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An audit of home health charts as a basis for clinical pathway development

Margaret Faye Harris
San Jose State University

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**AN AUDIT OF HOME HEALTH CHARTS AS A BASIS FOR CLINICAL
PATHWAY DEVELOPMENT**

A Thesis

Presented to

The Faculty of the School of Nursing

San Jose State University

In Partial Fulfillment

of the Requirements for the Degree

Master of Science

by

Margaret Faye Harris

August, 1995

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APPROVED FOR THE SCHOOL OF NURSING

Merle Kataoka-Yahiro, Dr.P.H.

Virgil Parsons, D.N.Sc.

Jane Hoffman, M.S.

APPROVED FOR THE UNIVERSITY

ABSTRACT

An Audit of Home Health Charts as a Basis for Clinical Pathway Development

by Margaret F. Harris

The purpose of this study was to describe variables related to the prematurely born home health patient as a basis for clinical pathway development. A retrospective review of patient charts was conducted and data were collected regarding number of nursing visits, length of stay, and nursing activities in relation to premature home health patients.

The data indicated that this sample (N=39) received a median of five visits and remained on service a median of 49 days. Many of the frequently performed nursing activities could have been performed by most pediatric nurses or in most doctor's offices. Nursing activities that were infrequently, or almost never, performed were nursing activities that required a specialized skill and knowledge base in regard to the premature infant. This study highlighted the need to develop tools, such as the clinical pathway, that will assist in standardizing home health nursing care for the premature infant.

ACKNOWLEDGMENTS

I dedicate this finished product to John . . . definitely my better half. In loving memory of E. Faye Dinwiddie . . . who received her High School diploma at age 44, and who inspired me to become an educated person.

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Chapter 1

BACKGROUND AND PROBLEM AREA

Much effort has been invested in researching and defining clinical practice patterns and patient outcomes in pediatric nursing within acute care settings. This has led to the recent trend of developing and establishing clinical pathways (also known as critical pathways and caremaps) for the hospitalized pediatric patient. The purpose of the clinical pathway is to standardize the delivery of patient care for a certain diagnosis or diagnostic grouping. This ensures that minimum standards of care are adhered to, that care is delivered in an interdisciplinary, cost-effective, and timely manner, that patient outcomes are improved and better predicted, and that deviations from the norm are quickly identified, evaluated, and addressed. Because the goals of case management include coordination of high quality health care in the most cost-effective manner possible, the clinical pathway is recognized as a valuable tool within a case management framework. Clinical pathways, especially those utilized within a case management framework, have the potential to be an important tool for health care providers in marketing managed care payer sources. As managed care becomes more pervasive, it will be necessary for home health care providers to demonstrate cost-effective service delivery. It would be a significant marketing strategy to be able to demonstrate that certain nursing activities lead to improved patient outcomes, especially if those outcomes decrease the total cost of care for that patient population. In addition, the clinical pathway serves as a structured mechanism for staff orientation and training purposes.

Although nursing practice patterns and patient outcomes have been studied and documented in pediatric acute and critical care settings, little movement has been made toward establishing objective, research-based guidelines for clinical practice in the field of pediatric home health nursing. Systematic inquiry into current practices of the pediatric home health nurse, patient outcomes, and methods for staff orientation and training are needed in order to build the body of knowledge and establish frameworks to guide practice.

Describing and defining pediatric home health care practice has become especially relevant as the paradigm for health care shifts its locus from the acute care setting to outpatient settings. Outpatient settings include ambulatory clinics and surgical centers, home health agencies, and health care provider offices. The shift in locus is related to more restrictions on inpatient services by insurance payers and by advances in technology, medicine, and nursing that make it safe and feasible to perform and manage health care services in outpatient settings. Health care services received in the outpatient setting now outnumber hospital admissions by 10 to 1. In 1991, there were only 31 million hospitalizations as compared with 325 million outpatient encounters, excluding physician office visits (Donovan, 1992).

Other factors contribute to the increasing number of pediatric patients receiving home health care services. The United States continues to perform poorly (in comparison to other industrialized countries) on indicators such as prenatal care, infant morbidity and mortality, infant and child immunization rates, teenager pregnancies, and poverty rates for women and children (Sardell, 1990). All of these factors lead to an infant and child

population at risk for both short-term and chronic health care problems and a concomitant need for health care services, including home health care.

Another factor for the increase in pediatric home health utilization is the increasing numbers of infants who survive premature birth and are discharged from neonatal intensive care units with ongoing health problems. This study focuses on premature infants and the home health nursing services they receive.

Gestational age and birth weight are closely correlated, with premature infants generally having below average birth weights (Office of Technology Assessment, 1987, chap. 1). The numbers of low birth weight (LBW) and very low birth weight (VLBW) infants that survive and “graduate” from intensive care nurseries are increasing. New technologies have contributed to the survival of an expanding population of infants who will be dependent on technology, skilled nursing, and pharmaceutical and rehabilitative services. Examples of medically fragile, technology-dependent patients include infants who are dependent on nasogastric or gastrostomy tube feedings, parenteral nutrition, oxygen and respiratory therapies, and cardiac and apnea monitoring.

Neonatal intensive care for the LBW and VLBW infant is among the costliest of all hospitalizations. Many children’s hospitals report that their greatest financial losses occur in the neonatal intensive care unit (Office of Technology Assessment, 1987, p. 4). With the growing number of LBW, VLBW, and premature infants surviving, insurance payers and health care providers are motivated to find alternatives to neonatal intensive care as soon as it becomes safe and feasible for the patient, even though the infant may still be

considered medically fragile and technology-dependent. Many of these infants will be discharged to home with follow-up and support from a home health agency.

Purpose of Study

The purpose of this study was to identify and describe variables related to the prematurely born home health patient. These variables included the number of home visits, the length of stay (LOS) on home health service, and home health nursing activities. This will add to the body of knowledge needed in order to develop clinical pathways for this population of home health patients.

Research Questions

The specific research questions were: (a) What is the frequency of home visits made by the home health registered nurse (HHRN) to the premature infant, (b) what is the LOS on home health service for the premature infant, and (c) what tasks, skills, teaching, and case management activities does the HHRN most frequently perform for the patient with a diagnosis of prematurity?

Definition of Terms

For the purpose of this study, the following definitions apply:

1. Case management is defined as the coordination and allocation of resources and services necessary to achieve the desired patient outcome. In addition to coordination, case management includes collaboration with other disciplines and professionals regarding the needs of the patient. An examination of the definitions, concepts, and models of case management will be presented in chapter 2.
2. Clinical pathway is a comprehensive plan of care that predicts when specific

processes, tasks, and interventions will be needed at specific intervals along a timeline. A pathway is developed for a specific nursing or medical diagnosis and includes expected patient outcomes. The pathway includes processes and interventions for all involved disciplines and is developed as an interdisciplinary team effort. A pathway is developed based on data collection of the common activities, timelines, and patient outcomes in relation to a particular diagnosis. It is an attempt to standardize care and move toward the desired patient outcome in the most competent, cost-effective way possible. An examination of the definitions, concepts, and research relating to clinical pathways will be discussed in chapter 2.

3. Continuum of care is a seamless provision of services and management of care that eliminates barriers between patient settings (e.g., home, community, clinic, and hospital) and between all disciplines and organizations providing care to the patient. Information is shared by all disciplines and organizations and between all settings. Case management facilitates continuity and communication between people and settings. The goal is to decrease fragmentation of health care and improve patient outcomes and satisfaction.

4. Managed care is a health care delivery system whose purpose is to provide comprehensive services but at the same time control costs and utilization of resources. Rather than traditional fee-for-service, services in a managed care framework are scrutinized for necessity, and generally all services or utilization of resources must be preapproved.

5. Home health agencies provide a variety of services to individual patients and the community. These include nursing, physical, occupational, and speech therapies, home

health aide and homemaker services, and more. Home health agencies provide these services in the home. The Joint Commission on the Accreditation of Healthcare Organizations and Title 22 have separate accreditation and licensing requirements for home health agencies (versus, for example, hospitals or ambulatory care settings). Title 22 from Barclay's California Code of Regulations (1990) defines a home health agency as a public agency, private organization or subdivision of such an agency or organization which is primarily engaged in providing skilled nursing and other therapeutic services on a part-time or intermittent basis to patients in a place of residence used as the patient's home under a plan of treatment as prescribed by the attending physician, which meets the requirements of Titles XVIII and XIX, PL 93-603. (p. 2209)

6. Pediatric home health care is the provision of nursing, therapy, and supportive services to infants and children and their families in a home or community setting. The care acknowledges the special needs of this population, and providers generally have pediatric-specific training and experience.

7. Home health registered nurse (HHRN) is defined as a registered nurse whose job scope includes the delivery of comprehensive nursing care within the home for a designated patient, and who works within the community on behalf of that patient through case management activities. Although there are similarities between the practice patterns of hospital-based nurses, home health nurses, and public health nurses, there are also significant role differences and practices. Hughes and Marcantonio (1992) found that home health nurses "generally deliver more episodic, concentrated care while placing a greater emphasis on the individual patient" (p. 532), in contrast to the public health nurse

who focuses on populations within the larger community. Hospital nurses generally spend the majority of their time engaged in direct patient care, while the home health nurse does this as well as a larger scope of activities such as case management and consultation.

8. Nursing activities are the tasks, skills, teaching, documentation, and case management activities performed by a HHRN.

9. Low birth weight (LBW) characterizes infants born weighing under 2500 grams (Office of Technology Assessment, 1987, p. 3).

10. Very low birth weight (VLBW) characterizes infants born weighing under 1500 grams (Office of Technology Assessment, 1987, p. 3).

