	2	28.6%	3	30.0%
68-77	4	23.5%	0	--	4	40.0%
78-87	4	23.5%	3	42.8%	1	10.0%
Column Total	17	100%	7	100%	10	100%
Marital Status						
Never Married	3	17.6%	2	28.6%	1	10.0%
Common Law	1	5.9%	1	14.3%	0	--
Married	4	23.5%	1	14.3%	3	30.0%
Separated	2	11.8%	1	14.2%	1	10.0%
Divorced	1	5.9%	0	--	1	10.0%
Widowed	6	35.3%	2	28.6%	4	40.0%
Column Total	17	100%	7	100%	10	100%

Table 4 continued

Demographic Characteristics	Total Sample (N=17)		Experimental Units (N=7)		Comparison Unit (N=10)	
	N	%	N	%	N	%
Level of Education						
< High School	9	52.9%	5	71.4%	4	40.0%
High School	3	17.6%	1	14.3%	2	20.0%
Technical/Trade	2	11.8%	1	14.3%	1	10.0%
Some University	2	11.8%	0	--	2	20.0%
University Grad	1	5.9%	0	--	1	10.0%
Column Total	17	100%	7	100%	10	100%
Residence						
City	13	76.5%	7	100.0%	6	60.0%
Town	3	17.6%	0	--	3	30.0%
Rural/Northern	1	5.9%	0	--	1	10.0%
Column Total	17	100%	7	100%	10	100%
Annual Income						
<$15,000	6	35.3%	4	57.1%	2	20.0%
$15,000-$19,999	2	11.8%	1	14.3%	1	10.0%
$20,000-$24,999	1	5.9%	0	--	0	--
$25,000-$29,999	0	--	0	--	1	10.0%
$30,000-$34,999	1	5.9%	0	--	1	10.0%
$35,000-$39,999	0	--	0	--	0	--
>$40,000	0	--	0	--	0	--
Unknown	7	41.1%	2	28.6%	5	50.0%
Column Total	17	100%	7	100%	10	100%

The length of hospital stay for the entire posttest sample ranged from two to 209 days with a mean average length of stay of 40.65 days (Mdn=21.00, SD=50.07). The four most common admitting medical diagnoses that accounted for 47% (n=8) of the total sample were pneumonia, acute renal failure, diabetic foot ulcers, and rhabdomyolosis. A total of 11 patients (65%) had a history of the current admitting medical diagnosis. Eighteen percent (n=3) of the total sample underwent a surgical procedure during their hospital stay which included surgical debridement of a foot ulcer, open liver biopsy, and surgical reduction of a fracture. Admitting medical diagnoses and frequencies of surgical interventions among the posttest patient sample are displayed in Table 5 (pp. 65).

Table 5

Admitting Medical Diagnoses and Surgical Interventions

Patient Characteristics	Total Sample (N=17)		Experimental Units (N=7)		Comparison Unit (N=10)	
	N	%	N	%	N	%
Admitting Diagnoses						
Diabetic Foot Ulcer	2	11.7%	1	14.3%	1	10.0%
Pneumonia	2	11.7%	0	--	2	20.0%
Acute Renal Failure	2	11.7%	0	--	2	20.0%
Rhabdomyolosis	2	11.7%	2	28.5%	0	--
Chronic Renal Failure	1	5.9%	0	--	1	10.0%
COPD	1	5.9%	0	--	1	10.0%
Congestive Heart Failure	1	5.9%	1	14.3%	0	--
GI Blood	1	5.9%	0	--	1	10.0%
Sepsis	1	5.9%	1	14.3%	0	--
Hyponatremia	1	5.9%	0	--	1	10.0%
Fracture	1	5.9%	1	14.3%	0	--
Pancreatitus	1	5.9%	1	14.3%	0	--
Cerebral Vascular Accident	1	5.9%	0	--	1	10.0%
Column Total	17	99.9%	7	100%	10	100%
Past History of the Admitting Diagnosis						
Yes	11	64.7%	4	57.1%	7	70.0%
No	6	35.3%	3	42.9%	3	30.0%
Column Total	17	100%	7	100%	10	100%
Surgical Procedure						
Yes	3	17.6%	2	28.6%	1	10.0%
No	14	82.4%	5	71.4%	9	90.0%
Column Total	17	100%	7	100%	10	100%

The average level of patient acuity among the total posttest sample at the time of admission was 98.29 points (Mdn=92.00, SD=28.14) with a range of 62 to 153 points. At the time of discharge, PRN points ranged from 50 to 122 points with a mean of 79.23 points (Mdn=68.00, SD=24.55).

Of the total sample, 47% (n=8) of patients received community-based health care services during the two weeks preceding their hospital admission. These preadmission services were most frequently provided by Home Care [n=4(50%)]. At the time of discharge, 55% (n=9) of the sample required community-based health care services with the majority to receive multiple services [n=5(56%)]. The "other" category refers to subject(s) transferred

from the study facility to a long term care facility. Pre-admission and post-discharge community-based services are summarized in Table 6.

Table 6

Community-Based Health Care Services

Type of Health Care Services	Total Sample (N=17)		Experimental Units (N=7)		Comparison Unit (N=10)	
	N	%	N	%	N	%
Pre-Admission Services						
VON	1	12.5%	0	--	1	25.0%
Home Care	4	50.0%	2	50.0%	2	50.0%
Mental Health Work.	0	--	0	--	0	--
Social Worker	1	12.5%	1	25.0%	0	--
Dialysis	0	--	0	--	0	--
Multiple Services	2	25.0%	1	25.0%	1	25.0%
Column Total	8	100%	4	100%	4	100%
Post Discharge Services						
Home Oxygen	1	11.1%	0	--	1	20.0%
VON	1	11.1%	0	--	1	20.0%
Home Care	1	11.1%	0	--	1	20.0%
Multiple Services	5	55.6%	3	75.0%	2	40.0%
Other	1	11.1%	1	25.0%	0	--
Column Total	9	100%	4	100%	5	100%

Due to patient death, three of the 17 patients recruited into the posttest phase of the study failed to complete study participation. The Mann-Whitney U Test failed to find any statistically significant differences between these subjects and the remaining data-generating sample in regards to patient acuity levels, length of stay, or age.

Comparative analysis by study units revealed a relatively homogenous group of patients ($N=14$) on almost all of the sociodemographic variables, with the exception of patient acuity levels. A statistically significant higher level of patient acuity was found on the experimental versus comparison unit(s) at both the time of hospital admission and discharge ($p<.01$).

2. Nurse Demographics

Preliminary analysis of the demographic variables for the total sample of staff nurses (N=38) revealed that almost entirely, these subjects were women [n=37(97%)]. The majority of respondents were reported to be married [n=22(58%)], having completed some post-secondary education [n=23(61%)]. The mean age of staff nurses was 35.66 years with a range of 22 to 50 years (Mdn=34.50, SD=7.63). The length of time of professional employment ranged from one to 27 years, with a mean of 10.13 years (Mdn=9.50, SD=5.38). The mean number of years that the sample of staff nurses had been employed on the study units was 8.17 years with a range of one to 22 years (Mdn= 8.25, SD=4.23). The demographic characteristics of the nurse sample are outlined in Table 7.

Table 7

Demographic Characteristics of the Nurse Sample

Nurse Demographics	Total Sample (N=38)		(Experimental Units) Unit A (N=11)		Unit B (N=12)		Comparison Unit (N=15)	
	N	%	N	%	N	%	N	%
Gender								
Male	1	2.6%	0	–	0	–	1	6.7%
Female	37	97.4%	11	100%	12	100%	14	93.3%
Column Total	38	100%	11	100%	12	100%	15	100%
Marital Status								
Never Married	7	18.4%	1	9.1%	2	16.7%	4	26.7%
Common Law	6	15.8%	1	9.1%	2	16.7%	3	20.0%
Married	22	57.9%	9	81.8%	6	50.0%	7	46.7%
Separated	1	2.6%	0	–	0	–	1	6.6%
Divorced	2	5.3%	0	–	2	16.6%	0	–
Widowed	0	–	0	–	0	–	0	–
Column Total	38	100%	11	100%	12	100%	15	100%
Education								
RN Diploma	7	18.5%	2	18.2%	1	8.3%	4	26.7%
Some University	23	60.5%	7	63.6%	7	58.4%	10	66.7%
BN Graduate	7	18.4%	2	18.2%	3	25.0%	1	6.6%
Postgraduate	1	2.6%	0	–	1	8.3%	0	–
Column Total	38	100%	11	100%	12	100%	15	100%

Table 7 Continued

Nurse Demographics	Total Sample (N=38)		(Experimental Units) Unit A (N=11)		Unit B (N=12)		Comparison Unit (N=15)	
	N	%	N	%	N	%	N	%
Age								
20-25	2	5.3%	0	--	0	--	2	13.3%
26-30	11	28.9%	1	9.1%	6	50.0%	4	26.7%
31-35	9	23.7%	6	54.5%	1	8.3%	2	13.3%
36-40	2	5.3%	1	9.1%	0	--	1	6.7%
41-45	8	21.0%	1	9.1%	4	33.4%	3	20.0%
46-50	6	15.8%	2	18.2%	1	8.3%	3	20.0%
Column Total	38	100%	11	100%	12	100%	15	100%
Years of Nursing Employment								
1-5	4	10.5%	0	--	2	16.7%	2	13.3%
6-10	21	55.4%	6	54.5%	7	58.3%	8	53.4%
11-15	8	21.1%	4	36.4%	2	16.7%	2	13.3%
16-20	3	7.8%	0	--	1	8.3%	2	13.3%
21-25	1	2.6%	0	--	0	--	1	6.7%
26-30	1	2.6%	1	9.1%	0	--	0	--
Column Total	38	100%	11	100%	12	100%	15	100%
Years of Employment on the Study Units								
1-5	10	26.4%	0	--	2	16.7%	8	53.3%
6-10	20	52.6%	7	63.6%	8	66.6%	5	33.3%
11-15	6	15.8%	3	27.3%	2	16.7%	1	6.7%
16-20	1	2.6%	1	9.1%	0	--	0	--
21-25	1	2.6%	0	--	0	--	1	6.7%
Column Total	38	100%	11	100%	12	100%	15	100%

Comparative analysis by study units demonstrated a relatively homogeneous sample on demographic variables. The mean age of staff nurses was 37.18 years on Unit A (Mdn=35.00, SD=6.24); 35.08 years on Unit B (Mdn=30.50, SD=8.05); and 35.00 years on the comparison unit (Mdn=31.00, SD=8.53). Although slightly variable, the mean years of professional experience was found to be comparable between Unit A (M=11.95, Mdn=10.00, SD=5.24); Unit B (M=8.67, Mdn=8.75, SD=4.40); and the comparison unit (M=9.97, Mdn=9.00, SD= 6.10). However, a statistically significant difference was found at the $p<.05$ level between Unit A (M=10.18, Mdn=10.18, SD=2.79) and the comparison unit (M=6.93, Mdn=5.0, SD=5.39) in relation to the mean number of years staff nurses were employed on each of the study units.

3. Interdisciplinary Demographics

The convenience sample of interdisciplinary staff (N=29) represented 12 different professional departments from within the study facility. The largest percentage of representation was from the following departments: Social Work [n=5(17%)]; Medicine [n=4(14%)]; Home Care [n=4(14%)]; Clinical Nurse Specialists [n=4(14%)]; Physiotherapy [n=3(10%)]; Dietetics [n=3(10%)], and Aboriginal Services [n=3(10%)]. Table 8 depicts the various departments represented in this study.

Table 8

Interdisciplinary Staff Departments

Departments	Total Sample (N=29)		(Experimental Units)					
			Unit A (N=10)		Unit B (N=9)		Comparison Unit (N=10)	
	N	%	N	%	N	%	N	%
Social Work	5	17.2%	1	10.0%	1	11.1%	3	30.0%
Medicine	4	13.8%	1	10.0%	1	11.1%	2	20.0%
Home Care	4	13.8%	1	10.0%	1	11.1%	2	20.0%
Clinical Specialists	4	13.8%	1	10.0%	3	33.4%	0	--
Aboriginal Services	3	10.4%	1	10.0%	1	11.1%	1	10.0%
Physiotherapy	3	10.4%	1	10.0%	1	11.1%	1	10.0%
Dietetics	3	10.4%	2	20.0%	0	--	1	10.0%
Occupational Therapy	1	3.4%	1	10.0%	0	--	0	--
Speech Therapy	1	3.4%	1	10.0%	0	--	0	--
Pharmacy	1	3.4%	0	--	1	11.1%	0	--
Column Total	29	100%	10	100%	9	100%	10	100%

II. STATISTICAL ANALYSIS OF PRETEST FINDINGS

1. Patient Satisfaction

Previously documented reliability testing of the Patient Hospital Stay Rating Questionnaire (PHSRQ) reported the Cronbach's Alpha Coefficient to be .89 (J. Deatrich, personal communication, December 12, 1997). For purposes of this study, the Cronbach's Alpha Coefficient was calculated for the PHSRQ and found to be .92.

Descriptive Statistics. Among the total sample of patients recruited into the pre-test phase of the study (N=28), the majority rated the technical competence [n=14(50%)] and the personal manner [n=12(43%)] of the hospital staff who cared for them during their stay as "excellent." In terms of explanations offered regarding tests and procedures, patients overwhelmingly perceived this aspect of their care to be "excellent" [n=12(46%)]. In contrast, the information given to the patients regarding hospital discharge was perceived less favourably. Respondents were found to be equally likely to rate information-giving of staff as "very good" [n=7(30%)] or "good" [n=7(30%)].

In regards to comfort measures provided, and length of time for call bells to be answered, there was less agreement and greater disparity among respondents' ratings. The majority of patients were found to be as likely to rate comfort measures provided as "excellent" [n=10(36%)] or "good" [n=10(36%)]. The length of time call bells were answered was rated by 33% of patients (n=9) as "very good," while 22% (n=6) stated this aspect of care was "fair." However, greater agreement among respondents was found on items related to pain management and privacy. Pain management was rated by respondents as "very good" [n=11(34%)] or "excellent" [n=8(25%)], while privacy provided to patients was viewed by the majority of subjects to be "excellent" [n=14(50%)]. On the remaining two items, the majority of patients [n=11(39%)] rated their overall hospital stay as "very good," and the meals provided as "good" [n=11(41%)]. The frequencies of response ratings on the PHSRQ for the pretest patient sample are illustrated in Table 9 (pp.71).