11. Premature infant is an infant born prior to the end of the 37th week of gestation (Whaley & Wong, 1991, p. 386).

12. Timeline is a schedule that outlines when certain nursing activities are expected to take place in relation to a specific nursing or medical diagnosis.

13. Visit is a visitation made to the home of a patient by a registered nurse providing home health nursing service. This does not include private duty nursing (i.e., nursing shift care in the home).

Summary

This chapter examined the need to define clinical practice patterns for the pediatric home health nurse. This study will focus specifically on practice patterns of the HHRN in relation to the patient with a diagnosis of prematurity. One strategy for defining clinical practice patterns is to conduct the necessary research to establish clinical pathways. Clinical pathways can serve as a guide and resource for clinical practice and training, as

well as a marketing tool for managed care contracts. Developing standards and guidelines for pediatric home health nursing practice is relevant due to the increasing number of prematurely born pediatric patients that require home health nursing services. These increasing numbers are related to several factors, including technological advances that improve survival rates for infants born prematurely. Many of these infants will have concomitant health problems that will require skilled nursing services even after discharge from the hospital. Also, managed care payers and health care providers are motivated to find safe and feasible alternatives to expensive hospital care.

Chapter 2

CONCEPTUAL FRAMEWORK AND REVIEW OF THE LITERATURE

This chapter presents the conceptual framework of the study and the literature review. The conceptual framework for this study is the nursing model of case management performed by home health registered nurses. Literature relating to the effectiveness of nursing case management and case management within home health care will be examined. Literature relating to clinical pathways will also be reviewed, including the utilization of clinical pathways in case management, and the impact of clinical pathways on LOS, cost of care, and patient and professional satisfaction levels. Standards of care and performance and their significance to the clinical pathway will be discussed, and the usefulness of clinical pathways for staff development and orientation will be examined. In relation to clinical pathway development for the premature home health patient, literature regarding the home health care needs of this population will be reviewed.

Conceptual Framework

General Concepts and Definitions of Case Management

Case management is a concept and model defined and operationalized in different ways by different organizations and theorists. Not only health care providers, but insurers, social service agencies, and community service agencies utilize case management as a framework from which to serve the needs of their customers or clients. According to Giuliano and Poirier (1991), the concept of case management began in the 1950s with the coordination of community mental health services. In the 1960s, the term was used by

community, state, and federal programs whose purpose was to coordinate fragmented services. In the 1970s, the concepts of case management were being used extensively by the social services. Through these decades, case management evolved as a means to ensure that clients were linked with all available resources pertinent to their needs. Controlling costs and utilization of resources was not the function or goal of most case management models. In fact, the opposite was true. In the 1980s and 1990s, case management became an important framework utilized by health care providers and insurers. More and more Americans began receiving health care services through managed care policies that utilized case management as a method to ensure appropriate, cost-effective use of resources.

The model of case management implemented by an organization depends upon the organization's function within the health care industry (Cline, 1990). However, despite the organizational setting, there are recurring themes regarding the function of case management. These include coordination of care and services (ideally across a continuum of care), and the designation of a person or party to ensure that the goals of case management are met. Hampton (1993) describes case management in health care as a system in which:

care is directed by a case manager who follows the patient through all settings in which the patient receives care the goal of case management is to achieve positive patient outcomes within effective time frames and with the appropriate use of resources. (p. 21)

Quinn and Burton (1988) state that "as a working process, case management cuts

across the professional spheres of medicine, nursing, social work, and mental health in its practical application. While precise definitions of case management vary, most contain five core components” (p. 9). These five core components include (a) intake and screening, (b) assessment and reassessment, (c) care planning, (d) service arrangement and coordination, and (e) monitoring. The process begins by identifying and screening potential clients who may be eligible for services. Identification may be initiated by referral from another source or by the case manager’s own case finding activities. Assessment and reassessment of the client’s needs, abilities, deficits, and support network are done on an ongoing basis. A care plan is developed that is specific to the client and outlines goals and the services to be delivered. Assessments and care planning may be formalized with structured tools to guide the case manager, or these components may be informal and undocumented and guided by the case manager’s individual experience and preferences. After assessment and care planning, the case manager would then arrange for and coordinate the services outlined in the care plan and ensure that the sources paying for the services are contacted. Finally, the case manager monitors the services as they are delivered and ensures that the care plan remains pertinent to the client’s needs. The case manager facilitates changes to the care plan and rearranges or coordinates new services as needed.

Case management is utilized within health care to decrease the fragmentation of services experienced by clients, to decrease the unnecessary costs associated with fragmented care, and to move the client toward the best possible outcome within reasonable timeframes. This is done through a strong emphasis on the coordination of care

and by “maximizing the contributions of all disciplines within the health care team” (Bower, 1992, p. 7). Another unique feature of case management is its holistic approach toward the health care system. Case management seeks to build relationships between all parties that contribute to the system of health care delivery. Bower states that the “needs of clients, providers, and payers all receive attention within a case management system. Case management represents a merger of clinical and financial interests, systems, and outcomes” (p. 8).

The Nursing Model of Case Management

The conceptual framework for this study is the nursing model of case management (NMCM) developed and implemented by the Visiting Nurse Service Association of Schenectady County (VNSA), a home health agency in Schenectady, New York. The model operationalizes case management through role definition, client referral, case manager assignment, and application of seven phases of case management (Lajeunesse, 1994). The model represents one of the few published descriptions of case management frameworks utilized in home health care.

One component of the NMCM is role definition. The model is built on the premise that nurses make the best case managers and that the best nurse case manager for the patient is the primary care nurse (PCN). The PCN not only provides direct patient care but is also acknowledged as the case manager. Generally, although not always, the PCN-case manager will be the nurse who makes the initial admission visit to the patient’s home. A physical or speech therapist may assume the role of case manager if nursing is not required. Regardless of which discipline functions in the role of case manager, the NMCM

is utilized. In this model, the case manager is described as:

the professional responsible for overseeing all of the patient's fundamental needs. . . .

The approach is holistic . . . she or he plays matchmaker, assessing where the patient and family are on a continuum of functioning, and links them with an appropriate array of formal and informal community services. The case manager coordinates all those services and disciplines and intervenes to make adjustments when care needs change. She or he also anticipates and plans for discharge from agency services, making sure that any remaining needs are managed through an alternate resource. (Lajeunesse, 1994, p.117)

The client's referral to the agency is an important process within the NMCM. Case management begins as soon as the agency receives a request to provide home health care services for a patient. The referring source (which may be a hospital discharge planner, physician, or family member) is queried for information regarding the patient's diagnoses, functional abilities, support systems, and care needs. Intake of the above information is supervised by experienced community health nurses within the agency who also work within the quality assurance program. This immediately links the patient with the agency's quality assurance process before care has even begun. Lajeunesse (1994) states that this initial intake of information:

is merely preliminary to the in-home comprehensive assessment later conducted by the PCN. However, the intake supervisor's assessment does provide the PCN some guidance in establishing an approach and making preparations for the initial visit, and it

minimizes surprises and maximizes the effectiveness of the PCN's or admitting nurse's time. (p. 118)

A case manager is assigned for each patient admitted to the agency. Geography (i.e., where the patient lives) and specialized skills (e.g., pediatric expertise) play a part in determining who will be assigned as case manager. All patients are seen by a case manager within 24 hours of referral unless there is a reasonable indication to do otherwise.

Application of the NMCM is based on the nursing process. The traditional nursing process is expanded to seven phases in the NMCM: (a) patient and family assessment, (b) problem identification, (c) care planning, (d) delegation of care responsibilities, (e) intervention, (f) coordination and collaboration of disciplines, and (g) evaluation of outcomes. Each phase of the application process of the NMCM will be discussed.

The first phase, patient and family assessment, involves obtaining data relating to the client's physical, psychosocial, environmental, familial, and financial circumstances. In addition, community supports and all the physicians involved in the patient's care are identified. The case manager also identifies the patient's preepisodic functioning and performs a complete physical assessment to determine the patient's current functional status. The case manager identifies what payer sources are available for the home health services that will be rendered. Assessments are performed throughout the patient's length of stay on service.

Based on data obtained from the assessment, the case manager develops a problem list and establishes the nursing diagnoses. Nursing diagnoses should be comprehensive and holistic in nature, taking into account any factor that could influence patient outcomes.

Not all problems can or should be addressed by the agency. In these cases, the case manager ensures that other agencies or entities providing care or service to the patient are identified.

The next phase of the case management process is the development of an individualized, comprehensive plan of care. Goals are identified with the patient's and family's input, with the understanding that the agency's intent is to work toward the patient's or family's independence and eventual discharge from the agency. Lajeunesse (1994) states that:

it usually is in the patient's best interest to discourage dependence on formal caregivers as much as possible. Case managers have an obligation to third-party payers to reduce the frequency and limit the duration of services without jeopardizing the provision of high-quality, professional care that fully meets patient's needs. (p. 120)

Clinical pathways can be utilized at this phase to determine the general sequence of interventions and activities by the health care team.

The next phase involves delegation of care responsibilities. This occurs when the case manager assigns responsibilities or tasks to other personnel. An example of this is assigning another nurse to make a home visit to the patient. Delegation also includes instructing or supervising other staff such as nursing assistants and LVNs. Regardless of which personnel actually performs the visits or activities, the case manager is responsible for ensuring the patient's care needs are met.

The next phase is intervention. Interventions include direct patient care and treatments performed by the PCN or designated personnel. Often, the PCN will instruct the patient or

caregiver so that they can take over the treatment. Interventions may be needed by other disciplines or community resources (e.g., Meals-on-Wheels or evaluation at a high risk infant clinic). In this case, the case manager contacts and coordinates these services.

Assessment is performed periodically to determine if changes to the care plan are needed.

A key component of case management is coordination and collaboration of disciplines. Many patients require the services of multiple disciplines. The case manager initiates referrals to other disciplines and coordinates home visits by all the involved disciplines. The case manager also coordinates team conferences as needed and ensures the patient record is kept up to date. Case managers collaborate with community personnel and agencies as well as intra-agency personnel.

Evaluation is continuous and is based on the goals established by the patient, family, and case manager. If the patient is not progressing towards the established goals, the case manager reassesses and makes changes to the plan of care. The patient record should clearly reflect progress towards completion of goals, the case manager's periodic reassessments of the plan of care, and any adjustments made to the plan of care. The case manager also ensures that standards of care are met. Lajeunesse (1994) states that "if patient outcomes do not match goals, the reasons should be clear, as should appropriate follow-up actions. If standards of care are not met, the agency should have a mechanism for further review" (p. 123). Evaluation is made easier by clinical pathways in that outcomes are identified and variances from the standard path are readily apparent.

In summary, the nursing model of case management designates an individual, optimally a primary care nurse, as the case manager. The case manager's role was defined, the

relevance of the referral process to case management was examined, and how the agency assigns individuals to the case management role was discussed. The application of case management within this framework was represented by seven phases. These phases are not discrete, rather each phase overlaps with others and many are continuous throughout the patient's length of stay.

Utilization of the NMCM with the Pediatric Population

Regarding home health case management of the premature infant, the PCN-case manager would need to be a skilled and experienced pediatric nurse to be able to provide direct care to the patient as well as coordinate community resources. Pediatric care is distinguished from care rendered to the adult patient by many factors. These include the differences between pediatric and adult diagnoses, the specialized skills and equipment needed by the pediatric patient, evolving developmental levels of the infant and child, and the family (not the individual patient) as the unit of care (Karr, Locke, & Leonard, 1993).

The pediatric nurse case manager should be knowledgeable about the physical, physiological, and growth and developmental aspects of infancy and childhood. The pediatric case manager's repertoire of knowledge and experience should include not only concepts and parameters of usual health, but an understanding of the chronic illnesses and handicapping conditions seen in the pediatric population.

Pediatric case managers should also be knowledgeable about community resources that serve the needs of children and families (Davis & Steele, 1991). Examples of these resources include early intervention programs, parent support and resource groups, and governmental programs that assist low-income families (such as the Women, Infants, and

Children program and California Children's Service). It is also important for pediatric nurse case managers to be aware of laws that address the circumstances and needs of infants and children (e.g., Part H of P.L. 99-457 and child abuse reporting laws).

Review of the Literature: Case Management

The Nurse as Case Manager

Case management is receiving intense scrutiny as health care providers experiment with various case management applications and models in an attempt to balance the demand for high quality patient service and at the same time control health care costs. With passage of the federal government's Omnibus Budget Reconciliation Act in 1981 and the introduction of Diagnostically Related Groups (DRGs) within Medicare's prospective payment system, cost control has become a major focus of case management models within health care organizations. Giuliano and Poirier (1991) state that "the focus of case management shifted from making more services accessible . . . to making established services more economically efficient" (p. 52). Indeed, cost control is a major concern for health care insurers and providers and case management is acknowledged as a tool to ensure at least some control over expenditures. Bower (1991) summarizes this shift in expectations by stating that the "provision of outcome-oriented, cost-effective health care is no longer a goal--it is a mandate. To accomplish this mandate, the relationship between the costs of care, the desired outcomes of care, and the processes involved in providing care must be reexamined" (p. 1). Case management is a methodology used to not only improve individual patient outcomes but to improve systems outcomes, that is, outcomes at an organizational level.

There is strong evidence to suggest that within the health care industry, case management is effectively performed by the registered nurse. Much of the health care literature regarding case management consistently depicts nursing in a leadership role. Indeed, the nursing process (assessment, diagnosis, planning, implementation, and evaluation) reflects many of the same thought and practice processes utilized in case management. Faherty (1990) believed that “case management is the nursing process expanded in scope and made operational” (p. 20). What follows is a review of literature regarding nursing case management. These studies were conducted in hospital settings, with case managers in some models managing hospitalizations only and some managing across the continuum of care.

Ethridge and Lamb (1989) reported that the nurse as case manager produced significant reductions in lengths of hospital stay and costs and improved client access to services across the continuum of care. Their study was conducted at Carondelet St. Mary's Hospital. The case managers in this system are part of the Nursing Network. Network components include acute care services, home care, ambulatory care services, and nurse-managed community clinics. The nurse case managers worked in the hospital and managed hospitalized patients. Study results indicated that since the year that nursing case management was implemented in the Carondelet St. Mary's Hospital system, patients admitted with Chronic Obstructive Pulmonary Disease had 8.1 fewer hospital days for a savings of \$1,552 per case. In general, for patients with respiratory illnesses, they found that non-case-managed patients averaged 9.5 days in the hospital and that case managed patients with respiratory illnesses averaged 6.0 days in the hospital.

Cohen (1991) reported a quasi-experimental study, conducted in a hospital, that demonstrated significantly decreased length of patient stays and reduced expenditures after the implementation of a nurse case management model. She reported that the case managed group of patients had 1.16 fewer hospital days with an average cost of \$5,147.05 per case as compared with the non-case-managed group which had an average cost of \$6,198.90 per case. This was despite an increase in the number of direct nursing hours for each patient and a general increase in the number and intensification of patient treatments and services. Cohen concluded that the greater amount of services and nursing hours was offset by the efficiency of the delivery of services and care and shorter lengths of stay. She believed the results were attributable to management of care by the nurse case manager.

Rogers, Riordan, and Swindle (1991) reported a pilot program for community-based nursing case management that demonstrated fewer hospital admissions and shorter lengths of stay when a hospital admission became necessary. They also reported that patients receiving nursing case management while hospitalized incurred lower costs. The case managers in this pilot program were based in a hospital, but their management extended across the continuum of care, from hospitalization to the community and home upon discharge, and back again when necessary.

Zander (1988) reported dramatic changes in hospitalized patient's lengths of stay after a nurse case management model was implemented at the New England Medical Center Hospitals. For ischemic stroke patients, there was a 29% decrease in the average length of stay and a 47% decrease in the number of days spent in the Intensive Care Unit. For induction and consolidation in adult leukemia patients, the average length of stay dropped

from 8 weeks to approximately 32 days.

Martinez, Schreiber, and Hartman (1991) reported the success of a program that utilized pediatric nurse practitioners (PNPs) as case managers for chronically ill children. The PNPs provided primary health care services within a hospital setting (the Children's Hospital and Health Center in San Diego, California). As part of this pilot program, their role expanded to include case management and home visitation to selected chronically ill children. After implementation of the program, they observed that the children's chronic illnesses were better controlled, laboratory values for children with diabetes improved dramatically, and hospitalizations and visits to the emergency room were reduced significantly.

Erkel (1993) summarized various studies regarding the impact of case management in various settings including public health nursing, community health settings, and acute care settings. Her review of the literature indicated that case management was effective in reducing costs and improving health outcomes in two contexts: case management during prenatal care and case management in acute care settings. Nurses usually fill the role of case manager in both these contexts.

Case management by nurses is supported by the clinical expertise nurses bring to the role, by their understanding of patient problems and needs, and by the profession's holistic approach to patient care as operationalized by the nursing process. In fact, Medicare recently changed its regulations to allow for direct reimbursement for case management activities performed by registered nurses in home care agencies (Allen, 1994).

Case Management in Home Health Care

Virtually all health care providers engage in case management activities to some degree. Each implements a model of care that recognizes the organization's priorities and mission. As demonstrated above, the literature is replete with discussions and studies regarding case management in hospitals (e.g., Bower, 1992; Cohen, 1991; Zander, 1988) and in outpatient settings (e.g., Alario, 1994; Rucker, Abrams, & Piazza, 1994). There are also discussions in the literature regarding the benefits of integrating home health care services with inpatient services to create a seamless continuum of care and decrease the amount of fragmentation between these settings (e.g., Blase & Kaufman, 1994; Lumsdon, 1994; Rozell & Newman, 1994; Wolfe, 1993). However, there are few published theoretical articles regarding case management specifically for the home health agency, and no research studies regarding case management in home health care were found. Articles that discuss conceptual frameworks for home health care are presented below.

Esposito (1994) described a series of steps that the home health nurse case manager should follow. She described these activities as "a guideline to help the home care nurse formulate his or her own style in case management" (p. 30). The steps she described were (a) the initial referral and orders, (b) the first home visit, (c) collaborating with team members, (d) formulating the plan of care, (e) evaluating the plan of care, (f) assessing new or changed needs, (g) preparing for discharge, (h) evaluating for discharge, (i) reviewing the record, and (j) discharge.

O'Hare and Terry (1991) described a framework for community-based case management that could be utilized by home health care agencies. It included the

components of assessment, problem identification, planning, intervention, coordination and referrals, and monitoring and evaluating. This framework is structured within the context of the needs of the client and family in the community, and ideally is applied across a continuum of care. A common theme of each of these models or guidelines for case management is an expanded nursing process.

Review of the Literature: Clinical Pathways

Utilization of Clinical Pathways in Case Management

The challenge for case management is to provide for high quality patient care in efficient, cost-effective ways. An important tool for the case manager in accomplishing this complex task is the clinical pathway. The clinical pathway describes a course of events that leads to a successful patient outcome. The pathway includes standardized actions and interventions by each member of the interdisciplinary health care team. Variations from the expected pathway are immediately apparent, allowing for the health care team to quickly evaluate and adjust the plan of care. Crummer and Carter (1993) state that the clinical pathway:

maximizes the use of resources. It decreases time spent in education, communication, and documentation and standardizes care for high-volume patient populations so that all members of the health care team know their responsibilities and can plan accordingly. It identifies areas for improving not only the quality of patient care, but also patient outcomes. Lastly, the critical pathway is a tool that enables not only clinicians but also administrators to measure their proficiency and efficiency. (p. 37)

The clinical pathway provides a sequence of key activities or incidents that occur in a

predictable order and at predictable times within an appropriate length of stay (Zander, 1988). It is a sequence of important events, activities, and interventions along a timeline. As such, it provides a framework for mapping a patient's progress and identifying variations from the norm.