Table 9

Pretest PHSRQ Response Frequencies

Item Frequencies	Excellent		Very Good		Good		Fair		Poor	
	N	%	N	%	N	%	N	%	N	%
Technical Competency										
Unit A	6	42.8%	1	16.7%	3	50.0%	1	50.0%	0	--
Unit B	4	28.6%	4	66.6%	1	16.7%	0	--	0	--
Comparison Unit	4	28.6%	1	16.7%	2	33.3%	1	50.0%	0	--
Column Total	14	100%	6	100%	6	100%	2	100%	0	--
Personal Manner										
Unit A	5	41.7%	4	50.0%	2	33.3%	0	--	0	--
Unit B	4	33.3%	3	37.5%	1	16.7%	1	50.0%	0	--
Comparison Unit	3	25.0%	1	12.5%	3	50.0%	1	50.0%	0	--
Column Total	12	100%	8	100%	6	100%	2	100%	0	--
Comfort Measures										
Unit A	4	40.0%	3	42.8%	4	40.0%	0	--	0	--
Unit B	4	40.0%	2	28.6%	3	30.0%	0	--	0	--
Comparison Unit	2	20.0%	2	28.6%	3	30.0%	1	100%	0	--
Column Total	10	100%	7	100%	10	100%	1	100%	0	--
Length of Call Bell										
Unit A	1	20.0%	4	44.4%	2	40.0%	3	50.0%	0	--
Unit B	2	40.0%	3	33.3%	2	40.0%	1	16.7%	0	--
Comparison Unit	2	40.0%	2	22.3%	1	20.0%	2	33.3%	1	100%
Column Total	5	100%	9	100%	5	100%	6	100%	1	100%
Pain Management										
Unit A	4	50.0%	5	45.5%	1	25.0%	0	--	0	--
Unit B	2	25.0%	4	36.3%	1	25.0%	0	--	0	--
Comparison Unit	2	25.0%	2	18.2%	2	50.0%	0	--	1	100%
Column Total	8	100%	11	100%	4	100%	0	--	1	100%
Privacy Provided										
Unit A	6	42.8%	1	20.0%	4	57.1%	0	--	0	--
Unit B	4	28.6%	3	60.0%	2	28.6%	0	--	0	--
Comparison Unit	4	28.6%	1	20.0%	1	14.3%	1	100%	1	100%
Column Total	14	100%	5	100%	7	100%	1	100%	1	100%
Information-Giving										
Unit A	2	40.0%	5	71.4%	2	28.6%	1	33.3%	1	50.0%
Unit B	1	20.0%	1	14.3%	2	28.6%	2	66.7%	0	--
Comparison Unit	2	40.0%	1	14.3%	3	42.8%	0	--	1	50.0%
Column Total	5	100%	7	100%	7	100%	3	100%	2	100%
Explanation of Tests										
Unit A	6	50.0%	2	33.3%	1	25.0%	2	66.7%	0	--
Unit B	4	33.3%	3	50.0%	0	--	1	33.3%	0	--
Comparison Unit	2	16.7%	1	16.7%	3	75.0%	0	--	4	100%
Column Total	12	100%	6	100%	4	100%	3	100%	4	100%

Table 9 Continued

Item Frequencies	Excellent		Very Good		Good		Fair		Poor	
	N	%	N	%	N	%	N	%	N	%
Hospital Meals										
Unit A	0	--	3	42.8%	6	54.5%	2	40.0%	0	--
Unit B	0	--	1	14.4%	4	36.4%	3	60.0%	0	--
Comparison Unit	0	--	3	42.8%	1	9.1%	0	--	4	100%
Column Total	0	--	7	100%	11	100%	5	100%	4	100%
Overall Hospital Stay										
Unit A	5	71.4%	2	18.1%	3	50.0%	1	33.3%	0	--
Unit B	2	28.6%	4	36.4%	2	33.3%	1	33.3%	0	--
Comparison Unit	0	--	5	45.5%	1	16.7%	1	33.3%	1	100%
Column Total	7	100%	11	100%	6	100%	3	99.9%	1	100%

Total PHSRQ scores were tabulated for 23 completed questionnaires. Five questionnaires were excluded due to missing response items. The total sample of patients (n=23) achieved a mean score of 24.22 on the PHSRQ (Mdn=22.00, SD=9.19). Comparative analysis of mean PHSRQ scores by units demonstrated that patients on experimental Unit A (M=21.82, Mdn=20.00, SD=7.78), and Unit B (M=25.60, Mdn=29.00, SD=7.50) were generally more satisfied with aspects of their hospital care, as indicated by lower mean scores, than patients on the comparison unit (M=27, Mdn=25.00, SD=12.23).

Through analysis of the mean scores obtained on each of the 10-items of the PHSRQ, differences and similarities between units were noted. The PHSRQ item and total mean scores by units are presented in Table 10 (pp.73). Patients from the experimental units were found to report greater satisfaction, as indicated by lower mean scores, on items related to privacy, comfort measures, pain management, technical competency and personal manner of the staff, explanations of tests, meals, and overall hospital stay.

In contrast, patients' mean satisfaction scores on items related to length of call bells and information-giving of staff were more variable among the experimental and comparison unit(s). Despite this variability, in all cases patients from the comparison unit failed to rate their level of satisfaction as greater than respondents on either Unit A or Unit B.

Table 10

Pretest PHSRQ Item Mean Scores

Item	N	X	SD	Item	N	X	SD
Technical Competency				Pain Management			
Total Sample	28	2.00	1.04	Total Sample	27	2.52	1.67
Unit A	11	1.91	1.14	Unit A	11	2.09	1.45
Unit B	9	1.67	0.71	Unit B	8	2.37	1.60
Comparison Unit	8	2.00	1.19	Comparison Unit	8	2.87	1.80
Personal Manner				Privacy Provided			
Total Sample	28	2.09	0.99	Total Sample	27	2.08	1.16
Unit A	11	1.73	0.79	Unit A	9	1.82	0.98
Unit B	9	1.89	1.05	Unit B	8	1.78	0.83
Comparison Unit	8	2.25	1.16	Comparison Unit	8	2.25	1.58
Comfort Measures				Information-Giving			
Total Sample	28	2.22	0.95	Total Sample	24	2.61	1.23
Unit A	11	2.00	0.89	Unit A	11	2.45	1.21
Unit B	9	1.56	0.93	Unit B	6	2.83	1.17
Comparison Unit	8	2.37	1.06	Comparison Unit	7	2.57	1.40
Length of Call Bell				Explanation of Tests			
Total Sample	27	2.91	1.31	Total Sample	26	2.17	1.23
Unit A	11	3.00	1.41	Unit A	11	1.91	1.22
Unit B	8	2.25	1.04	Unit B	8	1.75	1.03
Comparison Unit	8	2.75	1.49	Comparison Unit	7	2.57	1.40
Hospital Meals				Overall Hospital Stay			
Total Sample	27	3.26	1.09	Total Sample	28	2.00	1.07
Unit A	11	2.90	0.70	Unit A	11	2.00	1.09
Unit B	8	3.25	0.71	Unit B	9	2.22	0.97
Comparison Unit	8	3.62	1.50	Comparison Unit	8	2.75	1.16
Total PHSRQ Scores							
Total Sample	23	24.22	9.19	–	–	–	–
Unit A	11	21.82	7.78	–	–	–	–
Unit B	5	25.60	7.50	–	–	–	–
Comparison Unit	7	27.00	12.23	–	–	–	–

Inferential Statistics. The Kruskal-Wallis Test was used to detect for statistically significant differences between pretest groups on total mean satisfaction scores. Non-parametric testing was carried out due to the small sample sizes of patients, and non-normal distribution of sample demographic and outcome variables. No statistically significant differences were found between the patient groups in reported satisfaction with their hospital stays (Table 11, pp. 74).

Table 11

Kruskal Wallis Test for Pretest Patient Satisfaction

Study	N Sample	Mean Rank	Chi-Square Statistic	Degrees of Freedom	Level of Sig.
Total PHSRQ Scores			1.24	2	0.54
Unit A	11	10.36	–	–	–
Unit B	5	13.30	–	–	–
Comparison Unit	7	13.64	–	–	–

2. Patient Utilization of Post-Discharge Health Care Services

Descriptive Statistics. Of the data-generating sample of patients recruited into the pretest phase of the study (N=28), only 43% of respondents (n=12) participated in the telephone interview, conducted three months after their initial hospital discharges. Patient response rates varied between the three study units, ranging from a maximum rate of 64% on Unit A (n=7) to a minimum response rate of 25% on the comparison unit (n=2). The 57% overall attrition rate of study subjects (n=16) was due to the following factors: unable to reach by phone (n=14); hospital readmission (n=1); and/or patient death (n=1).

Of the 12 respondents successfully contacted by telephone, seven patients (58%) reported not having received any community-based, home health care services immediately following their initial hospital discharges. Five respondents (42%) indicated that they had received home health care services upon discharge, of which the majority reported receiving multiple services [n=4(80%)]. At the time of the telephone interview, all five patients reported either a decreased or continued level of home health care services. In other words, in no case did respondents report an increase in the amount of health care services received at home during the three month period following their initial hospital discharges.

All 12 respondents denied having utilized hospital emergency room visits during the three month period following discharge. Two subjects (17%) reported having been

readmitted to a tertiary care facility during this period for ongoing chemotherapy treatments. Only one of the 12 respondents (8%) accessed a walk-in clinic for the reason of obtaining medications. Finally, of the 12 respondents successfully reached by telephone, eight (67%) reported having attended scheduled follow-up appointments with physicians within three months of their initial hospital discharge. However, in no case did these subjects report that due to health concerns they were required to see a physician prior to the assigned date and time. The frequencies of post-discharge health care service utilization by the patient sample are outlined in Table 12. Due to the attrition rate of subjects, inferential statistical analyses were precluded from being conducted to compare the three study groups on post-discharge rates of health care service utilization.

Table 12

Frequencies of Post-Discharge Service Utilization by Patient Sample

Community-Based Health Care Services	**Yes**		**No**		**Not Applicable**	
	N	%	N	%	N	%
Services Initially Provided Post-Discharge						
Unit A	4	80.0%	3	42.8%	0	--
Unit B	1	20.0%	2	28.6%	0	--
Comparison Unit	0	--	2	28.6%	0	--
Column Total	5	100%	7	100%	0	--
Change in the Level of Post-Discharge Services						
Unit A	4	100%	0	--	3	42.8%
Unit B	0	--	1	100%	2	28.6%
Comparison Unit	0	--	0	--	2	28.6%
Column Total	4	100%	1	100%	7	100%
Increase in Post-Discharge Services						
Unit A	0	--	4	80.0%	3	42.8%
Unit B	0	--	1	20.0%	2	28.6%
Comparison Unit	0	--	0	--	2	28.6%
Column Total	0	--	5	100%	7	100%

Table 12 Continued

Community-Based Health Care Services	Yes		No		Not Applicable	
	N	%	N	%	N	%
Emergency Room Visits						
Unit A	0	--	7	58.3%	0	--
Unit B	0	--	3	25.0%	0	--
Comparison Unit	0	--	2	16.7%	0	--
Column Total	0	--	12	100%	0	--
Hospital Readmissions						
Unit A	2	100%	5	50.0%	0	--
Unit B	0	--	3	30.0%	0	--
Comparison Unit	0	--	2	20.0%	0	--
Column Total	2	100%	10	100%	0	--
Walk-in Clinic Visits						
Unit A	0	--	7	63.6%	0	--
Unit B	0	--	3	27.3%	0	--
Comparison Unit	1	100%	1	9.1%	0	--
Column Total	1	100%	11	100%	0	--
Unscheduled Physician Visits						
Unit A	0	--	4	50.0%	3	75.0%
Unit B	0	--	3	37.5%	0	--
Comparison Unit	0	--	1	12.5%	1	25.0%
Column Total	0	--	8	100%	4	100%

3. Nurse Job Satisfaction

The Cronbach's Alpha Coefficient for the total WQI was previously reported to be .94 with the six subscale reliability measures ranging from .72 to .87 (Peddicord-Whitley & Putzier, 1994). In this study, the computed Cronbach's Alpha Coefficient for the total index was .93. The six subscales of the WQI were found to have Alpha Coefficients ranging from .69 (professional role enactment) to .91.

Descriptive Statistics. On baseline measures, the total sample of staff nurses (N=36) achieved a total mean WQI score of 136.75 (Mdn=130.00, SD=29.24). Comparative analysis of total WQI mean scores revealed that staff nurses from Unit A (M 144.50, Mdn=139.50, SD=37.38) and Unit B (M=144.55, Mdn=139.00, SD=23.93) achieved higher mean scores indicating lower overall satisfaction with the quality of their work and work environment than

in relation to nurses on the comparison unit (M=125.87, Mdn=126.00, SD=24.73).

Comparative analysis of the six WQI subscale mean scores revealed the differences and similarities between the three study groups. On five of the six subscales, staff nurses from the comparison versus experimental unit(s) were reported to be more satisfied, as indicated by lower mean scores, with the autonomy of their practice; work benefits; work environment; professional relationships; and work worth. Only on the subscale measuring satisfaction with professional role enactment were nurses from Unit A reported to be more satisfied than subjects from either Unit B or the comparison unit. The total and subscale WQI satisfaction scores for the three groups are displayed in Table 13.

Table 13

Pretest WQI Total and Subscale Mean Scores

WQI	N	Median	Mean	SD
Autonomy of Practice				
Unit A	11	13.00	14.82	6.63
Unit B	12	13.00	12.33	5.56
Comparison Unit	15	11.00	11.20	2.76
Total Sample	38	11.50	12.60	5.12
Work Benefits				
Unit A	10	35.50	35.40	10.81
Unit B	11	45.00	39.38	9.41
Comparison Unit	15	34.00	34.33	6.98
Total Sample	36	36.00	37.28	8.74
Work Environment				
Unit A	11	35.00	36.00	5.74
Unit B	12	31.00	33.67	7.40
Comparison Unit	15	32.00	31.93	9.39
Total Sample	38	34.00	33.66	7.84
Professional Role Enactment				
Unit A	11	14.00	15.45	5.32
Unit B	12	17.00	16.58	3.45
Comparison Unit	15	16.00	16.20	4.38
Total Sample	38	16.00	16.10	4.32

Table 13 Continued

WQI	N	Median	Mean	SD
Professional Relationships				
Unit A	11	29.00	28.55	9.89
Unit B	12	26.00	26.08	5.11
Comparison Unit	15	24.00	22.73	5.70
Total Sample	38	24.00	25.76	7.38
Work Worth				
Unit A	11	10.00	11.08	5.19
Unit B	12	10.50	10.68	5.11
Comparison Unit	15	9.00	9.47	5.70
Total Sample	38	10.00	10.32	7.38
Total WQI Score				
Unit A	10	139.50	144.50	37.38
Unit B	11	139.00	144.55	23.93
Comparison Unit	15	126.00	125.87	24.73
Total Sample	36	130.00	136.75	29.24

Inferential Statistics. Although the three study samples were found to be relatively homogenous in relation to demographic variables, preliminary screening of outcome variables revealed the presence of outliers and non-equal variability between groups. To detect for statistically significant differences between the study samples on the mean pretest total and subscale nurse job satisfaction scores, the Kruskal-Wallis Test was utilized. No statistically significant differences were found between groups on the ranked mean total job satisfaction scores. However, on the subscale related to work benefits, a statistically significant difference in reported satisfaction was found at the $p<.05$ level between Unit B and the comparison unit (Table 14).