Clinical Pathways: Impact on LOS and Cost of Care

All of the research relating to the clinical pathway's impact on LOS and cost of care were found to be from hospital settings. Graybeal, Gheen, and McKenna (1993) reported outcomes of the application of clinical pathways (used as a component of a case management model) to high-volume, high-loss DRG groups in an adult, acute care population. The DRG groups included Coronary Artery Bypass Graft (CABG), Percutaneous Transluminal Coronary Angioplasty, Personality Disorders (Axis II), and Total Hip Replacement. After development and implementation of a clinical pathway for each of these diagnoses, significant decreases in lengths of stay and costs of care were observed and reported.

Hofman (1993) reported results of a pilot clinical pathway for CABG. Preliminary findings indicated lower rates of complications and decreased lengths of stay for patients cared for utilizing the clinical path method. In addition, the number of blood gases drawn for patients on the CABG clinical pathway were significantly reduced, resulting in savings of money and staff time. Rudisill, Phillips, and Payne (1994) also reported significant results in patients on a clinical pathway for the CABG procedure. Patients on the pathway were discharged from the hospital an average of 1 day earlier than those patients who were not on the clinical pathway. Pathway patients also demonstrated an average savings

of \$1,893 per hospitalization.

Katterhagen and Patton (1993) had found inconsistent management of patients with respiratory neoplasm at their institution. In addition, the cost of caring for these patients exceeded the hospital's usual reimbursement for that DRG. After implementation of a clinical pathway for respiratory neoplasm, the authors reported achieving the desired patient outcomes 98% of the time, indicating more consistent management of these patients. In addition, the hospital was able to deliver the care needed, with successful outcomes, at less cost. In fact, the authors indicated that after clinical pathway implementation, those patients were often economic winners for the institution. The costs savings were attributed to decreased use of ancillary services and dramatic decreases in lengths of stay.

As noted in the literature review, there is indication that utilization of clinical pathways can decrease the cost of care, although this has only been demonstrated in hospital settings. This seems to be accomplished by increasing efficient use of resources and ancillary services, avoiding delays or duplication in services, clearly outlining expected outcomes, and providing a timeline.

Clinical Pathways: Patient and Professional Satisfaction Levels

Mosher et al. (1992) reported on development and use of the clinical pathway for a lumbar laminectomy. The authors created the clinical pathway in such a way that nursing notes and variances from the pathway were documented directly on the pathway form. Patients were also provided with the pathway. Although data regarding lengths of stay and cost savings were not reported, the authors did report higher physician, nurse, and patient

satisfaction levels with the clinical pathway method. Both physicians and nurses liked having nursing documentation on one piece of paper. Patients reported appreciation in knowing what to expect. Mosher et al. stated that “the pathway helps patients know exactly what their activity level should be by the day of discharge They also described the nursing care as very organized, which we attribute to the way the patient pathway spells out the daily expectations” (p. 44).

Clinical Pathways: Incorporation of Standards of Care and Performance

Overall, a review of the literature indicated that the clinical pathway method standardized patient care, improved the efficient delivery of services, decreased lengths of stay in acute care settings, and often resulted in a cost savings for the providers. The clinical pathway method was usually developed as a component of a case management framework and utilized as a tool by the acute care staff and case manager to track patient progress and manage delivery of care.

An important feature of the clinical pathway is the standardization of care it imposes upon the providers. Managing and assuring quality of care is a major preoccupation and challenge for health care providers. This is especially so for home health care providers. Many factors exist in home care that make quality assurance more challenging. For example, Peters (1992) states that:

the in-home location, unlike healthcare provided in hospitals, nursing homes or other institutions, makes the care essentially invisible to scrutiny by others, thereby creating an even more important need for measures of quality There is minimal professional supervision of direct care. (p. 21)

The current and future reality for home health care is that high quality patient care must be delivered within existing cost constraints. Kirk and Kranz (1992) described a process whereby home health standards of care, performance standards, and the costs to implement those standards are examined simultaneously. They advocate for developing patient care standards (e.g., “the patient will safely manage all aspects of TPN administration”) along with staff performance criteria (e.g., “staff teaches patient use of the infusion pump and dressing change”). This builds a quality assurance and improvement program that is effective for both staff and patients. They also believe that in designing standards of care and performance, “we must concurrently identify the cost involved to ensure that the standards are cost feasible and efficient as well as effective” (p. 30).

Because managed care is changing the paradigm of how providers deliver care, home health agencies will need to find ways to identify the costs of providing home care and eliminate inefficiencies and waste. At the same time, standards of care and performance must be maintained. Clinical pathways are a means to this end. Especially effective are those pathways developed with patient outcomes and quality indicators incorporated into the pathway. Pathways may be developed with only staff activities and interventions outlined. However, a pathway becomes more useful if expected patient outcomes and goals are incorporated along with staff activities and interventions. With all of these elements present, the pathway becomes an effective tool to guide standards of patient care and staff performance. All personnel (staff, physicians, and patient) can then monitor quality on an ongoing, daily basis, and the process of delivering care becomes directly related to outcomes.

This fits well with the new application of nursing standards by the Joint Commission on Accreditation of Healthcare Organizations. A nursing care plan was once necessary to document the nursing process for each individual patient. California remains the only state where written nursing care plans are required for each patient. However, the Joint Commission will no longer evaluate nursing care based on a written nursing care plan. Instead, under the Joint Commission's revised standards, "the primary place to document the nursing process is a patient's medical record, either directly or by reference to some document or standard of care" (Bridger, 1991, p. 35). The clinical pathway meets these requirements. It provides for economy of documentation, because expected processes and outcomes are already outlined. The staff person's documentation would focus primarily on variances from the norm. In addition, standards of care and performance are an integral part of each pathway. In many agencies and institutions, standards of care are often kept in books on a bookshelf. For home health field staff, these books (sometimes many volumes thick) are often physically inaccessible. With the clinical pathway, standards of care and performance become readily accessible and easily incorporated into each patient's care. The clinical pathway can easily be made a part of each patient's field chart unlike large volumes of standards. This holds staff accountable on a daily, patient-specific basis for the care they deliver and the outcomes achieved. It also standardizes the care delivered by multiple staff people.

Clinical Pathways: Staff Development and Orientation

Utilization of the clinical path method may prove to be a useful and cost-effective tool for orientation of staff, although no research relating to this was found. Regarding

orientation of nursing staff, O'Grady and O'Brien (1992) state that "the orientation process should address the individual's needs relative to the expectations of the specific work setting" (p. 128). Clinical pathways are specific and clearly outline standards for performance and care as well as expected patient outcomes. They assist in guiding nursing practice, especially important for the nurse new to home health practice.

Clinical Pathways in Home Health Care

Most of the literature reports research and discussion of clinical pathway use within hospital settings and for adult diagnoses. Although there is a growing body of literature addressing the rapidly expanding field of home health nursing, minimal discussion and research regarding the use of clinical pathways in home health care has been found. Published research regarding development of pediatric-specific clinical pathways in hospitals is minimal and is lacking in regards to the pediatric home health care patient.

The importance of clinical pathway development to pediatric home care practice is immediate and significant. Although home care represents only 2% of health industry revenues, it is the fastest growing segment of the American health care system (Dee-Kelly, Heller, & Sibley, 1994). Inpatient occupancy rates continue to decline and home health and community-based care continues to expand. The senior adult with Medicare insurance received an average of 24 home visits per year in 1986; in 1991 the average number had increased to 44.7 visits per year (Dee-Kelly, Heller, & Sibley, 1994). These authors also report that there is a wide variance across regions in the average number of visits made for patients with the same diagnoses and demographic characteristics. In other words, the number of visits received by the patient depends to some degree on what agency renders

the service. This implies that home health patient care is not standardized and that some agencies can achieve the same outcomes with fewer visits and fewer charges to the payer. In order to meet the demands of a managed care payer system, home health agencies will need to improve care delivery systems. Managed care payers will choose to purchase services from providers who can demonstrate quality patient care outcomes within contracted reimbursement rates.

In a review of the literature, two reports were found pertaining to clinical pathways in home health. Goodwin (1992) reported a descriptive study that took place in a home health agency. The purpose of the study was to gain “knowledge of what interventions are used in the home health care setting for specific patient problems, when they are implemented, and the outcomes achieved Use of the critical pathway will assist agency staff and management in defining the process to yield the desired outcomes of care” (p. 36). The diagnosis selected was Congestive Heart Failure (CHF); the average client age was 83 years old. A retrospective chart audit was performed, and nursing activities and timelines were recorded. The audit revealed that the majority of nursing activities were performed in the first week of service, or during home visits one through three. Patients with CHF averaged between 11 to 12 visits over a period of 3 to 6 weeks. Cardiac and pulmonary assessments were performed 100% of the time (i.e., on every visit). Patient teaching regarding a low-sodium diet was performed on 84% of all visits, instruction on medications was provided in 76% of all visits, and instructions regarding signs and symptoms to report to the nurse or physician was provided 60% of the time. Goodwin noted that many interventions were provided during the first few visits:

Sometimes as many as 10 different interventions were implemented during a single visit. She believed this demonstrated a need for staff education regarding the ability of the elderly client to absorb this much information at one time. She also stated that this finding “lends support for a critical pathway that guides the nurse to implement fewer interventions on single visits and to consider providing more visits . . . in the early phases of care to ensure that teaching and other interventions are optimally effective” (Goodwin, 1992, p. 38). Goodwin noted that the results of the chart audit provided the foundation for development of a critical pathway for CHF. The article did not report on development or utilization of an actual CHF pathway. She believed that once developed, the CHF critical pathway would standardize the care provided and guide the nurse’s decisions regarding implementation and timing of patient teaching and interventions.

Rozell and Newman (1994) published a theoretical article regarding the development of a clinical pathway for ventilator-dependent patients at home. The pathway was an extension of an inpatient pathway. Days 1 through 21 are hospital days. On day 21, the patient is discharged home and the 2 week clinical pathway for home begins. The development of this pathway was the preliminary step in standardizing discharge planning and teaching for the ventilator-dependent patient, incorporating home health personnel into discharge teaching, and decreasing this population’s hospital LOS. The authors did not report findings on utilization of the pathway.

Clinical Pathway Development: The Premature Infant at Home

This study seeks to describe the activities of the home health nurse in relation to delivery of care for the premature infant. Specifically, what tasks, skills, teaching, and case

management activities does the HHRN perform for this population. In addition to describing nursing activities for this patient population, it would be helpful to examine the literature for information regarding care of the premature infant at home. Prematurely born infants are at risk for a number of acute and chronic conditions, including apnea of prematurity, respiratory distress syndrome, chronic lung disease, gastroesophageal reflux, failure to thrive, neurological disorders, retinopathy of prematurity, infectious processes, sudden infant death, cardiovascular disorders, and an altered parental-infant relationship (Whaley & Wong, 1991, chap. 10). Some of these infants will be discharged to home requiring oxygen therapy, apnea monitors, special diets, respiratory treatments, and nasogastric or gastrostomy tube feedings. Many of them will need interventions relating to impairments in neuromuscular function and development.

Ridgell (1993) outlined a schedule of home visits for infants newly discharged to home with apnea monitors. She provided a long list of activities the home health nurse should include as part of her visits. These centered on parent education regarding use of the monitor, cardiopulmonary resuscitation, safe travel with the infant, skin care, emergencies, and identifying who may watch the baby and what they need to know. Young, Creighton, and Sauve (1988) reported on the educational needs of families of infants discharged home on continuous oxygen therapy. Their qualitative study found that it would be useful for community health nurses to know about, and provide families with training regarding, the chronic lung disease process, cardiopulmonary resuscitation, oxygen equipment, growth and developmental implications, nutritional needs, and community services.

Brooten et al. (1986) reported a clinical trial of VLBW infants discharged to home

with home follow-up by registered nurses. Nursing activities during the home visit included “a physical examination of the infant, developmental screening, confirmation of appointments for medical follow-up care, an assessment of the parent’s coping ability and caretaking skills and support systems, and instruction and counseling regarding infant care and infant stimulation” (p. 936). Brown and Suave (1994) reported their evaluation of an educational program to teach parents home oxygen therapy for infants being discharged from a neonatal intensive care unit. The education program identified several areas in which parents needed training. It could be assumed these are areas that could be addressed by home health care nurses. They included the psychosocial development of an infant, parental needs, oxygen equipment, and cardiopulmonary resuscitation.

In a descriptive, correlational study, McKim (1993) found that many mothers of premature infants reported that the first week home after discharge was difficult. A community health nurse visit was important to these mothers, especially during that first week. In fact, her data revealed that mothers reporting a difficult first week were less likely to have been visited by a community health nurse. McKim stated that “mothers of premature infants appear to need more information about infant health, growth and development, feeding, sleeping, and crying problems and, except for feeding, this was shown in this study” (p. 240).

This chapter has presented a framework for case management by the home health nurse. Specific knowledge and skills needed by the pediatric case manager were discussed, and the significance of case management in relation to the growing managed care environment was examined. The delivery of care to pediatric home health patients has not

been standardized or even clearly defined. Pediatric care in outpatient settings, including home health care, will continue to grow. It is imperative that home health care professionals work towards developing clinical pathways that will address the unique needs of the pediatric home health population. Clinical pathways are an important tool of case management because they are interdisciplinary, map out a patient's expected progression towards specific goals, and allow for immediate recognition of variances. Clinical pathways make standards of care and performance easily accessible to every member of the health care team and have potential usefulness as a staff development and orientation tool. Especially when utilized within a case management framework, the clinical pathway is emerging as a powerful instrument in the delivery of high quality, cost-effective health care.

Chapter 3

METHODOLOGY

This chapter will discuss the design of the study, sample and sampling techniques, the instrument used for data collection, and the data collection. Procedures for statistical data analysis will be outlined.

Design

The study design was descriptive. A retrospective review of pediatric patient charts was conducted. The chart review was conducted in order to record nursing activities, LOS, and number of visits for home health patients with a diagnosis of premature birth. In relation to the diagnosis of prematurity, the study sought to describe (a) the number of nursing visits, (b) how long the premature patients remained on service, and (c) nursing activities (i.e., skills, tasks, teaching, and case management) performed by the HHRN.

Subjects and Setting

Two major home health agencies were selected by convenience for inclusion in the study. Both home health agencies were major providers of pediatric home health care in northern California. Both were licensed agencies and were certified by the Joint Commission on Accreditation of Healthcare Organizations, Medicare, and MediCal. They were nonprofit agencies supported by fee for services, charitable donations, and United Way contributions. Both agencies had specialized pediatric programs that were designed to meet the special requirements of the pediatric population. The programs were managed by a maternal/child health registered nurse and were separately managed from programs

that provided services to the adult and geriatric populations. The pediatric populations served by both agencies were similar in that the majority of patients were from lower socioeconomic levels. Both agencies received the majority of pediatric referrals from the same local children's hospital. The referral base for each agency also included pediatricians and other hospitals within their respective communities. The majority of premature patients referred to Agency 1 were discharged from a local community hospital's neonatal intensive care unit. The majority of premature patients referred to Agency 2 were discharged from the neonatal intensive care unit at the local children's hospital. The educational level and background of the pediatric staff nurses in both agencies were similar in that all were registered nurses, most with baccalaureate education, and most had either pediatric acute care experience or neonatal intensive care unit experience, or both.

Agency 1 provided services to patients of all ages. The pediatric program, which included services to prematurely born infants, carried a typical census of 40 to 50 patients. The census included pediatric patients receiving nursing services; it did not include patients receiving only nonnursing services. Services provided to the pediatric population by this agency included (a) intermittent home health visits by registered nurses and physical, occupational, and speech therapists; (b) hospice care; (c) home health aides; (d) social workers; (e) a child life specialist; and (f) private duty nursing care.

Agency 2 also provided services to patients of all ages. A typical pediatric census consisted of 20 to 30 patients. This census included infants with a diagnosis of prematurity. Services provided to the pediatric population by this agency included (a) intermittent home health visits by registered nurses and physical, occupational, and

speech therapists; (b) home health aides; and (c) social workers. At the time of this study, services provided by Agency 2 did not include private duty nursing or a formalized hospice program.

Sampling

This study utilized a convenience sample. Patients eligible for sample selection included those patients with a diagnosis of prematurity, who were admitted to the agency in 1993, and discharged in either 1993 or 1994. Only patients who had received at least one HHRN visit were eligible for inclusion in the sample, and only visits made by a HHRN were audited. Visits made by other disciplines (e.g., a Physical Therapist) were not audited.

The original intent of the researcher was to select a random sample of 24 patients from each agency. Information was provided by each agency regarding the number of premature patients admitted in 1993. This information indicated that in both agencies there were an adequate number of premature infants from which to select 24 patients. In Agency 1, 47 patients met the above criteria for sample selection. The software system "Mathematica" (version 2.2.1) was used to randomly select a sample of 24 from the total number of 47 eligible patients (Wolfram, 1991, p 552).

The intention was to select a random sample of 24 patient charts in Agency 2 as well. However, upon examination of patient charts in Agency 2, several were eliminated because they did not meet criteria for sample selection. Only 15 patient charts were found to meet the criteria for sample selection. In order to obtain a sufficient sample size, all 15 were selected from Agency 2. Due to the time constraints for this study, the decision was

made to utilize the sample size of 24 from Agency 1 and 15 from Agency 2. Because of the inability to randomize sample selection in Agency 2, the total sample ($N=39$) was treated as a convenience sample.

Human Subjects Approval

This study used no human subjects. Data collection consisted of a review of pediatric patients' charts. A research protocol was submitted to the Human Subjects-Institutional Review Board for review, and approval was obtained prior to data collection.

Data Collection

Data collection was conducted over a period of 2 days at Agency 1 and during 1 day at Agency 2. Charts for patients in the sample were obtained from the medical records files at each agency. Each chart was audited using the Chart Audit Tool (see Appendixes A and B). Audits were performed at each agency in a room designated by agency personnel. Prior to the chart audit, a master list of all patient names in the sample was compiled, and each patient was assigned a research code number. In order to ensure anonymity, the research code number was recorded on the Chart Audit Tool. The master list of patient names and corresponding research code numbers was kept in a secure place.

Instrument

Because no suitable instrument for data collection could be found in the literature, the Chart Audit Tool was developed by the researcher. The tool is a three-page instrument. Its purpose was to record information and data relating to the research questions. Appendix A includes the Chart Audit Tool. Appendix B provides interpretations of items on the tool, as well as abbreviations used on the Chart Audit Tool.

The Chart Audit Tool contained a section where the research code number and various sociodemographic data were recorded. Sociodemographic data included (a) admission and discharge dates, (b) total number of visits made to the patient, (c) number of days on service, (d) insurance information, (e) age and gender, (f) the primary caregiver, (g) primary language, (h) county of residence, (i) ethnicity, and (j) medical diagnoses.