Table 14

Kruskal-Wallis Test for Pretest Nurse Job Satisfaction

WQI	N	Mean Rank	Chi-Square Statistic	Degrees of Freedom	Level of Sig.
Autonomy of Practice			2.20	2	0.33
Unit A	11	23.56	--	--	--
Unit B	12	19.25	--	--	--
Comparison Unit	15	16.87	--	--	--

Table 14 Continued

WQI	N	Mean Rank	Chi-Square Statistic	Degrees of Freedom	Level of Sig.
Work Benefits			7.42	2	0.03*
Unit A	10	16.30	--	--	--
Unit B	11	25.64	--	--	--
Comparison Unit	15	14.73	--	--	--
Professional Relationships			4.71	2	0.10
Unit A	11	23.91	--	--	--
Unit B	12	21.29	--	--	--
Comparison Unit	15	14.83	--	--	--
Professional Role Enactment			1.36	2	0.50
Unit A	11	17.05	--	--	--
Unit B	12	22.33	--	--	--
Comparison Unit	15	19.03	--	--	--
Work Worth			0.89	2	0.65
Unit A	11	20.50	--	--	--
Unit B	12	21.17	--	--	--
Comparison Unit	15	17.43	--	--	--
Work Environment			2.17	2	0.34
Unit A	11	23.36	--	--	--
Unit B	12	19.21	--	--	--
Comparison Unit	15	16.90	--	--	--
Total Score			3.72	2	0.16
Unit A	10	20.45	--	--	--
Unit B	11	22.09	--	--	--
Comparison Unit	15	14.57	--	--	--

4. Interdisciplinary Staff Satisfaction

Descriptive Statistics. On base line measures, the total sample of respondents (N=29) most frequently reported that the primary source of patient information was the assigned staff nurse [n=16(55%)], followed by the patient's record [n=9(31%)]. Among those interdisciplinary staff surveyed, 72% (n=21) indicated that assigned staff nurses are "sometimes" perceived to be knowledgeable of the patient's status. Of those surveyed, 55% (n=16) reported that nurses "always" have the authority to make patient care decisions, with 41% (n=12) having indicated this was true only "sometimes." The contrast in item responses related to nurses' knowledge and authority is of particular interest. Although interdisciplinary staff perceive nurses to "always" possess the authority to make patient care decisions, nursing

decisions are viewed to be based upon "sometimes" limited knowledge of the patient's status.

The largest proportion of interdisciplinary staff [n=19(66%)] reported that "never" is one staff nurse viewed as accountable for each patient's total care from admission through to discharge. Despite this perceived lack of nursing accountability, 62% of respondents (n=18) reported that "sometimes" nursing care was co-ordinated to facilitate discharge planning. On the two final survey items related to the quality of nursing care, the largest proportion [n=20(69%)] rated the overall quality of nursing care at the study facility as "good" while 66% of subjects (n=19) perceived the quality of nursing care on their affiliated inpatient units as "good." The ICQ item response frequencies for the total sample are shown in Table 15.

Table 15

Pretest ICQ Item Frequencies

ICQ Items	Total Sample		Unit A		Unit B		Comparison Unit	
	N	%	N	%	N	%	N	%
Primary Information Source								
Assigned Nurse	16	55.2%	5	50.0%	6	66.7%	5	50.0%
Patient Record	9	31.0%	4	40.0%	2	22.2%	3	30.0%
Patient	3	10.3%	1	10.0%	1	11.1%	1	10.0%
Nurse Manager	1	3.5%	0	--	0	--	1	10.0%
Column Total	29	100%	10	100%	9	100%	10	100%
Nurse's Knowledge of the Patient's Status								
Always	8	27.6%	2	20.0%	3	33.3%	3	30.0%
Sometimes	21	72.4%	8	80.0%	6	66.7%	7	70.0%
Never	0	--	0	--	0	--	0	--
Column Total	29	100%	10	100%	9	100%	10	100%
Nurse's Authority to Make Patient Care Decisions								
Always	16	55.2%	7	70.0%	5	55.6%	4	40.0%
Sometimes	12	41.4%	3	30.0%	4	44.4%	5	50.0%
Never	1	3.4%	0	--	0	--	1	10.0%
Column Total	29	100%	10	100%	9	100%	10	100%

Table 15 Continued

ICQ Items	Total Sample		Unit A		Unit B		Comparison Unit	
	N	%	N	%	N	%	N	%
Nurse's Accountability for Patient Care From Admission to Discharge								
Always	1	3.5%	1	10.0%	0	--	0	--
Sometimes	9	31.0%	3	30.0%	4	44.4%	2	20.0%
Never	19	65.5%	6	60.0%	5	55.6%	8	80.0%
Column Total	29	100%	10	100%	9	100%	10	100%
Co-ordination of Nursing Care to Facilitate Discharge Planning								
Always	11	37.9%	4	40.0%	4	44.4%	3	30.0%
Sometimes	18	62.1%	6	60.0%	5	55.6%	7	70.0%
Never	0	--	0	--	0	--	0	--
Column Total	29	100%	10	100%	9	100%	10	100%
Overall Quality of Hospital Nursing								
Excellent	2	6.9%	2	20.0%	0	--	0	--
Good	20	69.0%	8	80.0%	6	66.7%	6	60.0%
Fair	7	24.1%	0	--	3	33.3%	4	40.0%
Poor	0	--	0	--	0	--	0	--
Column Total	29	100%	10	100%	9	100%	10	100%
Overall Quality of Unit Nursing								
Excellent	6	20.7%	2	20.0%	1	11.1%	3	30.0%
Good	19	65.5%	8	80.0%	7	77.8%	4	40.0%
Fair	4	13.8%	0	--	1	11.1%	3	30.0%
Poor	0	--	0	--	0	--	0	--
Column Total	29	100%	10	100%	9	100%	10	100%

Comparative analysis of the findings between the three study units highlighted several noteworthy differences. Although the primary source of patient information on Unit B [n=6(67%)] and the comparison unit [n=5(50%)] was the assigned staff nurse, Unit A interdisciplinary staff were decidedly less in agreement between utilizing the assigned nurse [n=5(50%)] and the patient record [n=4(40%)]. In regards to staff nurse accountability, the largest proportion of respondents from Unit A [n=6(60%)] and the comparison unit [n=8(80%)] concurred in their assessments that "never" is one nurse perceived to be accountable for each patient's total care, from admission through to discharge. In contrast, Unit B interdisciplinary staff were almost equally split between rating staff nurse accountability as "sometimes" [n=4(44%)] and "never" [n=5(56%)]. In terms of staff nurse authority to make patient care decisions, the majority on Unit A [n=7(70%)] and Unit B

[n=5(56%)] agreed this was the case "always." However, on the comparison unit, the majority of interdisciplinary staff [n=5(50%)] reported this to be true only "sometimes."

One final difference between groups was found in relation to the reported quality of nursing care on affiliated inpatient units. On Unit A [n=8(80%)], Unit B [n=7(78%)], and the comparison unit [n=4(40%)], the largest proportion of respondents rated the inpatient quality of nursing care as "good." However, greater disparity was observed in responses on the comparison unit, with equal ratings of the quality of nursing care having been documented in the categories of "excellent" [n=3(30%)] and "fair" [n=3(30%)].

Two subscale scores were tabulated from the ICQ. In regards to items related to staff nurse knowledge, accountability, authority and co-ordination of patient care, the mean score for the entire sample was 7.45 (Mdn=8.0, SD=1.24). On items related to the quality of nursing care, the total sample's mean score was 4.10 (Mdn= 4.0, SD=1.01).

Comparative analysis of the mean pretest scores on the ICQ demonstrated that interdisciplinary staff on Unit A (M=7.20, Mdn=7.0, SD=1.03) and Unit B (M=7.22, Mdn=8.0, SD=1.56) were generally more satisfied with aspects of nursing care knowledge, accountability, authority and co-ordination of care, as indicated by lower mean scores, than subjects on the comparison unit (M=7.90, Mdn=8.0, SD=1.10). Similarly, respondents from Unit A (M=3.6, Mdn=4.0, SD=.70), and Unit B (M=4.33, Mdn=4.0, SD=.87) reported greater satisfaction with the quality of nursing care at the study facility overall, and on affiliated inpatient units than in relation to respondents from the comparison unit (M=4.40, Mdn=4.0, SD=1.26). The ICQ item and subscale mean scores are presented in Table 16 (pp 83).

Table 16

Pretest ICQ Item and Subscale Mean Scores

ICQ Items	Total Sample (N=29)		Unit A (N=10)		Unit B (N=9)		Comparison Unit (N=10)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Accountability	2.62	0.56	2.50	0.71	2.56	0.53	2.80	0.42
Authority	1.48	0.57	1.30	0.48	1.44	0.53	1.70	0.68
Co-ordination	1.62	0.49	1.60	0.56	1.56	0.53	1.70	0.48
Knowledge	1.72	0.46	1.80	0.42	1.67	0.50	1.70	0.48
Quality of Hospital	2.17	0.54	1.80	0.42	2.33	0.50	2.40	0.52
Quality of Unit	1.93	0.59	1.80	0.42	2.00	0.50	2.00	0.82
Subscale 1	7.44	1.24	7.20	1.03	7.22	1.56	7.90	1.10
Subscale 2	4.10	1.01	3.60	0.70	4.33	0.87	4.40	1.27

Inferential Statistics. Given the relatively small sample sizes, unknown distribution of demographic variables among subjects, and non-normal distribution of outcome variables, the Kruskal-Wallis Test was used to detect for statistically significant differences in mean rank satisfaction scores on the two subscales of the ICQ. No statistically significant differences at the $p<.05$ level were found (Table 17).

Table 17

Kruskal-Wallis Test for Pretest Interdisciplinary Staff Satisfaction

Sample Groups	N	Mean Rank	Chi-Square Statistic	Degrees of Freedom	Level of Sig.
ICQ Subscale 1			2.21	2	0.34
Unit A	10	12.85	--	--	--
Unit B	9	14.00	--	--	--
Comparison Unit	10	18.05	--	--	--
ICQ Subscale 2			3.07	2	0.22
Unit A	10	11.50	--	--	--
Unit B	9	16.50	--	--	--
Comparison Unit	10	17.22	--	--	--

III. Statistical Analysis of Posttest Findings

1. Patient Satisfaction

Descriptive Statistics. Of the total posttest sample of patients (N=14), 57% of subjects (n=8) rated the technical competency of the staff as "very good" while 50% (n=7) judged the personal manner of the staff who cared for them as "excellent." Fifty percent of respondents perceived staff's explanations of tests and procedures (n=7); and the provision of pain management (n=6), comfort measures (n=7), and privacy (n=7) as "very good." The largest proportion of patients rated the information-giving of staff as "excellent" [n=4(29%)] or "very good" [n=4(29%)]. The length of time call bells were answered was reported by 55% (n=5) of the sample as "excellent" or "very good" On the final item, 50% of patients (n=7) rated their overall hospital stay as "very good."

In contrast to the above responses, patient ratings of hospital meals demonstrated considerable disparity. Sixty-one percent of subjects (n=8) rated hospital meals as "good to excellent," while 39% (n=5) were reported to rate the meals as only "fair or poor." The frequencies of response ratings on the PHSRQ for the posttest patient sample are illustrated in Table 18.

Table 18

Posttest PHSRQ Response Frequencies

Item Frequencies	Excellent		Very Good		Good		Fair		Poor	
	N	%	N	%	N	%	N	%	N	%
Technical Competency										
Experimental Units	3	60.0%	3	37.5%	1	100%	0	--	0	--
Comparison Units	2	40.0%	5	62.5%	0	--	0	--	0	--
Column Total	5	100%	8	100%	1	100%	0	--	0	--
Personnel Manner										
Experimental Units	3	42.8%	3	50.0%	1	100%	0	--	0	--
Comparison Units	4	57.2%	3	50.0%	0	--	0	--	0	--
Column Total	7	100%	6	100%	1	100%	0	--	0	--

Table 18 Continued

Item Frequencies	Excellent		Very Good		Good		Fair		Poor	
	N	%	N	%	N	%	N	%	N	%
Comfort Measures										
Experimental Units	0	--	3	42.8%	3	75.0%	1	100%	0	--
Comparison Units	1	100%	4	57.2%	1	25.0%	0	--	1	100%
Column Total	1	100%	7	100%	4	100%	1	100%	1	100%
Length of Call Bell										
Experimental Units	0	--	1	33.3%	1	50.0%	2	100%	0	--
Comparison Units	2	100%	2	66.7%	1	50.0%	0	--	0	--
Column Total	2	100%	3	100%	2	100%	2	100%	0	--
Pain Management										
Experimental Units	0	--	1	16.7%	2	100%	2	100%	0	--
Comparison Units	2	100%	5	83.3%	0	--	0	--	0	--
Column Total	2	100%	6	100%	2	100%	2	100%	0	--
Privacy Provided										
Experimental Units	3	75.0%	2	40.0%	2	66.7%	0	--	0	--
Comparison Units	1	25.0%	5	60.0%	1	33.3%	0	--	0	--
Column Total	4	100%	7	100%	3	100%	0	--	0	--
Information Giving										
Experimental Units	2	50.0%	2	50.0%	1	33.3%	2	66.7%	0	--
Comparison Units	2	50.0%	2	50.0%	2	66.7%	1	33.3%	0	--
Column Total	4	100%	4	100%	3	100%	3	100%	0	--
Explanation of tests										
Experimental Units	0	--	4	57.1%	2	50.0%	1	100%	0	--
Comparison Units	2	100%	3	42.9%	2	50.0%	0	--	0	--
Column Total	2	100%	7	100%	4	100%	1	100%	0	--
Hospital Meals										
Experimental Units	1	50.0%	2	66.7%	1	33.3%	0	--	2	50.0%
Comparison Units	1	50.0%	1	33.3%	2	66.7%	1	100%	2	50.0%
Column Total	2	100%	3	100%	3	100%	1	100%	4	100%
Overall Hospital Stay										
Experimental Units	2	66.7%	3	42.8%	2	42.8%	0	--	0	--
Comparison Units	1	33.3%	4	57.2%	2	57.2%	0	--	0	--
Column Total	3	100%	7	100%	4	100%	0	--	0	--

Total posttest PHSRQ scores were tabulated for 12 of the 14 completed questionnaires. Two were excluded due to missing response items. The total sample of patients achieved a mean score of 21.50 points (Mdn=22.00, SD=5.76). On baseline measures, the pretest sample's mean satisfaction score was slightly higher at 24.22 points (Mdn=22.00, SD=9.19). Comparative analysis of posttest scores between study units, revealed that patients from the comparison (M=20.71, Mdn=22.00, SD=5.94) versus

experimental units (M=22.60, Mdn=22.00, SD=5.98) achieved a lower mean score, indicating greater overall satisfaction with their hospital care. This result was found to contradict earlier results obtained during the pretest phase of the study. Analysis of the mean posttest scores obtained on each item of the PHSRQ highlighted the differences and similarities between study groups. These statistics are presented in Table 19.

Patients from the comparison unit were more likely to be satisfied with aspects of hospital care that included the personal manner and information-giving of staff, comfort measures, pain management, and length of call bell responses. In contrast, the experimental group was reported to be more satisfied with the provision of privacy, explanation of tests, hospital meals, and their overall hospital stay. No differences were found between study groups on ratings of satisfaction with the technical competency of staff.

Table 19

Posttest PHSRQ Item Mean Scores

Item	N	X	SD	Item	N	X	SD
Technical Competency				Pain Management			
Total Sample	14	1.71	0.61	Total Sample	12	2.33	0.98
Experimental Units	7	1.71	0.76	Experimental Units	5	3.20	0.84
Comparison Unit	7	1.71	0.49	Comparison Unit	7	1.71	0.49
Personal Manner				Privacy Provided			
Total Sample	14	1.57	0.65	Total Sample	14	1.93	0.73
Experimental Units	7	1.71	0.76	Experimental Units	7	1.86	0.90
Comparison Unit	7	1.43	0.53	Comparison Unit	7	2.00	0.58
Comfort Measures				Information-Giving			
Total Sample	14	2.57	1.02	Total Sample	14	2.36	1.15
Experimental Units	7	2.71	0.76	Experimental Units	7	2.43	1.27
Comparison Unit	7	2.43	1.27	Comparison Unit	7	2.29	1.11
Length of Call Bell				Explanation of Tests			
Total Sample	9	2.44	1.13	Total Sample	14	2.29	0.83
Experimental Units	4	3.25	0.96	Experimental Units	7	1.91	1.22
Comparison Unit	5	1.80	0.84	Comparison Unit	7	2.00	0.82
Hospital Meals				Overall Hospital Stay			
Total Sample	13	3.15	1.52	Total Sample	14	2.07	0.73
Experimental Units	6	3.00	1.67	Experimental Units	7	2.00	0.82
Comparison Unit	7	3.29	1.50	Comparison Unit	7	2.14	0.69

Table 19 Continued

Item	N	X	SD	Item	N	X	SD
Total PHSRQ Scores							
Total Sample	12	21.50	5.76	--	--	--	--
Experimental Units	5	22.60	5.98	--	--	--	--
Comparison Unit	7	20.71	5.94	--	--	--	--

Inferential Statistics. The Mann-Whitney U Test was used to detect for statistically significant differences in patient posttest satisfaction scores between the experimental and comparison groups. Patients from the two experimental units were subsequently grouped for analysis based upon preliminary screening of data. Non-parametric testing was carried out due to the small sample size, and non-normal distribution of sample demographics. No statistically significant differences were found between the two posttest patient groups in reported satisfaction with aspects of their hospital stays (Table 20).

Table 20

Mann-Whitney U Test for Posttest Patient Satisfaction

Sample Groups	N	Mean Rank	Sun of Ranks	Mann-Whitney U Test Static	Level of Sig.(One-Tailed Probability)
Study Samples				16.50	0.876
Experimental Units	5	6.70	33.50	--	--
Comparison Unit	7	6.36	44.50	--	--

The Mann-Whitney U Test was used to detect for statistically significant differences in satisfaction ratings within the two patient groups from baseline to posttest measures. As displayed in Table 21 (pp. 88), no statistically significant differences at the $p<.05$ level were found.

Table 21

Mann-Whitney U Test for Patient Satisfaction

Sample Groups	N	Mean Rank	Sun of Ranks	Mann-Whitney U Test Static	Level of Sig. (One-Tailed Probability)
Experimental Units				39.00	0.97
Pretest	16	10.94	175.00	--	--
Prottest	5	11.20	56.00	--	--
Comparison Unit				17.50	0.38
Pretest	7	8.50	59.50	--	--
Prottest	7	6.50	49.50	--	--

2. Patient Utilization of Post-Discharge Health Care Services

Descriptive Statistics. Of the data-generating sample of patients recruited into the posttest phase of the study (N=14), only 29% of respondents (n=4) participated in the telephone interview, conducted three months after their initial hospital discharges. Patient response rates did not vary between units. The 71% overall attrition rate of study subjects (n=10) was due to the following factors: unable to reach by phone [n=7(70%)]; placement to long term care facility [n=1(10%)] and/or patient death [n=2(20%)].

Of the 4 respondents successfully contacted by telephone, one subject (25%) indicated having received multiple community-based, home health care services immediately following hospital discharge. At the time of the telephone interview, this subject reported a decrease in the level of home health care services initially provided. Two of the four subjects (50%) reported visits to hospital emergency rooms, and were subsequently readmitted to tertiary care facilities because of feeling unwell during the three month period following discharge. In no case did subjects report having accessed a medical walk-in clinic. Three of the four respondents (75%) reached by telephone reported having attended scheduled follow-up appointments with physicians within three months of their initial hospital discharge. Two (67%) of these subjects were required to see a physician earlier than scheduled due to health concerns. The frequencies of post-discharge health care service

utilization by the patient sample are outlined in Table 22. Due to the attrition rate of subjects, inferential statistical analyses were precluded from being conducted to compare the two study groups on post-discharge rates of health care service utilization.

Table 22

Frequencies of Post-Discharge Service Utilization by Posttest Patient Sample

Community-Based Health Care Services	**Yes**		**No**		**Not Applicable**	
	N	%	N	%	N	%
Services Initially Provided Post-Discharge						
Experimental Units	1	100%	1	33.3%	0	--
Comparison Unit	0	--	2	66.7%	0	--
Column Total	1	100%	3	100%	0	--
Change in the Level of Post-Discharge Services						
Experimental Units	1	100%	0	--	1	33.3%
Comparison Unit	0	--	0	--	2	66.7%
Column Total	1	100%	0	--	3	100%
Increase in Post-Discharge Services						
Experimental Units	0	--	1	100%	1	33.3%
Comparison Unit	0	--	0	--	2	66.7%
Column Total	0	--	1	100%	3	100%
Emergency Room Visits						
Experimental Units	0	--	2	100%	0	--
Comparison Unit	2	100%	0	--	0	--
Column Total	2	100%	2	100%	0	--
Hospital Readmissions						
Experimental Units	0	--	2	100%	0	--
Comparison Unit	2	100%	0	--	0	--
Column Total	2	100%	2	100%	0	--
Walk-in Clinic Visits						
Experimental Units	0	--	2	50.0%	0	--
Comparison Unit	0	--	2	50.0%	0	--
Column Total	0	--	4	100%	0	--
Unscheduled Physician Visits						
Experimental Units	1	50.0%	1	50.0%	0	--
Comparison Unit	1	50.0%	1	50.0%	0	--
Column Total	2	100%	2	100%	0	--

3. Nurse Job Satisfaction

Of the total sample of 38 nurses surveyed during the pretest phase of the study, 31 subjects successfully completed study participation during posttesting. The 18% overall attrition rate of study subjects was attributed to the following factors: leave of absence from the workplace (n=1), and non-returned satisfaction questionnaires (n=6). Subject response rates were found to vary dramatically between study units from greater than 90% on Unit A (n=10) and the comparison unit (n=14), to a minimum response rate of 58% on Unit B (n=7). Of those nurses who failed to complete the study (n=7), the majority were married [n=5(71%)], having completed some university education [n=4(57%)]. These subjects were not found to significantly differ from the remaining data-generating sample in age, years of professional experience, or number of years employed on the study units.

Descriptive Statistics. On posttest measures, the entire sample of staff nurses (N=31) achieved a total WQI mean satisfaction score of 133.74 points (Mdn=133.00; SD=24.56). The total sample's posttest mean score on the WQI was slightly lower in relation to the pretest, baseline measure of 136.75 points. Comparative analysis of the total WQI mean posttest scores between study groups revealed that nurses from Unit A (n=10) achieved a lower mean score (M=126.90, Mdn=128.50, SD=21.53), indicating greater overall satisfaction with the quality of their work and work environment, than in relation to nurses (n=14) from the comparison unit (M=131.14, Mdn=127.50, SD=19.80). From the pretest to posttest phases of data collection, Unit A's total mean job satisfaction score fell 17.60 points. In contrast, staff nurses from Unit B (n=7) obtained the highest posttest total WQI mean score (M=148.71, Mdn= 139.00, SD=33.41), indicating the lowest overall reported job satisfaction among the three study groups. This latter finding was consistent with baseline results.

Comparison of the six WQI subscale mean scores highlighted the major differences between the three groups on posttest measures. On four of the six subscales, staff nurses from Unit A reported greater satisfaction with the autonomy of their practice (M=10.80, Mdn=10.50, SD=4.61); work benefits (M=32.80, Mdn=34.00, SD=5.01); work environment (M=31.30, Mdn=32.50, SD=5.29); and professional role enactment (M=14.40, Mdn=13.50, SD=4.62) than compared with nurses from either Unit B or the comparison unit. On only two subscales did respondents from the comparison versus experimental units obtain lower posttest mean scores, indicating greater satisfaction with professional relationships (M=22.35, Mdn=22.50, SD=4.07), and work worth (M=13.00, Mdn=13.00, SD=2.93). These findings contrasted with pre-test measures, in which subjects from the comparison unit reported the greatest satisfaction among the study groups on five of the six WQI subscales (autonomy of practice, work benefits, work environment, professional relationships, and work worth). Congruent with pretest results, Unit B nursing staff rated their posttest level of job satisfaction on all six WQI subscales as the lowest among the three samples. Total and subscale WQI posttest mean scores are illustrated in Table 23.

Table 23

Posttest WQI Total and Subscale Mean Scores

WQI	N	Median	Mean	SD
Autonomy of Practice				
Unit A	10	10.50	10.80	4.61
Unit B	7	12.00	12.43	6.80
Comparison Unit	14	10.00	11.14	3.30
Total Sample	31	10.00	11.32	4.56
Work Benefits				
Unit A	10	34.00	32.80	5.01
Unit B	7	43.00	42.71	8.58
Comparison Unit	14	37.50	37.21	6.20
Total Sample	31	35.00	37.03	7.24

Table 23 Continued

WQI	N	Median	Mean	SD
Work Environment				
Unit A	10	32.50	31.30	5.29
Unit B	7	32.00	35.00	10.92
Comparison Unit	14	32.50	33.79	8.63
Total Sample	31	32.00	33.26	8.16
Professional Role Enactment				
Unit A	10	13.50	14.40	4.62
Unit B	7	19.00	17.71	4.03
Comparison Unit	14	15.50	16.28	5.00
Total Sample	31	15.00	16.00	4.70
Professional Relationships				
Unit A	10	26.00	26.10	6.26
Unit B	7	29.00	27.57	6.92
Comparison Unit	14	22.50	22.36	4.07
Total Sample	31	24.00	24.74	5.80
Work Worth				
Unit A	10	14.00	14.40	3.92
Unit B	7	15.00	15.57	4.50
Comparison Unit	14	13.00	13.00	2.93
Total Sample	31	14.00	14.03	3.67
Total WQI Score				
Unit A	10	128.50	126.90	21.53
Unit B	7	139.00	148.71	33.41
Comparison Unit	14	127.50	131.14	19.80
Total Sample	31	133.00	133.74	24.56

Inferential Statistics. In addition to the small sample sizes, preliminary screening of the posttest data revealed non-normal distributions of outcome variables among the groups of respondents. Therefore, non-parametric testing was conducted to detect for statistically significant differences between the three groups on the mean total and subscale nurse job satisfaction scores. As presented in Table 24, the Kruskal-Wallis Test failed to find any statistically significant differences at the $p<.05$ level (pp.93).

Table 24

Kruskal-Wallis Test for Posttest Nurse Job Satisfaction

WQI	N	Mean Rank	Chi-Square Statistic	Degrees of Freedom	Level of Sig.
Autonomy of Practice			0.11	2	0.95
Unit A	10	15.25	--	--	--
Unit B	7	16.64	--	--	--
Comparison Unit	14	16.21	--	--	--
Work Benefits			5.89	2	0.06
Unit A	10	11.20	--	--	--
Unit B	7	22.00	--	--	--
Comparison Unit	14	16.43	--	--	--
Work Environment			0.68	2	0.72
Unit A	10	14.05	--	--	--
Unit B	7	16.93	--	--	--
Comparison Unit	14	16.93	--	--	--
Professional Relationships			4.20	2	0.13
Unit A	10	18.45	--	--	--
Unit B	7	19.79	--	--	--
Comparison Unit	14	12.36	--	--	--
Professional Role Enactment			1.98	2	0.38
Unit A	10	13.30	--	--	--
Unit B	7	19.57	--	--	--
Comparison Unit	14	16.14	--	--	--
Work Worth			1.86	2	0.40
Unit A	10	17.00	--	--	--
Unit B	7	19.14	--	--	-
Comparison Unit	14	13.71	--	--	--
Total WQI Score			2.02	2	0.37
Unit A	10	14.15	--	--	--
Unit B	7	20.21	--	--	--
Comparison Unit	14	15.21	--	--	--

The Friedman Test was used to detect for statistically significant differences in nurse job satisfaction scores from baseline to posttest measures within the three study samples. No statistically significant differences were found within study groups between pre- and posttest total WQI mean rank satisfaction scores. However, a statistically significant decrease in reported job satisfaction related to work worth was found for all three groups at the $p<.02$ level. A statistically significant increase in reported job satisfaction with autonomy of practice at the $p<.02$ level was found for only experimental Unit A (Table 25, pp. 94).

Table 25

Friedman Test for Nurse Job Satisfaction

WQI	N	Pretest Mean Rank	Posttest Mean Rank	Chi-Square Statistic	Level of Sig.
Autonomy of Practice					
Unit A	10	1.85	1.15	5.44	0.02*
Unit B	7	1.57	1.43	0.20	0.65
Comparison Unit	14	1.57	1.43	0.33	0.56
Work Benefits					
Unit A	9	1.39	1.61	0.50	0.48
Unit B	7	1.29	1.71	1.29	0.26
Comparison Unit	14	1.29	1.71	3.00	0.09
Work Environment					
Unit A	9	1.75	1.25	2.78	0.10
Unit B	7	1.57	1.43	0.14	0.71
Comparison Unit	14	1.36	4.64	1.14	0.29
Professional Relationships					
Unit A	10	1.50	1.50	0.00	1.00
Unit B	7	1.50	1.50	0.00	1.00
Comparison Unit	14	1.46	1.54	0.08	0.79
Professional Role Enactment					
Unit A	10	1.65	1.35	1.00	0.32
Unit B	7	1.64	1.36	0.67	0.42
Comparison Unit	14	1.43	1.57	0.29	0.60
Work Worth					
Unit A	10	1.10	1.90	6.40	0.02*
Unit B	7	1.00	2.00	7.00	0.01*
Comparison Unit	14	1.14	1.86	7.14	0.01*
Total WQI Score					
Unit A	9	1.67	1.33	1.00	0.32
Unit B	7	1.43	1.57	0.14	0.71
Comparison Unit	14	1.29	1.71	2.57	0.11

4. Interdisciplinary Staff Satisfaction

Of the total sample of interdisciplinary staff (N=29) who participated in the pretest phase of the study, 24 subjects or 83% of the original sample completed study participation during posttesting. Subject attrition during posttesting was not found to vary between the three study units, and was solely due to either non-returned questionnaires or job reassignment within the study facility.

Descriptive Statistics. On posttest measures, the total sample reported that the primary source of patient information continued to be the assigned staff nurse [n=12(50%)] followed by the patient's record [n=10(42%)]. The sample majority [n=13(54%)] perceived staff nurses to "always" have the authority to make patient care decisions, while 67% of respondents (n=16) indicated that assigned staff nurses were only "sometimes" knowledgeable of the patient's status. The majority of respondents [n=16(67%)] reported that "sometimes" nursing care was co-ordinated to facilitate discharge planning. On survey items related to the quality of nursing care, the sample majority rated the overall quality of nursing care at the study facility [n=16(67%)] and on their affiliated inpatient units [n=15(63%)] as "good." These results were consistent with baseline, pretest findings.