The total number of visits made to a patient and the number of days on service (LOS) were both recorded because they provided information regarding how many visits were made, and within what time frame those visits were provided. There is currently no established standard regarding the number of home health visits that should be provided for this population, and over how many days, weeks, or months, those visits should be distributed. Therefore, in order to determine if a pattern existed between the number of visits and the LOS, data was collected for both variables.

The instrument was designed to record specific HHRN activities during a homevisit to a premature infant. The selection of nursing activities for inclusion in the Chart Audit Tool was based on the researcher's knowledge and experience as a pediatric home health nurse. Nursing activities known to be the standard practice for this population or documented in the literature were incorporated into the instrument. On the Chart Audit Tool, nursing activities were categorized as either a skill or task, a teaching activity, or a case management activity. Skills and tasks were activities that entailed the provision of direct, hands-on care or assessment. Teaching activities included provision of instruction, information, or guidance regarding care and support of the infant. Case management activities involved coordination of care and services, contact with other disciplines,

agencies, and physicians, referrals for services, and contact with the caregivers for purposes of monitoring the patient's health status or to provide support and information. Appendix D provides a list of every nursing activity recorded in the chart audit and the category to which it was assigned.

It was not considered possible to devise an instrument that would include an exhaustive list of all home health nursing activities. During the chart audit, there were some nursing activities that were not found on the tool. When a nursing activity was not found on the tool, the researcher would write in the activity in the appropriate category (see Appendix C). The goal was to ensure that all activities and outcomes were recorded.

On each page of the tool, there were three columns. Each column provided space for nursing activities and information relating to one home visit. The day on which the home visit was made was also recorded in the column. The number of Chart Audit Tools used per patient varied depending on the number of home visits made for each patient. For example, for a patient who received only two home visits from the HHRN, one Chart Audit Tool was sufficient to record the information, utilizing two columns. For a patient who received 12 home visits, four tools were required in order to collect data for each of the 12 visits, utilizing 12 columns.

In order to determine if the instrument would actually measure the variables in this study, face validity was obtained. Two pediatric HHRNs were provided a copy of the Chart Audit Tool and invited to provide the researcher with feedback regarding the ability of the instrument to accurately measure the extent that the variables operationalize the construct (Powers & Knapp, 1990). The researcher sought to establish that the instrument

would accurately measure and record the practice of HHRNs in relation to the premature infant.

The two pediatric HHRNs who reviewed the Tool for validity had 2 years and 5 years experience, respectively, as pediatric home health nurses. One of these clinicians suggested that assessment of hydration status, and assessment and teaching regarding comfort measures for the premature infant, be included in the instrument. The other clinician suggested that the instrument include teaching regarding infant positioning and observation of parental feeding techniques. Each of these suggestions were added to the instrument. Their comments indicated that they believed the instrument would provide adequate and accurate measurement of the construct.

Analysis

Analysis was done using descriptive statistical methods. These methods included determining frequencies and percentages of the skills, tasks, teaching, and case management activities documented by the HHRN. Related case management activities were collapsed into categories for ease of interpretation. Appendix E provides a list of the case management activities that were collapsed into categories.

The most frequently performed nursing activities were identified and summarized in tables. Other summary statistics were performed to describe the median number of home visits made to prematurely born patients and the median number of weeks those patients remained on service (i.e., the median LOS). Frequencies and percentages of patients in relation to various sociodemographic characteristics were done. An interpretation and discussion of findings and tables of summary statistics, is presented in the next chapter.

Chapter 4

FINDINGS AND INTERPRETATION

Data was collected and analyzed in order to determine what activities (i.e., skills, tasks, teaching, and case management) were frequently performed by the HHRN, what the median LOS was for prematurely born home health patients, and what the median number of home health visits were for this sample. This chapter discusses findings of the data analysis as well as an interpretation of those findings. Data regarding the sample's sociodemographic characteristics were also collected and reported.

Findings

Patient-Caregiver Sociodemographic Characteristics

Table 1 provides a summary of sociodemographic characteristics. The findings indicated that a diverse patient population was served by both home health agencies during 1993. The majority of premature patients were Hispanic (53.8%), Caucasian (20.5%), or Asian (17.9%). The sample was made up of an approximately equal percentage of males (58.9%) and females (41.0%). The majority of caregivers were either English-speaking (61.5%) or Spanish-speaking (35.9%). The majority of patients were primarily cared for by either both parents (46.2%), or by the mother only (35.9%). An equal percentage of patients were insured through MediCal (48.7%) and private insurance (48.7%). The most frequently occurring diagnoses, in relation to prematurity, were respiratory distress syndrome (RDS, 35.9%), apnea and bradycardia (35.9%), and chronic lung disease (CLD,

Table 1

Patient-Caregiver Sociodemographic Characteristics (N = 39)

Characteristic	Frequencies	Percentages	<u>Mdn</u>	<u>Q</u>	<u>M</u>	<u>SD</u>
	<u>n</u>	<u>%</u>				
Patient Ethnicity						
Hispanic	21	53.8				
Caucasian	8	20.5				
Asian	7	17.9				
African-American	1	2.7				
Not documented	2	5.1				
Patient Gender						
Male	23	58.9				
Female	16	41.0				
Caregiver Language						
English	24	61.5				
Spanish	14	35.9				
Other	1	2.6				

(table continues)

Characteristic	Frequencies	Percentages	<u>Mdn</u>	<u>Q</u>	<u>M</u>	<u>SD</u>
	<u>n</u>	<u>%</u>				
Caregivers Participating in Care						
Both parents	18	46.2				
Mother only	14	35.9				
Parent and Grandparent	4	10.3				
Other	3	7.7				
Insurance						
MediCal	19	48.7				
Private/Commercial	19	48.7				
Not documented	1	2.6				
Most Frequent Diagnoses (in relation to prematurity)						
RDS	14	35.9				
Apnea/bradycardia	14	35.9				
CLD	13	33.3				
Patient Age Upon Admission to Home Health Agency					70.2	42.9
Patient Gestational Age at Birth			28.5	1.5		

33.3%). The mean age upon admission to the home health agency was 70.2 days old ($SD = 42.9$). The median gestational age at birth for these patients was 28.5 weeks ($Q = 1.5$).

Frequency of Visits and LOS

Table 2 summarizes data analysis regarding the number of visits received by patients in this sample, and the number of days patients remained on the home health agency's service. Over half of the patients received five or fewer visits (53.8%). The majority of patients (92.3%) in this study received 1 to 10 visits, with the median number of visits equal to five ($Q = 2.5$). There were as many patients on the agency's service less than 16 days (25.6%) as were on service 31 to 60 days (25.6%) and over 90 days (25.6%). Almost 75% of all patients were on service 90 days or less, with the median LOS equal to 49 days ($Q = 40$).

Nursing Activities

This study sought to determine the most frequently performed nursing activities, with nursing activities grouped into three categories: (a) skills and tasks, (b) teaching activities, and (c) case management activities (see Appendix D). Tables 3, 4, and 5 summarize by category the nursing activities performed by the HHRN. Because the majority of patients had 1 to 10 visits, nursing activities performed during at least 10 visits or more were included in each table. In each table, the frequencies and percentages of the number of visits in which the activity was performed are provided, as well as the frequencies and percentages of the number of patients who received that activity at least once. Frequencies

Table 2

Frequency of Visits and LOS by Patient (N = 39)

	Frequencies	Percentage of Patients	<u>Mdn</u>	<u>Q</u>
	<u>n</u>	<u>%</u>		
Number of visits received by patients			5	2.5
1 - 5 visits	21	53.8		
6 - 10 visits	15	38.5		
> 10 visits	3	7.7		
Number of days on service (LOS)			49	40
1 - 15 days	10	25.6		
16 - 30 days	3	7.7		
31 - 60 days	10	25.6		
61 - 90 days	6	15.4		
> 90 days	10	25.6		

and percentages, for both number of visits and number of patients, were provided to ensure clarity and avoid misinterpretation of the findings in regards to nursing activities. For example, in the category of teaching activities, teaching regarding signs and symptoms of compromise were provided in only 51.1% of the visits. However, 97.4% of all patients in the sample received this teaching during at least one visit. Certain nursing activities may appear in small numbers when related to the total number of visits ($N=229$), whereas when considered in relation to the total number of patients ($N=39$), the frequencies and percentages for that activity are often larger. A discussion of the findings for each category of nursing activity follows.

Nursing Activities: Skills and Tasks

Table 3 reports findings regarding the most frequently performed skills and tasks as documented by the HHRN. The chart audit revealed a total of 33 skills or tasks performed for the 39 patients in this sample (see Appendix D). In Table 3, 12 skills and tasks, performed on at least 10 visits out of the total 229, are included. The remaining 21 skills and tasks were not included because they were performed during fewer than 10 visits.

The three most frequently performed skills or tasks were vital signs with 226 visits (98.7%) and 39 patients (100%), physical assessment with 222 visits (96.9%) and 39 patients (100%), and measurement of weight with 146 visits (63.8%) and 37 patients (94.8%). Vital signs, physical assessment, and weight were the most frequently performed skills and tasks based on number of visits and number of patients.