The most notable change from pre- to posttest was related to respondents perceptions of staff nurse accountability. On baseline measures, 66% of staff (n=19) reported that "never" was one nurse perceived to be accountable for each patient's total care from admission through to discharge. However, posttest responses indicated that 58% of interdisciplinary staff (n=14) viewed that this was "sometimes" the case. The item response frequencies for the total sample are summarized in Table 26.

Table 26

Posttest ICQ Item Frequencies

ICQ Items	Total Sample		Unit A		Unit B		Comparison Unit	
	N	%	N	%	N	%	N	%
Primary Information Source								
Assigned Nurse	12	50.0%	2	25.0%	4	50.0%	6	75.0%
Patient Record	10	41.6%	6	75.0%	3	37.5%	1	12.5%
Patient	1	4.2%	0	--	0	--	1	12.5%
Care Co-ordinator	1	4.2%	0	--	1	12.5%	0	--
Column Total	24	100%	8	100%	8	100%	8	100%

Table 26 Continued

ICQ Items	Total Sample		Unit A		Unit B		Comparison Unit	
	N	%	N	%	N	%	N	%
Nurse's Knowledge of the Patient's Status								
Always	8	33.3%	2	25.0%	2	25.0%	4	50.0%
Sometimes	16	66.7%	6	75.0%	6	75.0%	4	50.0%
Never	0	--	0	--	0	--	0	--
Column Total	24	100%	8	100%	8	100%	8	100%
Nurse's Authority to Make Patient Care Decisions								
Always	13	54.2%	5	62.5%	6	75.0%	2	25.0%
Sometimes	11	45.8%	3	37.5%	2	25.0%	6	75.0%
Never	0	--	0	--	0	--	0	--
Column Total	24	100%	8	100%	8	100%	8	100%
Nurse's Accountability for Patient Care from Admission to Discharge								
Always	0	--	0	--	0	--	0	--
Sometimes	14	58.3%	6	75.0%	4	50.0%	4	50.0%
Never	10	41.7%	2	25.0%	4	50.0%	4	50.0%
Column Total	24	100%	8	100%	8	100%	8	100%
Co-ordination of Nursing Care to Facilitate Discharge Planning								
Always	8	33.3%	4	50.0%	2	25.0%	2	25.0%
Sometimes	16	66.7%	4	50.0%	6	75.0%	6	75.0%
Never	0	--	0	--	0	--	0	--
Column Total	24	100%	8	100%	8	100%	8	100%
Overall Quality of Hospital Nursing								
Excellent	1	4.1%	0	--	1	12.5%	0	--
Good	16	66.7%	7	87.5%	5	62.5%	4	50.0%
Fair	7	29.2%	1	12.5%	2	25.0%	4	50.0%
Poor	0	--	0	--	0	--	0	--
Column Total	24	100%	8	100%	8	100%	8	100%
Overall Quality of Unit Nursing								
Excellent	7	29.2%	3	37.5%	3	37.5%	1	12.5%
Good	15	62.5%	5	62.5%	5	62.5%	5	62.5%
Fair	2	8.3%	0	--	0	--	2	25.0%
Poor	0	--	0	--	0	--	0	--
Column Total	24	100%	10	100%	8	100%	8	100%

Comparison of responses between study units revealed several major differences. Interdisciplinary staff from Unit B [n=4(50%)], and the comparison unit [n=6(75%)] continued to favour the assigned nurse as the primary source of patient information, while 75% of subjects from Unit A (n=6) reported that the hospital record remained the preferred information source.

Respondents from Unit B and the comparison unit respectively, were equally divided in their views that staff nurses were "sometimes" [n=4(50%)] and "never" [n=4(50%)] perceived as accountable for total patient care. In contradiction to pretest measures, the majority of Unit A subjects [n=6(75%)] were found to have indicated staff nurses were "sometimes" versus "never" accountable for total patent care from admission through to discharge. Similarly, respondents from Unit B and the comparison unit respectively, concurred that "sometimes" nursing care was co-ordinated to facilitate discharge planning [n=6(75%)]. In contrast, staff on Unit A were equally likely to report that the nursing care was co-ordinated "always" [n=4(50%)] and "sometimes" [n=4(50%)].

Consistent with pretest results, Unit A [n=5(63%)] and Unit B [n=6(75%)] subjects reported that staff nurses "always" have the authority to make patient care decisions while those from the comparison unit indicated this was "sometimes" the case [n=6(75%)]. Staff nurses continued to be viewed by the majority as "sometimes" knowledgeable of the patient's status on Unit A and Unit B respectively [n=6(75%)], while respondents from the comparison unit were divided between their ratings of "always" [n=4(50%)] and "sometimes" [n=4(50%)].

One final difference was found in relation to perceptions of the overall quality of nursing care at the study facility. The sample majority from Unit A [n=7(88%)] and Unit B [n=5(63%)] viewed the overall quality of hospital nursing care as "good" while staff from the comparison unit were equally split in rating the care as "good" [n=4(50%)] or "fair" [n=4(50%)]. Again, these findings were comparable with baseline measures.

Two subscale scores tabulated from the ICQ revealed that the total sample achieved a mean posttest score of 7.21 points (Mdn=7.00, SD=1.18) on items related to staff nurse knowledge, accountability, authority, and co-ordination of patient care. In regards to the

quality of nursing care, the total sample's posttest mean score was 4.04 points (Mdn=4.00, SD=0.91). Although slightly lower, these findings were consistent with the sample's pretest mean scores of 7.45 points on subscale 1, and 4.10 points on subscale 2.

Analysis of the posttest mean ICQ scores demonstrated that interdisciplinary staff on Unit A (M=6.88, Mdn=7.00, SD=1.13) and Unit B (M=7.25, Mdn=7.50, SD=1.28) were generally more satisfied with aspects of nursing care knowledge, accountability, authority and co-ordination of care, as indicated by lower mean scores, than compared with respondents from the comparison unit (M=7.50, Mdn=7.50, SD=1.20). Similarly, subjects from Unit A (M=3.75, Mdn=4.00, SD=0.46) and Unit B (M=3.75, Mdn=4.00, SD=0.89) reported greater satisfaction with the quality of nursing care at the study facility overall, and on affiliated inpatient units than staff from the comparison unit (M=4.63, Mdn=4.50, SD=1.06). Posttest ICQ item and subscale mean scores are depicted in Table 27.

Table 27

Posttest ICQ Item and Subscale Mean Scores

ICQ Items	Total Sample (N=24)		Unit A (N=8)		Unit B (N=8)		Comparison Unit (N=8)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Accountability	2.42	0.59	2.25	0.46	2.50	0.53	2.50	0.53
Authority	1.46	0.51	1.37	0.51	1.25	0.46	1.75	0.46
Co-ordinates	1.67	0.48	1.60	0.52	1.56	0.53	1.70	0.48
Knowledge	1.67	0.48	1.75	0.46	1.75	0.46	1.50	0.53
Quality of Hospital	2.25	0.53	2.12	0.35	2.12	0.64	2.50	0.53
Quality of Unit	1.79	0.59	1.62	0.52	1.62	0.52	2.12	0.64
Subscale 1	7.21	1.18	6.87	1.13	7.25	1.28	7.50	1.19
Subscale 2	4.04	0.91	3.75	0.46	4.00	0.89	4.50	1.06

Inferential Statistics. Given the small sample sizes, unknown distribution of demographic variables and non-normal distribution of outcome variables, the Kruskal-Wallis Test was used to detect for statistically significant differences among study groups in mean satisfaction scores on the two ICQ subscales. Similar to the reported baseline findings, no

statistically significant differences in posttest scores were found among the three samples on either subscale 1 or subscale 2 of the ICQ (Table 28).

Table 28

Kruskal-Wallis Test for Posttest Interdisciplinary Staff Satisfaction

Sample Groups	N	Mean Rank	Chi-Square Statistic	Degrees of Freedom	Level of Sig.
ICQ Subscale 1			1.01	2	0.61
Unit A	8	10.63	--	--	--
Unit B	8	12.88	--	--	--
Comparison Unit	8	14.00	--	--	--
ICQ Subscale 2			4.30	2	0.12
Unit A	8	10.25	--	--	--
Unit B	8	11.00	--	--	--
Comparison Unit	8	16.25	--	--	--

The Friedman Test was utilized to compare for statistically significant differences within study groups in mean satisfaction scores on the two ICQ subscales from pre- to posttest. A statistically significant increase in reported satisfaction with the quality of nursing care was found only for Unit B (Table 29).

Table 29

Friedman Test for Interdisciplinary Staff Satisfaction

Sample Groups	N	Pretest Mean Rank	Posttest Mean Rank	Chi-Square Statistic	Level of Sig.
ICQ Subscale 1					
Unit A	8	1.56	1.44	0.15	0.71
Unit B	8	1.56	1.44	0.20	0.66
Comparison Unit	8	1.56	1.44	0.15	0.71
ICQ Subscale 2					
Unit A	8	1.44	1.56	0.34	0.57
Unit B	8	1.75	1.25	4.00	0.05*
Comparison Unit	8	1.50	1.50	0.00	1.00

IV. Total Unit Operating Expenditures

Actual total unit operating expenditures were defined to include costs based on two major expense categories: non-medical base salaries, and medical/surgical supply costs. The budget years of 1997 and 1998 were each based on a total of nine months inclusive of the dates January 01 to September 31. The 1998 actual total unit operating expenditures were tabulated and compared with the 1997 cost figures (Table 30). As illustrated, total unit operating expenditures rose by $329,281 dollars on Unit A and by $356,879 dollars on Unit B from 1997 to 1998. This represented an overall increase of over 26% in total unit operating expenditures for both units. The category of non-medical base salaries versus medical/surgical supplies represented the largest source of cost increase for each unit. The 1998 expenditures associated with non-medical base salaries rose over $300,000 dollars per unit, or 27% above the 1997 budget year figures.

Table 30

Actual Unit Operating Expenditures

Actual Unit Operating Expenditures	1997	1998	Cost Difference	% Change
Experimental Unit A				
Non-Medical Salaries	$1,165,937	$1,482,092	$316,155	27.1%
Med. / Surgical Supplies	$57,173	$70,299	$13,126	23.0%
Total Operating Costs	$1,223,110	$1,552,391	$329,281	26.9%
Experimental Unit B				
Non-Medical Salaries	$1,279,434	$1,628,382	$384,948	27.3%
Med. / Surgical Supplies	$83,744	$91,705	$7,961	9.5%
Total Operating Costs	$1,363,208	$1,720,087	$356,879	26.2%

At the same time that total operating expenditures increased, comparative analysis revealed that the total number of patients admitted and transferred onto each unit declined from 1997 to 1998 by 8% (n=63) on Unit A and by 6% (n=43) on Unit B. For both experimental units, the category of transfers in accounted for a 10% to 12% decline in overall

patient numbers in 1998. Table 31 displays the total number and percentage of change in patient admissions and transfers in per unit during the budget years of 1997 and 1998.

Table 31

Total Patient Admissions and Transfers

Patient Census	1997	1998	Difference	% Change
Experimental Unit A				
Admissions	614	566	-48	-7.8%
Transfers In	156	141	-15	-9.6%
Total	770	707	-63	-8.2%
Experimental Unit B				
Admissions	605	580	-25	-4.1%
Transfers In	146	128	-18	-12.3%
Total	751	708	-43	-5.7%

An average cost per patient was calculated based on the total costs expended overall and per major category, divided by the number of patient admissions and transfers in during that budget year. Table 32 illustrates the average cost per patient and the differences between 1997 and 1998 figures. Comparative analysis found that the average total costs per patient increased by $607.29 dollars (38%) on Unit A and by $614.32 dollars (34%) on Unit B. Both major expense categories displayed percentage increases in average costs per patient. However, the category of non-medical base salaries versus medical/surgical supplies accounted for the largest average cost increase per patient in 1998, ranging from $582.11 dollars (38%) on Unit A to $596.33 (35%) on Unit B.

Table 32

Average Costs Per Patient

Average Costs per Patient	1997	1998	Cost Difference	% Change
Experimental Unit A				
Salary Costs	$1,514.20	$2,096.31	$582.11	38.4%
Med. / Surgical Supplies	$74.25	$99.43	$25.18	33.9%
Total Unit Expenditures	$1,588.45	$2,195.74	$607.29	38.2%

Table 32 Continued

Average Costs per Patient	1997	1998	Cost Difference	% Change
Experimental Unit B				
Salary Costs	$1,703.64	$2,299.97	$596.33	35.0%
Med. / Surgical Supplies	$111.55	$129.53	$17.98	16.1%
Total Unit Expenditures	$1,815.19	$2,429.50	$614.31	33.8%

Chapter Summary

Descriptive statistics revealed that overall, patients were generally satisfied with their hospital stays. On both pre- and posttest measures, patients reported during their hospital stay that they were most satisfied with the staff's technical competency and personal manner. In contrast, patients were found to consistently report hospital meals as the least satisfying aspect of their admission. This study failed to find a statistically significant difference in reported patient satisfaction between the comparison and experimental groups, four months after implementation of the CCM.

The study findings also indicated that nurses from the experimental units reported an overall increase in nursing job satisfaction from pre- to post-implementation of the CCM. However, this difference was only statistically significant related to job autonomy for one of the two experimental groups. A noteworthy finding was the significant decline over time in nurses' satisfaction with work worth among all three study groups ($p<.02$).

The study documented that interdisciplinary staff on the experimental units were generally more satisfied with the nursing care delivery system both pre- and post-implementation of the CCM. However, on posttest measures a significant increase in interdisciplinary staff satisfaction on one of the two experimental units was reported in relation to the quality of nursing care.

Finally, comparative analysis of costs revealed that from 1997 to 1998, total unit operating expenditures had increased by more than 26% or over $325,000 on both

experimental units. Non-medical base salaries accounted for the largest percentage increase in total unit operating expenditures in 1998. Due to a reduction of between 5% to 8% in the total number of patient admissions and transfers in on each unit, the total average cost per patient increased in 1998 to more than $600 dollars above 1997 figures.

Chapter VI

Discussion of the Findings

This study failed to find evidence to support the hypothesis that a statistically significant increase in patient satisfaction would be reported among the experimental groups, four months after implementation of the CCM. This result was not unexpected given the contradictory, and inconclusive findings of previous research studies pertaining to patient satisfaction under a primary-based, nursing care delivery system. The findings of this study related to patient satisfaction may have been influenced by several factors: (1) the inclusion of non-probability sampling techniques; (2) small sample sizes; (3) unrelated pre- and posttest sample groups; and (4) the limited time in which the CCM was operationalized prior to commencing the posttest phase of the study. Kovner, Hendrickson, Knickman and Finkler (1994) have suggested that it may take up to one year for new initiatives in nursing care delivery to be fully implemented, and the expected outcomes realized.

Other variables that may have been influential on reported patient satisfaction in this study include: (1) patients' expectations of what constitutes satisfactory hospital care and, (2) health care outcomes experienced during the patient's hospital admission. Neither of these variables were controlled for in this study. However, earlier research has documented that patient expectations may not be well formulated prior to hospitalization and therefore, staff have a significant opportunity to shape patient perceptions of care (Harper-Petersen, 1988). Despite this argument, there remains serious concerns among researchers regarding global measures of patient satisfaction (eg. "how satisfied were you with.....") as being inadequate to measure a multidimensional phenomenon, and raise questions about which facet of satisfaction any group of respondents may be rating (La Monica, Oberst, Madea & Wolf, 1986). The lack of significant difference in patient satisfaction may also be explained by the

absence of patient exposure to both systems of nursing care delivery and thus, patient opinions are limited to their experience with the singular model.

Another possible explanation offered by Daeffler (1975) and Ryan et al (1988) may be that if intravening variables such as adequate staffing levels and nurse competencies are equitable, any system of nursing care delivery can be mutually satisfying to patients. In other words, nurses' clinical and interpersonal skills may be more influential determinants of patient satisfaction than the structural organization of nursing care. Although the researcher did attempt to match the study units based on patient populations and staffing patterns, it was not within the scope of this study to control for nursing competencies among the three groups.

There are also methodological issues related to the inability of the researcher to control for the impact of multiple health care providers on patient perceptions of hospital care. Patient ratings of aspects of hospital care outside the control of direct care providers may be erroneously attributed to them. This calls into question the inherent logic of combining patient responses to obtain an overall satisfaction score that equally weights items such as the technical competency of the staff with the quality of the meals.

Another intravening variable to consider in light of the study's findings, includes the operationalization of patient care co-ordination under the CCM. Mark (1995) has suggested that the structures and processes of nursing care may change without subsequent changes in outcomes when no causal links occur between them. In other words, the redesigning of the structure and process of nursing care delivery to ensure greater co-ordination among health care providers may not necessarily alter how patients and families perceive their level of satisfaction with direct care. So although the process of nursing care delivery has changed, this change may not be visible to patients and families and thus, has no overall impact on

patient satisfaction. It was also not within the scope of the study to have controlled for the way in which each individual care co-ordinator (CC) operationalized the model with assigned patients under the guidelines established by the CCM Planning Committee.

A final but, equally plausible explanation for the study findings may have involved the reluctance of patients to complete questionnaires with negative ratings despite assurances of anonymity. Subject response bias cannot be dismissed as a possible extraneous variable in survey studies even when counter measures are undertaken by the researcher to minimize the effect.

In summary, patient satisfaction is believed by the researcher to be a legitimate outcome measure to use in gauging the quality of nursing care delivery but admittedly, it may not be sufficiently sensitive to evaluate the impact of organizational change implemented under the CCM. Patient judgements of specific aspects of hospital care still remains invaluable in allowing clinicians to utilize the feedback so as to improve service delivery.

The second research hypothesis was partially supported by the study findings. It had been hypothesized that staff nurses on the experimental units would report greater satisfaction with their work and work environment following implementation of the CCM. Although no statistically significant increase was found related to overall nurse job satisfaction from pre- to posttesting, there was a significant increase in reported satisfaction with job autonomy for staff nurses on one of the two experimental units.

Researchers have found that the most significant extrinsic predictors of nursing job satisfaction include opportunities for advancement; adequate praise and recognition; sense of control and responsibility; and nonroutinzation of tasks (Blegen & Mueller, 1987; Mueller & McCloskey, 1990; Slavitt, Stamps, Piedmont & Haase, 1978). Fralic (1992) found that nurses who practice care co-ordination report increased feelings of autonomy, confidence,

accountability, and interdisciplinary collaboration. The question remains as to why the study failed to find a statistically significant increase in overall nurse job satisfaction?

Previous research contradicted the findings of this study by reporting a statistically significant increase in nurse job satisfaction after the implementation of a primary-based nursing system (Blair et al, 1982). Intravening variables which may have been influential on nurse satisfaction outcomes in this study include: (1) bias resulting from the non-random, selective recruitment of nurses into the two experimental groups, (2) bias from the Hawthorne effect, (3) small sample sizes, (4) the novelty effect of system change, (5) the influence of researcher as 'insider,' and (6) differing degrees to which staff nurses operationalized the care co-ordinator role.

Another plausible explanation for the study's contradictory findings may arise directly from the reality of nurses' work lives. The argument has been made in the literature that the increased complexity and acuity of patient health care needs has necessitated that staff nurses assume greater responsibility for the co-ordination of inpatient care (Atack & Kenny, 1998). However, researchers have found that factors such as health care under-resourcing, heavy patient workloads, and the inability to exercise control over the pace and content of work, all combine to effectively negate feelings of enhanced nursing job satisfaction that result from increased professional autonomy and decision-making in the workplace (Blegen & Mueller, 1987). Perala and Hentinen (1989) found that 80% of the nurses (N=62) surveyed in their study reported dissatisfaction with their roles under a primary-based model due to a cited lack of organizational support. Similarly, Sella and Macleod (1991) reported that 39% of nurses (N=96) felt that insufficient time, heavy workloads, inadequate staffing, and a lack of team work were constraints on the primary-based nursing role. This argument is further supported by the theoretical framework used in

this study which postulates that the organizational structure (eg. staffing patterns, labour saving technologies) must adequately support the processes and outcomes of patient care for the system to be effective (Evans and Brown, 1981). In fact, during the trial period of the CCM, the research setting faced a critical shortage of staff nurses, necessitating contingency planning over the summer months. The exact impact of the staffing crisis on nurse job satisfaction as measured in this study can not be known.

By evaluating the research findings within the context of the larger health care structure, it may then not be surprising that the study found a statistically significant decline over time among all three groups in nurse satisfaction related to work worth. Work worth was measured by four scale items related to how nurses perceived the skill variety of their roles in addition to their sense of contribution to the hospital, profession and own personal achievement, irrespective of wages. The changes envisioned under the CCM occur at the level of patient care, with no real impact on the structure or process of the overarching hospital bureaucracy. Thus, the current philosophy of asking nurses to assume additional clinical responsibilities, do more with less, work harder and faster, may only work to suffocate any feelings of personal and/or professional achievement. Further support for this argument was found in the research of Carlsen and Malley (1981) who reported that regardless of the type of nursing system employed (eg. team or primary nursing systems), neither was deemed sufficient in affording nurses with opportunities for prestige, self-actualization or fairness in working conditions. This directly calls into question structural factors that extend beyond the issue of simply how nursing care is organized. Coincidental to the study, much coverage was garnished in the media regarding the following issues: local nurses' union contract negotiations with the provincial government; hospital bed closures; staffing shortages; and time delays in patient surgeries, and hospital admissions. To what

extent the media coverage of these issues influenced nurses opinions regarding their level of current job satisfaction can only be surmised.

Finally, there remains at an intuitive level a lingering question regarding the weighting of all the components of job satisfaction in the study as mutually exclusive, equally salient, and totally encompassing of what makes nurses' work satisfying. This study did not attempt in any way to control for individual's perceptions of what aspects of professional practice are most influential in determining personal satisfaction with work life.

The study found only partial support for the third research hypothesis that a statistically significant increase in interdisciplinary staff satisfaction with the nursing care delivery system would be reported four months after implementation of the CCM. On the subscale related to the quality of nursing care, a statistically significant increase in interdisciplinary staff satisfaction was found for one of the two experimental units. This finding must be interpreted cautiously as the particular subscale encompassed ratings of nursing care quality on both the specific study unit, and within the hospital overall. Therefore, one cannot conclude that the quality of nursing care improved on the study unit as a result of the implementation of the CCM.

Previous researchers, using survey and audit tools, have documented statistically significant increases in ratings of nursing care quality following implementation of primary-based delivery models (Culpepper et al, 1986; Eichorn & Frevert, 1979; Ryan et al, 1988). Intravening study variables that may have influenced the findings include: (1) the length of the trial period; (2) small sample sizes; and (3) non-probability sampling techniques. Perhaps the most notable intravening variable in this study on interdisciplinary staff outcomes was identified by the researcher to involve the issue of instrumentation.

Respondents commented that the survey instrument used in this study failed to provide sufficient choices in response categories, calling into question the sensitivity of the instrument to detect any changes over time in staff satisfaction with the nursing care delivery system. A pilot of the instrument prior to the commencement of the study would have formally identified and alleviated this issue.

Of particular interest were the remarks of several interdisciplinary staff, who perceived one of the benefits post-implementation of the CCM to be the enhanced ease of communication among team members regarding patient care issues. This administrative efficiency was believed by subjects to have resulted from being able to easily identify, and communicate with one staff nurse (CC) who was cognizant and up-to-date on an assigned patient's health care issues. This particular finding has been previously documented and supported by researchers (Ciske, 1974; Haff, 1988; Ryan et al, 1988).

The fourth research hypothesis was neither supported nor refuted by the study's findings. It had been hypothesized that post-implementation of the CCM, patients from the two experimental units would report a statistically significant reduction in post-discharge rates of hospital readmissions, emergency room use and unscheduled physician visits, three months after discharge. Recruitment of a small patient sample size, combined with an overall patient attrition rate of 62%, precluded testing for statistically significant differences in subject rates of post-discharge health care service usage. A telephone follow-up interview versus survey mail-out was considered by the researcher as the least expensive alternative, and one that would have ensured a higher subject response rate. However, a more reliable approach that may have offset the difficulties encountered in this study, would have been to access the computerized records of the Provincial Health Information Services Branch. The cost of conducting this type of computer search was considered prohibitive in this study.

Lastly, the study failed to find evidence to support the fifth and final research hypothesis that total operating expenditures on the two experimental units would not vary from pre- to posttesting. Analysis of the 1998 total unit operating expenditures, inclusive of the months January to September, revealed substantial increases of more than $325,000 dollars above 1997 cost figures. The category of non-medical salaries of nurses and unit assistants accounted for the largest percentage increase in 1998 operating expenses. This category of expense is inclusive of paid regular hours worked, sick time, over time and vacation hours. The study did not control for differences in expenditures between 1997 and 1998 related to paid regular hours versus those hours accrued from sick time, over time and/or vacation.

Non-medical base salary expenditures are variable and dependent upon the level of staff seniority. In this study, the sample of RNs surveyed had on average 11.95 years of professional work experience on Unit A and 8.67 years on Unit B. However, incremental changes in salary differentials related to years of professional work experience fail to provide sufficient explanatory value for the extent to which 1998 unit operating expenditures increased above the previous budget year.

The bed capacities on Unit A (33 beds) and Unit B (34 beds) were unchanged from 1997 to 1998. Master staffing patterns on each of the two experimental units remained consistent throughout January to September of 1998 (J. Malcolm & C. Rodstrom, personal communication, November 29, 1998). In comparison with 1997 master staffing patterns, Unit A had increased baseline staff requirements in 1998 by one unit assistant and two RNs on day shifts, and one RN on nights. Similarly, Unit B increased baseline staff by 1 RN on day and night shifts, and one unit assistant on days during the 1998 budget year. In addition, master staffing patterns on both units are adjusted daily to accommodate increased patient-generated

workloads. The overall change in master staffing patterns; fluctuating daily demands for additional staff; and critical staffing shortages necessitating overtime hours, partially explain the increased salary expenditures.

An alternative explanation for the study's findings may be that the overall reduction in total patient admissions and transfers in during the 1998 budget year was reflective of increased levels of patient acuity mandating longer length of stays. Wolf, Lesic & Leak (1986) documented that the two strongest predictors of nursing care costs were nursing workload and length of patient stays ($p<.05$). Wolf et al (1986) found that these factors together accounted for 76% of the variance in nursing care costs. Chavigny and Lewis (1984) found in their study that differences in cost between primary and team units were not related to staffing patterns or the number of discharges but rather, patient diagnosis and required level of nursing care. This explanation was not validated by the findings since the study failed to control for patient PRNs and length of stays during the 1997 budget year. The lack of control for patient acuity levels has consistently been a limitation within previous published nursing research related to primary-based nursing systems (Felton, 1975; Gardner, 1991; Giovanneti 1980; & Marram, 1976).

Using a similar line of reasoning, increased patient acuity levels could conceivably drive up costs associated with medical/surgical supplies. Based upon the findings of this study, the percentage of change in medical/surgical supply costs from 1997 to 1998 ranged from 16% to 34%. Inflationary costs and new purchase contracts during the budget year could account for a percentage increase in these expenditures annually.

In theory, pilot implementation of the CCM did not require an alteration in the master staffing patterns on either of the two units. However, heavy patient workloads occasionally necessitated CCs to utilize up to four paid regular hours per week to dedicate

only to care co-ordinating functions. Costs associated with relief RN staffing for those hours ultimately added to the overall 1998 budget expenditures but, are not sufficient to explain the total increase. At a recent CCM Planning Committee Meeting, several CCs stated that the additional time required to co-ordinate patient care resulted from a lack of clarity regarding the associate nurse's role. The Planning Committee has begun to address this issue through planned CCM education forums and staff meetings on each of the units beginning in January 1998.

In summary, the study failed to find statistically significant differences in ratings of overall satisfaction among the patient and nurse samples from baseline to posttesting. In contrast, interdisciplinary staff from one of the two experimental units reported a statistically significant increase in satisfaction with the quality of nursing care, pre- to post-implementation of the CCM. Total unit operating expenditures were found to have dramatically increased on the two experimental units from pre- to post-implementation of the CCM. In the preceding discussion, a number of possible threats to the internal validity of the study were identified, and alternative explanations for the research findings discussed. Cognizant of the research limitations, the findings have been utilized by the CCM Planning Committee in determining the program's merits, and in planning for future development of the model. On the basis of this research, the implications for nursing research, education and practice can be extrapolated.

Implications for Nursing Research, Education, and Practice

Nursing Research

The study is a first in the research setting to make these particular comparisons, and is therefore limited in terms of the selected sample. In addition, clinical-based or applied research studies, unlike any other area of nursing research, are reputed to insufficiently

control for extraneous variables, again limiting the application of study's findings to other settings (Beattie, Cheek & Gibson, 1996). Beyond the methodological concerns, applied nursing research can be frequently hampered by issues of collegiality and collaboration (Wilson-Barnett, Corner & De Carle, 1990). The researcher as organizational insider can experience a marginalization or the closing off from colleagues, with their peers' unspoken word being "why you and not me" (Beattie et al, 1996). This study was in no way immuned or exempted from such difficulties. Regular and frank discussions with interested stakeholders, awareness of the socio-political issues in the study setting, flexibility and diplomacy, and sensitivity to not overburdening clinical staff were key to the success of the research project. Despite the challenges of applied research, the current era of health care reform demands that innovations in nursing practice are implemented with an appropriate mechanism for evaluation. The greatest value of undertaking applied research may lie in its ability to link science with practical utility through merging the worlds of researchers and practitioners. In doing so, we advance the profession further towards the establishment of evidence-based practice. But I like other researchers, believe that in order to conduct a clinically relevant applied study, the researcher must possess practice credibility and research ability (MacGuire, 1990).

Although I attempted to rigorously examine the outcomes of the CCM, the study clearly highlights the need for more stringent research to evaluate the questions generated. With the obvious difficulty in controlling for the impact of the organizational climate; and with limitations around conceptualization of study variables, research methodology and instrumentation, I suggest future research blend both quantitative and qualitative approaches (eg. case studies). Based upon my earlier literature review of published satisfaction instruments, there is also an important demand for research development in the area of patient

and nurse satisfaction tools that accurately represent current professional functions of staff nurses in the practice setting.