The three skills and tasks that were least performed in Table 3 were growth and developmental assessment with 15 visits (6.6%) and 7 patients (17.9%), HHRN

Table 3

Nursing Activities: Skills and Tasks

Skill/Task	No. of Visits (<u>N</u> = 229)	Percentage of Visits	No. of patients (<u>N</u> = 39)	Percentage of patients
	<u>n</u>	<u>%</u>	<u>n</u>	<u>%</u>
Vital signs	226	98.7	39	100
Physical assessment	222	96.9	39	100
Weight	146	63.8	37	94.8
Head circumference	72	31.4	35	89.7
Safety assessment	60	26.2	9	23.0
Height	48	21.0	31	79.4
Abdominal girth	35	15.3	21	53.8
Assessment of monitor alarms	25	10.9	10	25.6
Chest circumference	22	9.6	16	41.0
G & D assessment	15	6.6	7	17.9
Observation of feeding	14	6.1	8	20.5
Caregiver-infant bonding	10	4.4	7	17.9

Note. Only skills and tasks performed during at least 10 visits are included.

observation of the infant feeding with 14 visits (6.1%) and 8 patients (20.5%), and caregiver and infant bonding with 10 visits (4.4%) and 7 patients (17.9%). These three activities were the least frequently performed skills and tasks in Table 3 in relation to both number of visits and number of patients.

Nursing Activities: Teaching

There were a total of 45 teaching activities recorded in the chart audit (see Appendix D). Teaching activities that were performed during at least 10 visits are summarized in Table 4. There were 30 teaching activities that were not included in Table 4 because they were performed during fewer than 10 visits out of the total ($N = 229$).

Unlike the category of skills and tasks, there was no clear pattern between the most, and least, frequently performed teaching activities in regards to number of visits and number of patients who received the teaching activity. The most frequently performed teaching activities, in relation to number of visits and number of patients, were teaching regarding signs and symptoms of compromise with 117 visits (51.1%) and 38 patients (97.4%), medications with 62 visits (27.1%) and 28 patients (71.8%), feedings with 52 visits (22.7%) and 22 patients (56.4%), and cardiopulmonary resuscitation (CPR) with 46 visits (20.1%) and 28 patients (71.8%).

The least frequently performed teaching activities in Table 4, in relation to number of visits and number of patients, were teaching regarding the infant's disease process with 20 visits (8.7%) and 13 patients (33.3%), basic care with 20 visits (8.7%) and 16 patients (41.0%), chest physiotherapy (CPT) and aerosol treatments with 17 visits (7.4%) and 4 patients (10.3%), and skin care with 14 visits (6.1%) and 11 patients (28.2%).

Table 4

Nursing Activities: Teaching

Teaching Activity	No. of Visits (N = 229)	Percentage of Visits	No. of Patients (N = 39)	Percentage of Patients
	<u>n</u>	<u>%</u>	<u>n</u>	<u>%</u>
S & S of compromise	117	51.1	38	97.4
Medications	62	27.1	28	71.8
Feedings	52	22.7	22	56.4
Interventions for S & S of compromise	48	21.0	21	53.8
Use of apnea monitor	47	20.5	26	66.7
CPR	46	20.1	28	71.8
O2 administration	40	17.5	20	51.3
Growth & Development	37	16.2	22	56.4
Diet/Nutrition	30	13.1	17	43.6
Positioning	23	10.0	18	46.2
Home safety	23	10.0	15	38.5
Disease process	20	8.7	13	33.3
Basic care	20	8.7	16	41.0
CPT/Aerosols	17	7.4	4	10.3
Skin care	14	6.1	11	28.2

Note. Only teaching activities performed during at least 10 visits are included.

Nursing Activities: Case Management

There were a total of 35 case management activities recorded in the chart audit (see Appendixes D and E). Case management activities for this sample are summarized in Table 5. The three most frequently performed case management activities, in relation to both number of visits and number of patients, were contact with the patient's physician with 91 visits (39.7%) and 36 patients (92.3%), documentation of the community services and agencies involved with the patient with 63 visits (27.5%) and 27 patients (69.2%), and contact with the caregiver with 44 visits (19.2%) and 21 patients (53.8%). The least frequently performed case management activity in Table 5, in relation to both number of visits and number of patients, was referrals for services with 17 visits (7.4%) and 13 patients (33.3%).

Interpretation of Findings

Patient-Caregiver Sociodemographic Characteristics

Findings regarding sociodemographic characteristics indicated that both agencies served a diverse patient population in 1993. The sociodemographic characteristics demonstrated diversity in regard to ethnicity, gender, primary language, caregivers participating in care, insurance payers, and diagnoses related to prematurity.

Number of Visits and LOS

Clinical pathways include activities and outcomes imposed against a timeline. Within the context of home health care, number of visits and LOS would contribute important information towards the development of clinical pathway timelines. For this sample, a median number of visits was identified and the majority of the sample received a limited

Table 5

Nursing Activities: Case Management

Case Management Activity	No. of Visits (<u>N</u> = 229)	Percentage of Visits	No. of Patients (<u>N</u> = 39)	Percentage of Patients
	<u>n</u>	<u>%</u>	<u>n</u>	<u>%</u>
Contact with physician	91	39.7	36	92.3
Documentation of community services	63	27.5	27	69.2
Contact with caregiver	44	19.2	21	53.8
Physician appointments documented	42	18.3	16	41.0
Contact with community services/agencies	28	12.2	16	41.0
Contact with insurance payers	25	10.9	16	41.0
Referrals for services	17	7.4	13	33.3

Note. Some case management activities were collapsed into categories (see Appendix E).

number of visits (from 1 to 10 visits). A median LOS was also identified. The interpretation of findings in regards to LOS, however, was problematic due to the large variability in the sample. Patients were as likely to remain on service for lengthy periods as they were to remain on service for very short periods. Whether patients were on service for a short period of time (e.g., 1 to 15 days), or for a long period of time (e.g., greater than 90 days), the majority received only 1 to 10 visits. Many patients received the same, or approximately the same, number of visits, but how those visits were distributed across time varied greatly. The chart audit did not reveal an explanation for the inconsistent LOS for patients in this sample.

Nursing Activities

Vital signs, physical assessment, and weight were the skills and tasks most frequently performed in this study. These skills and tasks did not require significantly specialized expertise on the part of the pediatric HHRN. These are common skills and tasks that most pediatric HHRNs are able to perform. Growth and developmental assessment, observation of feedings, and caregiver and infant bonding were less frequently performed skills and tasks. These skills and tasks, although infrequently performed, were important because premature infants are at high risk for feeding problems, for growth and developmental delays, and for impaired bonding between caregiver and infant. These skills and tasks do require a skill and knowledge base specific to the premature patient.

The most frequently performed teaching activities were signs and symptoms of compromise, medications, feedings, and CPR. Similar to skills and tasks, these activities could be performed by most pediatric HHRNs. The teaching activity that required more

specialized knowledge, disease process, was less frequently performed.

Of the case management activities, contact with the patient's physician was the most frequently performed. Most home health nursing services must be prescribed by a physician, and it is the legal and professional standard to inform the physician of the patient's status or changes in status. For the majority of patients in this sample, the pediatric HHRN was in contact with the physician at least once, indicating overall compliance with legal and professional standards.

Contact with the caregiver was another frequently performed case management activity. This amount of contact with caregivers indicates that pediatric HHRNs sometimes monitored the patient's status, provided information, or coordinated care by telephone rather than during a visit.

Documentation of community services was also one of the most frequently performed case management activities. Because prematurely born infants are often referred to community services by hospitals before discharge, it is necessary for the pediatric HHRN case manager to identify and document the various community agencies and services involved with the patient. However, in addition to documentation, the case manager should take an active role in assessing the infant in regards to need for services, and in contacting other parties within the community to determine their plan of care for the patient. In this study, there was minimal contact with community agencies and services, and low numbers of referrals were made by the pediatric HHRN. These types of case management activities, unlike documentation and contact with physicians and caregivers, required knowledge regarding what community services were available for the premature

infant, which premature patients qualified for the various services, and how to initiate referrals for those services.

In summary, the findings indicate that the nursing activities most frequently performed for this sample could have been performed by most pediatric HHRNs without specialized skills or knowledge. Nursing activities that required a skill and knowledge base specific to the premature infant were far less likely to be performed, even if those skills and activities should be components of a standardized approach to care and case management for the premature infant.

Chapter 5

DISCUSSION

This chapter will summarize the study and discuss conclusions derived from the findings. Limitations of the study will be discussed and areas for future research regarding the prematurely born home health patient will be recommended.

Summary of Study

This research utilized the nursing model of case management as a framework for study. The intent of the research was to gather data relating to the activities performed by the pediatric HHRN as a basis for development of future clinical pathways for the premature home health patient. The relevance of clinical pathway development for this population was discussed in Chapter 2. The study involved a retrospective chart review of a convenience sample of prematurely born home health patients. Descriptive statistical methods were used to determine frequencies and percentages of the number of visits received by patients, LOS, and nursing activities.

In regards to nursing activities, the most frequently performed skills and tasks were vital signs, physical assessment, and measurement of weight. The most frequently performed teaching activities included signs and symptoms of compromise, medications, feedings, and CPR. The most frequently performed case management activities were contact with the patient's physician and caregiver, and documentation of the community services and agencies involved with the patient. Although all of these home health nursing activities were important, as noted in Chapter 4, they were activities that did not require

specialized skills or knowledge regarding the premature infant. Skills and activities that required the pediatric HHRN to utilize a specialized knowledge base were infrequently, or almost never, performed. Specialized skills and activities that were minimally performed included growth and developmental assessment, observation of feedings, assessment of caregiver and infant bonding, teaching disease process, and referrals for services.

Discussion of Major Findings

Clinical pathways describe activities and events against a timeline. Development of a clinical pathway for the premature home health patient would include a timeline based on the average number of visits and LOS for these patients. Data analysis demonstrated that the majority of this sample received from 1 to 10 visits with large variation in the LOS. There is no other published research to support the findings of this study in regards to number of visits and LOS. This study is the first of its kind to examine variables that relate to clinical pathway development for the premature home health patient.