This study has identified a number of new areas where future research is warranted. The CCM Planning Committee is keenly aware that ongoing evaluation of the program is required, and is currently targeted to commence in March of 1999. Based upon preliminary group discussions, the following areas have been identified for evaluation:

1. To clarify what our inpatients' and their families value as the most important 'satisfiers' of their hospital experience through a qualitative approach.

2. Identification of patient perceptions of nursing and nursing's role in the adult acute care medicine area.

3. To investigate among our discharged patient population whether hospital readmissions are preventable (eg. failure of the health care delivery system) or non-preventable (eg. disease progression).

4. To examine the length of extra hospital days incurred for our patient population as a direct result of delays in discharge planning versus medical care issues.

5. To explore what issues nurses employed in the tertiary care setting perceive to be impacting upon their quality of work life.

6. To investigate what aspects of the staff nurse practice role are most valued by nurses.

7. To identify the extent and cost of time care co-ordinators spend engaged in indirect and direct patient care activities.

The clinical practitioners involved in this study have formally placed themselves on record as major contributors to health care by not only delineating the full scope of their practice in the tertiary care setting, but also through their commitment to identify and evaluate ways to improve the delivery of those services. To this end, the members of the CCM Planning Committee remain dedicated.

Nursing Education

Given the increasing complexity and acuity of patient care needs, future clinical practitioners are required to possess the basic skills required to effectively co-ordinate the provision of inpatient services delivered by a multitude of health care professionals. Academic institutions are called upon to evaluate current course offerings to ensure that students are provided with sound leadership abilities, interpersonal skills, clinical decision-making aptitudes, and awareness for economic concerns in the delivery of health care services. Secondly, there can not be an assumption that all practising nurses are either educationally, experientially and/or philosophically oriented to become patient care co-ordinators. For those nurses who seek additional clinical autonomy and responsibility, the CCM provides for expert nurses to mentor staff through the associate nurse role. However, there remains a need for health care facilities, academic institutions, and professional associations to offer ongoing education inservices, forums, and workshops in the areas of leadership, management, and delegation to support ongoing professional development.

Nursing Practice

The CCM was founded upon the concept of differentiated practice that acknowledges staff nurse expertise based upon experience and education. In the context of salary compression and the absence of clinical ladders, there appears to be little organizational support for the concept. I believe it is time to revisit this debate, and formally

acknowledge as well as remunerate nursing practitioners based upon differing levels of education, autonomy, skill variety, and competence.

The CCM represented a grassroots nursing initiative that began in 1995. Staff nurse involvement in work redesign innovations and clinical-based evaluation studies requires a fundamental commitment from agency administration to be successful. Organizational support in the form of flexible scheduling of hours, protected staff time dedicated to non-patient care activities, and work space in the clinical area outfitted with computer and software technology are required to foster continued professional staff development.

Work redesign models are at best a bandaid solution when at the heart of the issue may lie inadequate human resourcing within health care organizations. Governments, academic institutions, health care facilities, and professional associations are called upon to collaborate in developing recruitment/retention strategies to ease current and forecasted staffing shortages. Concurrently, nurses cannot abandon their professional responsibility to vocalize current workplace health and safety issues, and to lobby government for the allocation of finite funding dollars into the health care economy.

Chapter Summary

The CCM embodies a philosophy of nursing care, and as such, contains important ideas for the way in which we approach contemporary professional practice. The significance of the study in documenting the scope of nursing practice within the tertiary care setting cannot be negated. There are however, obvious difficulties as discussed earlier in controlling for the effects of the organizational culture and climate when evaluating the outcomes of clinical-based nursing innovations. On the other hand, studies such as this spotlight those organizational factors that are inextricably linked and ultimately influential upon the processes of nursing care, staff work lives, and patient care outcomes.

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Appendix A

Explanation For The Patient Recruiter

A research study is being conducted to evaluate the outcomes of a newly implemented model of nursing care delivery that alters the approach to co-ordinating the professional care patients receive while in hospital. The study is being conducted on three adult acute care medical units, and is being conducted by Kimberly Jabusch, who is a registered nurse and a graduate nursing student at the University of Manitoba. She is conducting this study in partial fulfilment of her Master of Nursing degree program.

As part of the research project, Kimberly is interested in obtaining the opinions of adult medical patients regarding their satisfaction with their hospital stay. Patients who agree to participate in this study, would be required to complete an information form and satisfaction questionnaire on the day of hospital discharge. A telephone interview will take place several months later to inquire about the health care services you have required since returning home. Your participation in this study is strictly voluntary. The total time required to participate in the study will be approximately 20 minutes.

Would you like to meet with Kimberly so that she can provide you with additional information about her study, and answer any of your questions?

May I give Kimberly your name?

If yes, your name will be submitted to the researcher. Thank you for your time and co-operation.

If no, thank you for your time.

Appendix B

An Invitation To Patients

I invite you to take part in a research project entitled "A Pilot Study of the Implementation of a Multi-disciplinary Approach to the Episodic Health Care Management of Adult Acute Care Medical Inpatients." This study is being conducted to help health care professionals understand how hospital services can be better co-ordinated for their patients. I am conducting this study as the basis of my thesis in the Master of Nursing Program, at the University of Manitoba. The Ethical Review Committee at the University of Manitoba, Faculty of Nursing, has approved this study.

If you agree to take part in this study, your participation will involve two parts. First, you will be asked to take ten minutes to complete a satisfaction questionnaire and information form on the day you are discharged from the hospital. The questionnaire inquires about how satisfied you were with the care received while in hospital. The information form will ask about your gender, age, marital status, education and health services received at home, prior to your hospital admission. With your permission, your hospital charts will be reviewed to obtain the date of your admission and discharge; past and present medical diagnoses; surgery (if applicable); level of nursing care required; health care services needed upon going home; and your telephone number.

The second part of this study will involve being contacted by telephone approximately 12 weeks after your discharge. You will be asked whether or not, you have unexpectedly seen a doctor; gone to an emergency room; or been readmitted to a hospital. This will take approximately ten minutes of your time.

Your participation in this study may be of no direct benefit to you. There will be no financial cost to you as a result of participating. The only known risk may be some loss of privacy. However, to ensure confidentiality, the information collected from you will be coded by number, not by name. At no time, will it be possible to identify individuals in written or oral report from this study. Only myself (Kimberly Jabusch) and my thesis advisor (Dr. Erna Schilder) will have access to identifying data. Your signed consent form will be kept separate from your answers, and all information will be kept in locked drawers for seven years and then destroyed

You are under no obligation to participate in this study. Whether or not you choose to participate, will in no way effect the care you receive in hospital. Should you, at any time choose to withdraw from this study for whatever reason, you are free to do so.

If you decide to take part in this study, thank you for your time and co-operation. I will be in contact with you shortly, to discuss your participation. Should you have any questions concerning this study, please feel free to contact Kimberly Jabusch (837-2010) or Dr. Erna Schilder (474-9664) at the University of Manitoba.

Kimberly Jabusch, RN, MN student, Faculty of Nursing, University of Manitoba

Appendix C

Patient Consent Form

I _____, agree to participate in the research project entitled "A Pilot Study of the Implementation of a Multi-disciplinary Approach to the Episodic Health Care Management of Adult Acute Care Medical Inpatients." This study is being conducted by Kimberly Jabusch, Master of Nursing student in the Faculty of Nursing at the University of Manitoba. This study is being conducted to help health care professionals understand how hospital services can be better co-ordinated for their patients. I have been invited to participate in this study as my opinion is valuable to the researcher.

I understand that my participation in this study is strictly voluntary. In the first part of the study, I will be asked to take ten minutes to complete a satisfaction questionnaire and information form on the day that I am discharged from the hospital. The questionnaire inquires about how satisfied I was with the care received while in hospital. The information form asks about my gender, age, marital status, education, and health services received at home prior to my hospital admission. I understand that Kimberly will have access to my hospital charts to collect information regarding my date of admission and discharge; past and present medical diagnoses; surgery (if applicable); level of nursing care required; health care services needed upon going home; and my telephone number. In the second part of the study, I will be contacted by telephone approximately 12 weeks after my discharge. I will be asked whether or not I have unexpectedly seen a doctor; gone to an emergency room; or been readmitted to a hospital. This will take approximately ten minutes of my time.

My participation in this study may be of no direct benefit to me. There will be no financial cost to me as a result of participating. My only risk may be some loss of privacy. Kimberly will code my name by a number. At no time will it be possible to identify individuals in written or oral reports from this study. Only Kimberly and her thesis chair (Dr. Erna Schilder) will have access to my identifying data. My signed consent form will be kept separate from my answers, and all information will be kept in locked drawers for seven years and then destroyed. I understand that the care I receive during my hospital stay will in no way be effected by choosing to participate, or not in this study. I also understand that I am free to withdraw from this study at any time. I am aware that this study has been approved by the Ethical Review Committee of the Faculty of Nursing, University of Manitoba. I know that I am free to contact Kimberly (204-837-2010) or Dr. Erna Schilder (204-474-9664) if I have any questions about this study. I have been offered a copy of the summary of the project.

My signature below indicates my willingness to participate in this study.

Date:_____ Send To:_____(Name)

Patient Signature_____ _____(Address)

Researcher Signature_____ _____

Appendix D

Explanation for the Nurse Recruiter

A research study is being conducted to evaluate the outcomes of a newly implemented model of nursing care delivery that alters the approach to co-ordinating the professional care patients receive while in hospital. The study is being conducted by Kimberly Jabusch, who is a registered nurse and a graduate nursing student at the University of Manitoba. She is conducting this study in partial fulfilment of her Master of Nursing degree program.

Your name has been selected from a list provided by your unit manager. As part of the research project, Kimberly is interested in obtaining the opinions of registered nurses employed in adult medicine, regarding their satisfaction with their work and work environment. Your participation would require a total time commitment of approximately 20 minutes. Staff nurses who agree to participate will be requested to complete an information form and satisfaction questionnaire in January and June of 1998. Your participation in this study is strictly voluntary.

Would you like to meet with Kimberly so that she can provide you with additional information about her study, and answer any of your questions?

May I give Kimberly your name?

If yes, your name will be submitted to the researcher. Thank you for your time and co-operation.

If no, thank you for your time.

Appendix E

Disclaimer for Nursing Staff

A research study entitled "A Pilot Study of the Implementation of a Multi-disciplinary Approach to the Episodic Health Care Management of Adult Acute Care Medical Inpatients" is being conducted to evaluate the outcomes of a newly implemented model of nursing care delivery. This model alters the approach to coordinating the professional care patients receive while in hospital. The results of this study may help health care professionals better understand the efficacies of similar inpatient care service delivery models. I am conducting this study as the basis of my thesis in the Master of Nursing Program, at the University of Manitoba. The Ethical Review Committee at the Faculty of Nursing, University of Manitoba, has approved this study.

I would like to personally invite you to take part in this research study. If you agree to take part, you will be asked to respond to an information sheet and satisfaction questionnaire. The completion of these forms will take approximately 10 minutes of your time. The information sheet asks for demographic information such as your gender, age, education, marital status, and number of years of work experience. The questionnaire is designed to obtain your opinion regarding the degree of satisfaction you presently have with the nature of your work and work environment. As part of this study, you will be asked to complete this satisfaction questionnaire in January and June of 1998.

Your participation in this study may not be of any direct benefit to you. There will be no personal financial costs incurred as a result of your participation in the study, and the only known risk may be some loss of privacy. However, to ensure confidentiality, you will not be asked to write your name on the study items. The data will be coded only by number. All information will be analysed and presented in such a way that it will not be possible to identify individual respondents. Only myself (Kimberly Jabusch) and my thesis committee chair (Dr. Erna Schilder) will have access to identifying data. Your disclaimer form will be kept separate from the study item results. During and after the research study, all information obtained will be kept in locked drawers for seven years and then destroyed.

Your participation in this study is strictly voluntary. You are not obligated at anytime to continue in this study, should you decide for what ever reason to withdraw. Your employment status will in no way be effected by your decision to participate or withdraw from the study. At no time will your unit manager be aware of who has chosen or not, to participate.

Should you have any questions, please feel free to contact Kimberly Jabusch (837-2010) or Dr. Erna Schilder (474-9664) at the University of Manitoba. You have been offered a copy of the summary of the project.

Date:_____ Send to:_____(Name)

_____(Address)

Researcher:_____ _____

Appendix F

Explanation for Interdisciplinary Staff Recruiter

A research study is being conducted to evaluate the outcomes of a newly implemented model of nursing care service delivery that alters the approach to coordinating the professional care patients receive while in hospital. The study is being conducted on three adult acute care medical units by Kimberly Jabusch, who is a registered nurse and a graduate nursing student at the University of Manitoba. She is conducting this study in partial fulfilment of her Master of Nursing degree program.

All interdisciplinary staff from GA4, GD4, and GH4 are being invited to participate in this study. A list of names has been provided by the unit managers. As part of the research project, Kimberly is interested in obtaining the opinions of interdisciplinary team members regarding their present level of satisfaction with the nursing service delivery system on these inpatient care units. Your participation would require a total time commitment of approximately 10 minutes. Interdisciplinary team members who agree to participate will be requested to complete a satisfaction questionnaire in January and June of 1998. Your participation in this study is strictly voluntary.

Would you like to meet with Kimberly so that she can provide you with additional information about her study, and answer any of your questions?

May I give Kimberly your name?

If yes, your name will be submitted to the researcher. Thank you for your time and co-operation.

If no, thank you for your time.

Appendix G

Disclaimer for Interdisciplinary Staff

A research study entitled "A Pilot Study of the Implementation of a Multi-disciplinary Approach to the Episodic Health Care Management of Adult Acute Care Medical Inpatients" is being conducted to evaluate the outcomes of a newly implemented model of nursing care delivery. This model alters the approach to coordinating the professional care patients receive while in hospital. The results of this study may help health care professionals better understand the efficacies of similar inpatient care service delivery models. I am conducting this study as the basis of my thesis in the Master of Nursing Program, at the University of Manitoba. The Ethical Review Committee at the Faculty of Nursing, University of Manitoba, has approved this study.

I would like to personally invite you to take part in this research study. If you agree to take part, you will be asked to respond to an Interdisciplinary Collaboration Questionnaire which will take approximately five minutes of your time to complete. The questionnaire is designed to obtain your opinion regarding the degree of satisfaction you presently have with the nursing care delivery system on one of three adult acute care medical units. As part of this study, you will be asked to complete this satisfaction questionnaire in January and June of 1998.

Your participation in this study may not be of any direct benefit to you. There will be no personal financial costs incurred as a result of your participation in the study, and the only known risk may be some loss of privacy. However, to ensure confidentiality, you will not be asked to write your name on the study items. The data will be coded only by number. All information will be analysed and presented in such a way that it will not be possible to identify individual respondents. Only myself (Kimberly Jabusch) and my thesis committee chair (Dr. Erna Schilder) will have access to identifying data. Your disclaimer form will be kept separate from the study item results. During and after the research study, all information obtained will be kept in locked drawers for seven years and then destroyed.

Your participation in this study is strictly voluntary. You are not obligated at anytime to continue in this study should you decide for what ever reason to withdraw. Your employment status will in no way be effected by your decision to not participate or to withdraw from the study.

If you have any questions or require additional information concerning this study, please feel free to contact Kimberly Jabusch (837-2010) or Dr. Erna Schilder (474-9664) at the University of Manitoba. You have been offered a copy of the summary of the project.

Date:_____ Send to:_____(Name)

_____(Address)

Researcher:_____ _____

Appendix H

Patient Information Form

These questions are for statistical purposes only. These answers will be kept strictly confidential. You are requested <u>not</u> to write your name on this form. Please use a check mark to select the most appropriate answer from those provided. You are required to fill in your age (Question #2). Be sure to answer all the questions.

1. *Your gender?* _____Male _____Female

2. *Your age at the time of your last birthday?* _____Years

3. *Your annual gross income?*
   - _____Less than $15,000 dollars
   - _____$15,000 to $19,999 dollars
   - _____$20,000 to $24,999 dollars
   - _____$25,000 to $29,999 dollars
   - _____$30,000 to $34,999 dollars
   - _____$35,000 to $39,999 dollars
   - _____More than $40,000 dollars
   - _____Refuse to answer

4. *Your marital status?*
   - _____Never Married
   - _____Common Law
   - _____Married
   - _____Separated
   - _____Divorced
   - _____Widowed

5. *Your level of education completed?*
   - _____Less than High School
   - _____High School Graduate
   - _____Technical/Vocational School
   - _____Some University
   - _____University Graduate

6. *The location of your home residence?*
   - _____City
   - _____Town
   - _____Rural/Northern Community

7. *With whom do you live*?

_____Alone
_____Spouse
_____Children
_____Other (Please Specify)

8. *Within the last two weeks before this hospital admission, did you require any of the following services at home*?

_____VON
_____Home Care
_____Meals on Wheels
_____Dialysis Program
_____Mental Health Worker
_____Home IV Program
_____Home Nutrition Program
_____Home Oxygen Program
_____Physiotherapist
_____Dietician
_____Social Worker
_____Private House Cleaning
_____Private Nurse or Aid

_____Other (Please Specify)

Appendix I

Patient Hospital Stay Rating Questionnaire

Your opinion is important. On the next page are several questions about your stay in the hospital. Please read all the questions carefully, and place an X under the category that bests reflects how you would rate each aspect of your hospital stay. Be sure to answer all the questions.

Example:

Aspects of Your Hospital Stay	Excellent	Very Good	Good	Fair	Poor
1.The *competence* of the staff who cared for you (eg. technical skills, thoroughness and carefulness).		X			

Thank you for taking the time to complete this questionnaire.

Aspects of Your Hospital Care	Excellent	Very Good	Good	Fair	Poor
1. The *competence* of the staff who cared for you (eg. technical skills, thoroughness and carefulness)					
2. The *personal manner* of the staff who cared for you (eg. courtesy, sensitivity, friendliness).					
3. The *comfort measures* provided to you (eg. positioning, personal hygiene).					
4. *The length of time* for your call bell to be answered.					
5. *Management of your pain* (control of pain).					
6. *Privacy* provided to you (eg. curtains drawn when washing, door closed when on bed-pan).					
7. *Information* given to you about going home.					
8. *Explanation* of what was done to you.					
9. The meals served to you (eg. variety, taste).					
10. The hospital stay overall.					

Appendix J

Chart and Kardex Data Collection Form

1. Patient ID Code #: _____
2. Home Telephone #: _____
3. Date of Admission: _____
4. Date of Discharge: _____

5. Admitting Medical Diagnosis: _____

6. Surgery Performed (Date & Type) _____

7. Past Medical Diagnoses:

a)_____ f)_____
b)_____ g)_____
c)_____ h)_____
d)_____ i)_____
e)_____ j)_____

8. Admission PRN Points: _____

9. Discharge PRN Points: _____

10. Post-discharge Services Required:

_____VON
_____Home Care
_____Meals on Wheels
_____Dialysis Program
_____Mental Health Worker
_____Home IV Program
____Home Nutrition Program
____Home Oxygen Program
____Physiotherapist
____Dietician
____Social Worker

_____Other (specify)

Appendix K

Telephone Follow-up Questionnaire

Hello, Mr./Ms./Mrs ( ). This is Kimberly Jabusch who is the nurse researcher conducting the research project entitled a pilot study of the implementation of a multi-disciplinary approach to the episodic health care management of adult acute care medical inpatients. Several months ago, while you were in the hospital, you agreed to take part in this study. The day of your discharge, you completed an information form and patient satisfaction questionnaire. As the second part of the study, I would like to take approximately 10 minutes to conduct a telephone interview with you regarding the health care services you have required since your discharge. Is this a good time for you?

If no, or patient is unavailable,.....when would be the best time to call back? Thank you for your time. (Time to call back)_____.
(Reason unavailable)_____.

If refused,.....may I ask why? Thank you for your time. Good-bye.
(Reason Refused)_____.

If yes, ...proceed with the interview questions.

The following questions require you to respond "yes or no" or provide short answers. **Please keep in mind, that all your responses will be kept strictly confidential.**

1. Were any of the following services arranged for you when you left the hospital?

_____Home care	_____Home Oxygen Program
_____VON	_____Physiotherapist
_____Meals on Wheels	_____Dietician
_____Dialysis Program	_____Social Worker
_____Mental Health Worker	_____Private House Cleaning
_____Home IV Program	_____Private Nurse or Aid
_____Home Nutrition Program	_____Other (specify)

2. Has the helped you've received changed since leaving the hospital?.....Yes/No

   if no, go to #4

3. Has the helped you've received increased?.....Yes/No

4. Have you gone to an Emergency Room since you left the hospital?.....Yes/No

   If no, go to #6

5. Did you go to the Emergency Room because:
a) you felt unwell?..... Yes/No
b) you needed medication or medical supplies?..... Yes/No
c) you were unable to manage at home with the help provided?..... Yes/No
d) you had a questions about medications or treatments?..... Yes/No
e) Other reasons..... Yes/No

6. Have you had to be readmitted to a hospital since your discharge?..... Yes/No

if no, go to #8

7. Were you primarily readmitted because:
a) you were feeling unwell?..... Yes/No
b) you were unable to manage at home with the help provided?..... Yes/No

8. Have you gone to a walk-in clinic since you came home from the hospital?..... Yes/No

if no, go to #10

9. Did you go to the clinic because:
a) you felt unwell?..... Yes/No
b) you needed medication or medical supplies?..... Yes/No
c) You were unable to manage at home with the help provided?..... Yes/No
d) You had a question about medical or treatments?..... Yes/No
e) Other reasons..... Yes/No

10. Have you had a doctor's appointment since you left the hospital?..... Yes/No

if no, go to closing

11. Did you have to see your doctor before your appointment was originally scheduled?..... Yes/No

If no, go to closing.

12. Why did you have to go earlier?..... Yes/No
    a) you felt unwell?..... Yes/No
    b) you needed medication or medical supplies?..... Yes/No
    c) you were unable to manage at home with the help provided?..... Yes/No
    d) you had a question about medication or treatments?..... Yes/No
    e) Other reasons..... Yes/No

Thank you Mr./Ms./Mrs. ( ) for taking the time to answer these questions. Your involvement in this study is now completed. Do you have any questions you would like to ask me regarding this research project? Again, thankyou for your time and participation. Good-bye.

Appendix L

Nurse Information Form

These questions are for statistical purposes only. You are requested <u>not</u> to write your name on this form. All of the following information is strictly confidential. Please indicate with a check mark those items that apply to you, and fill in the blank spaces with the appropriate answers. Be sure to respond to all the questions.

1. *Your gender?* _____Male _____Female

2. *Your age at the time of your last birthday?* _____Years

3. *Marital Status?*
   _____Never Married _____Separated
   _____Common Law _____Divorced
   _____Married _____Widowed

4. *Highest Level of Education Attained?*
   _____RN diploma graduate
   _____Some university
   _____BN graduate
   _____Postgraduate

5. *The Number of Years you have been employed as a nurse?*

   _____.

6. *The Number of Years worked on your present unit?*

   _____.

Thank you for taking the time to complete this form.

Appendix M

Work Quality Index

The following questionnaire inquires about your present level of satisfaction with 38 job-related factors. The questionnaire uses a numbered scale of 1 through 7 to rate your present level of job satisfaction. A rating of 1 corresponds to extremely satisfied with 7 being extremely dissatisfied. A score of 4 is neutral. Please indicate your level of satisfaction by circling the most appropriate number. **Your answers are strictly confidential.** Please be sure to read the items carefully, and respond to all the questions.

	Satisfied			Neutral			Dissatisfied
1. The work associated with your position, allows you to make a contribution to:							
01. The hospital.	1	2	3	4	5	6	7
02. The profession	1	2	3	4	5	6	7
03. Your sense of achievement.	1	2	3	4	5	6	7
2. You receive adequate praise for work well done from:							
01. Your peers.	1	2	3	4	5	6	7
02. Hospital physicians.	1	2	3	4	5	6	7
03. Nursing administration.	1	2	3	4	5	6	7
3. The work associated with your position provides you with:							
01. Opportunity to use a full range of nursing skills.	1	2	3	4	5	6	7
02. A variety of clinical challenges	1	2	3	4	5	6	7
03. The opportunity to be of service to others.	1	2	3	4	5	6	7
4. The nursing practice environment:							
01. Allows you to make autonomous nursing care decisions.	1	2	3	4	5	6	7
02. Allows you to be fully accountable for those decisions.	1	2	3	4	5	6	7

	Satisfied			Neutral		Dissatisfied	
The nursing practice environment:							
03. Encourages to make adjustments in your nursing practice to suit patient needs.	1	2	3	4	5	6	7
04. Provides a stimulating intellectual environment.	1	2	3	4	5	6	7
05. Provides time to engage in research if you want.	1	2	3	4	5	6	7
06. Promotes a high level of clinical competence on your unit.	1	2	3	4	5	6	7
07. Allows opportunity to receive adequate respect from nurses on other units.	1	2	3	4	5	6	7
5. The hospital organizational structure:							
01. Allows you to have a voice in policy making for nursing service.	1	2	3	4	5	6	7
02. Allows you to have a voice in the overall hospital policy making.	1	2	3	4	5	6	7
03. Facilitates patient care.	1	2	3	4	5	6	7
6. You receive:							
01. Enough time to complete patient physical care tasks.	1	2	3	4	5	6	7
02. Enough time to complete indirect patient care tasks.	1	2	3	4	5	6	7
03. Support for your work from nurses on other shifts.	1	2	3	4	5	6	7
04. Support from your peers for your nursing decisions.	1	2	3	4	5	6	7
05. Support from physicians for your nursing decisions.	1	2	3	4	5	6	7

	Satisfied			Neutral		Dissatisfied	
7. Good working relationships exist between you and:							
01. Your supervisor.	1	2	3	4	5	6	7
02. Your peers	1	2	3	4	5	6	7
03. Physicians	1	2	3	4	5	6	7
8. Nursing Service:							
01. Gives clear direction about advancement.	1	2	3	4	5	6	7
02. Provides adequate opportunities for advancement.	1	2	3	4	5	6	7
03. Decides advancements for nurses fairly.	1	2	3	4	5	6	7
9. Your job offers:							
01. Opportunity for professional growth .	1	2	3	4	5	6	7
02. Satisfactory salary	1	2	3	4	5	6	7
03. Adequate funding for health care premiums.	1	2	3	4	5	6	7
04. Adequate additional financial benefits other than salary.	1	2	3	4	5	6	7
05. A satisfactory work hour pattern.	1	2	3	4	5	6	7
06. Adequate vacation.	1	2	3	4	5	6	7
07. Adequate sick leave	1	2	3	4	5	6	7
08. Adequate inservice opportunities.	1	2	3	4	5	6	7

Thank you for completing this questionnaire.

Appendix N

Interdisciplinary Collaboration Questionnaire

Please respond to the following questions about the present nursing care delivery system on one of three adult acute care medical units. **Your responses are strictly confidential.** Thank you for your time.

1. Your primary unit of interaction is: (Check one)

_____GA4 _____GD4 _____GH4

2. When you go to the patient care unit, with whom do you primarily communicate for information about the patient? (Check one).

_____Nurse Manager
_____Patient Care Co-ordinator/ Associate Nurse
_____Nurse Assigned to the Patient
_____Any Nurse who is on the Unit
_____Unit Clerk
_____Read the Patient's Record
_____Speak with the Patient
_____Other (Specify)_____

Please circle the best answer to the following questions:	Always	Sometimes	Never
3. Do you feel that the nurse assigned to your patient on any given day has an adequate *knowledge* of the patient's status?	1	2	3
4. Do you feel that one specific staff nurse is *accountable* for each patient's total nursing care from admission through discharge?	1	2	3
5. Do you feel that a staff nurse has the *authority* to make decisions about the patient's nursing care?	1	2	3
6. Do you feel that the nursing care is *co-ordinated* to facilitate discharge planning?	1	2	3

7. How would you rate the quality of nursing care:	Excellent	Good	Fair	Poor
01. At the hospital in general?	1	2	3	4
02. On the medical inpatient unit?	1	2	3	4

Department or Position_____ Date_____

Appendix O

The University of Manitoba

FACULTY OF NURSING
ETHICAL REVIEW COMMITTEE

APPROVAL FORM

Proposal Number N97/42

Proposal Title: A Pilot Study of the Implementation of a Multi-Disciplinary Approach to the Episodic Health Care Management of Adult Acute Care Medical Patients

Name and Title of Researcher(s): Kimberly Jabusch
Graduate Student

Date of Review: December 5, 1997

APPROVED BY THE COMMITTEE: December 9, 1997

Comments: With changes and clarifications submitted December 7, 1997

Date: December 9, 1997

Karen Chalmers

Karen I. Chalmers, PhD, RN — Chairperson
Associate Professor
University of Manitoba Faculty of Nursing

Position

NOTE:
Any significant changes in the proposal should be reported to the Chairperson for the Ethical Review Committee's consideration, in advance of implementation of such changes.

Revised: 92/05/08/se

Appendix P

December 19, 1997

Ms K. Jabusch
Principal Investigator
75 Hammond Rd.
Winnipeg, MB R3R 1L9

Dear Ms Jabusch:

RE: A PILOT STUDY OF THE IMPLEMENTATION OF A MULTI-DISCIPLINARY APPROACH TO THE EPISODIC HEALTH CARE MANAGEMENT OF ADULT ACUTE CARE INPATIENTS.

ETHICS #: N#97/42
RIC #: RI97:130

The above-named protocol, **has been evaluated and approved** by the Research Impact Committee.

If your study is receiving funds **and** Finance Division will be administering the moneys, please contact the Finance Department for a "Specific Purposes Account Application Form". It is imperative that you submit a copy of this letter along with your application to: Supervisor, Ancillary Services, Finance Division, so she is aware this has been approved by the Research Department.

PLEASE NOTE: THIS SPECIFIC RESEARCH ACCOUNT NUMBER CAN ONLY BE USED FOR THIS PARTICULAR STUDY.

My sincere best wishes for much success in your study.

Sincerely,

Luis Oppenheimer, MD, Ph.D., FRCS(C)
Director of Research

cc: Ms G. Dutchuk, Finance

LO/ks