Factors that may have influenced the number of visits and LOS for this sample include insurance payer sources, and patient and caregiver characteristics. Patients in this sample were insured through either private, managed care payers, or through MediCal sources. Both payers have strict criteria regarding what constitutes a medically necessary visit. If the payer determines that a home health visit is not medically necessary, the agency will not be reimbursed for that visit. Therefore, payers influence how frequently the pediatric HHRN visits by controlling what visits will be reimbursed. It is not known if the insurance company personnel (from a variety of government and private payer agencies) who determined the number of reimbursed visits for this sample, were personnel with

experience and training regarding the home health care needs of premature infants. Because payers influence the number and type of services provided by pediatric HHRNs, researching the level and type of expertise of insurance payer personnel would be beneficial. Also, if the HHRN does not have knowledge and skills relevant to premature infants, she or he will be unable to advocate effectively for patients with insurance payers who lack expertise regarding this population.

Patient and caregiver characteristics may also influence the frequency of visits and LOS. These include the degree of prematurity at birth, the extent of sequela experienced as a result of premature birth, the competency and abilities of the infant's caregivers, the willingness of the patient's physician to order home health visits, and the willingness of the caregivers to accept the visits and services offered by the agency. At times, pediatric HHRNs may make deliberate decisions to distribute a limited number of visits over a longer time period in order to remain involved with the patient for monitoring and support. It is not known, based on the chart audit, how influential these factors were and what factors accounted for the findings in regards to number of visits, LOS, and the variability of the sample's median LOS.

In addition to determining an appropriate number of visits and LOS, identifying key nursing activities is an essential component of clinical pathway development. Clinical pathways should be developed for specific groups of patients with specific diagnoses. The goals of the clinical pathway are attained, at least in part, by nursing activities that are relevant and specific to the needs of the patients. Nursing activities should be adapted and customized for the patient population and diagnoses for which the pathway is developed.

In this study, nursing activities specific to the needs of premature infants were minimally performed. It is not clear from the chart review that the specialized needs of premature infants were addressed by the home health agencies. This raises questions regarding the pediatric HHRNs' possession of the specialized knowledge base and skills requisite for delivering care and teaching to premature infants.

Skills and tasks that were infrequently performed included growth and developmental assessment, observation of feedings, and assessment of caregiver and infant bonding. These skills and tasks are important to premature infants, who are at high risk for growth and developmental delays, feeding problems, and for impaired bonding with caregivers. Because caregivers and physicians need initial and ongoing information regarding the strengths and delays of the infant in relation to growth and development, growth and developmental assessments should be a standard component of the HHRN's plan of care. The premature infant may also exhibit intolerance or difficulty with feedings. Feeding intolerance may indicate more serious problems such as reflux, failure to thrive, or congestive heart failure. Direct assessment of the caregiver's feeding technique, and the infant's tolerance for feedings, can only be made by observation.

Another infrequently performed skill was assessment of bonding between caregiver and infant. Premature infants sometimes spend long periods in the hospital, separated from their caregivers. In addition, these infants may be unable to tolerate sustained periods of interaction with their caregivers. Caregivers sometimes have unreasonable expectations of their premature infant. These factors can lead to alterations in the ability of the parent and infant to establish a mutual, positive, bonded relationship. Assessment of the caregiver and

infant relationship is an important part of the HHRN's involvement with this population. Infants and children who have "been separated from their parents, and children who are not securely attached to their parent, are at risk for maltreatment" (Office of Technology Assessment, 1988, p. 174).

Teaching regarding disease process was also minimally provided. This activity, unlike the most frequently performed teaching activities, required more specialized knowledge regarding premature birth, sequela, and diseases related to prematurity. Based on the researcher's expertise, clinical pathways for this population should include all, or nearly all, the teaching activities listed in Table 4, as well as other teaching activities specific and important to the premature infant (such as teaching regarding caregiver and infant bonding, and activity intolerance).

In a managed care environment, pediatric HHRNs must be able to demonstrate and offer unique and specialized skills and knowledge in order to receive reimbursement from payers, and support from physicians. As discussed earlier, reimbursement for pediatric home health services is determined by insurance payers. Legally, physicians must prescribe for the services of a HHRN. Insurance payers and physicians are reluctant to prescribe and reimburse home health agencies for services that could be rendered in a doctor's office. Most of the frequently performed skills, tasks, teaching, and case management activities, including vital signs, physical assessment, weights, and teaching regarding medications and signs and symptoms of compromise, could have been done in the pediatrician's office. This study is useful in demonstrating that home health agencies may benefit from ensuring that they hire nurses with the appropriate background and experience, and that pediatric

HHRNs receive adequate orientation and training regarding the premature population. Home health agencies should be able to demonstrate to consumers (such as payers, physicians, caregivers, and hospitals) that their pediatric HHRNs offer unique and qualified services and that those services improve patient outcomes and reduce overall costs for the payers.

Referrals for services was the least performed of the case management activities. Although many patients did have at least one community agency or service documented in the chart, documentation of a comprehensive case management assessment was lacking in all the patient charts in this sample. It is important to be able to detect from the chart that the HHRN case manager has taken a comprehensive approach in determining what agencies and services are involved with the patient, and if those services are appropriate and adequate. It was not evident from the documentation if the low number of referrals was because patients did not require referrals, or if the low number of referrals reflected the lack of assessment of the need for referrals.

Possible explanations for the lack of comprehensive case management assessments included the lack of documentation tools that triggered the pediatric HHRN to assess for and document all the agencies and services involved with the patient. Check-off lists of the commonly utilized community agencies and services for premature patients would be an example of a documentation tool that triggers the HHRN case manager to assess and document in this specific area. Another factor accounting for the lack of comprehensive case management assessment may have been knowledge deficit regarding community services and agencies commonly utilized by this population, or lack of knowledge

regarding case management and documentation procedures for premature home health patients.

It should be noted that home health agencies are reimbursed by payers for the pediatric HHRN visit, not for activities or services provided outside the context of the home visit. Therefore, case management activities for pediatric home health patients are generally not reimbursable. Because nonvisit services are not reimbursable, it is expensive for the agency to provide case management services to pediatric patients. This factor may have influenced how much case management was provided to patients in this sample.

The lack of documentation regarding important indicators and activities (i.e., the least frequently performed nursing activities), supports the discussion that pediatric home health care is in need of standardized tools that will guide the HHRN's professional practice and serve as a trigger for inclusion of all pertinent skills, teaching, and case management activities. Clinical pathway development for this population would serve as one such tool. In addition, the audit also demonstrates that within this sample, documentation tools and forms are less than adequate. The use of standardized checklists and clinical pathways would assist in a more comprehensive approach to care and case management for these patients.

Conclusions

This study provided preliminary research findings regarding number of visits, LOS, and nursing activities in relation to the premature home health patient. The majority of patients in this study did receive a limited number of visits. However, in regards to LOS, there was large variability in the sample. Although most patients received only the limited number of

visits, how those visits were distributed across time varied greatly.

In regards to nursing activities, the most frequently performed skills, tasks, teaching, and case management activities could have been performed by most pediatric nurses or in most doctor's offices. Nursing activities that required specialized knowledge or skill were infrequently, or almost never, performed. In addition, all of the patient charts lacked evidence that the HHRN case manager had performed a comprehensive case management assessment that considered the specialized needs of the premature infant. Clinical pathways that include timelines and nursing activities relevant to the needs of the premature infant would ensure a minimal standard of care for these patients. In addition, the clinical pathway would be an important tool for orienting and training HHRNs who provide care and case management for premature infants.

Scope and Limitations

This study was limited by the nonrandomized sample and limited number of home health agencies from which patient charts were selected. A larger sample size, randomly selected, from several agencies across the state or country, would increase the ability to generalize findings. In addition, establishing more stringent reliability and validity for the Chart Audit Tool would also improve the quality of the findings.

One significant limitation is that this study collected data regarding what was documented by the pediatric HHRN, rather than observation of what was actually performed. It was not possible to determine from the chart audit whether the patient's chart depicted an actual record of all nursing activities performed, or if documentation reflected only some of the HHRN's activities.

The scope of the study was limited in that it analyzed data gathered by chart review. Much information could not be gathered utilizing this methodology. For example, it was often not clear why certain nursing activities were, or were not, performed, or what influenced the patient's LOS and number of visits. It was unclear why some patients received multiple visits and were on service for several weeks or months, while other patients, with similar sociodemographic and diagnostic characteristics, received only a few visits and were on service for only a few days. It should be noted, however, that this study was preliminary research in an area that has received minimal attention in pediatric nursing.

Recommendations

Because there is minimal published work in the area of pediatric clinical pathway development for the home health patient, there are a number of recommendations for future research. These include selecting random samples from a larger number of home health agencies across the state or country, and controlling for extraneous variables, such as having all pediatric HHRNs in the study use the same documentation tools, and utilizing nurses with similar backgrounds, education, and expertise.

Recommendations for future research also include investigating and establishing guidelines for average LOS and number of visits in relation to the premature home health patient. This will lead to the development of timelines for clinical pathways. In addition, insurance payers, physicians, and caregivers should be surveyed to determine their attitudes, knowledge, and expectations regarding services offered by pediatric HHRNs.

Further research, both descriptive and correlational, is required regarding HHRN

practice for the premature patient population. This will assist in clarifying and establishing a typical HHRN skill and knowledge base, and lead towards development of more effective frameworks for case management and nursing care for the premature home health patient. Research that clarifies the nursing skill and knowledge base required for premature home health patients will provide a foundation from which to develop orientation and training programs. Standardization of orientation and training programs may lead to improved quality of care, higher levels of patient and staff nurse satisfaction, and higher retention rates for pediatric HHRNs.

In addition, research regarding HHRN practice for the premature infant should lead to better, more comprehensive, documentation tools. These would include standardized checklists of important activities and services needed by this patient population, and clinical pathways that act as guides for clinical practice. Insurance payers, physicians, and an interdisciplinary team of professionals should be involved in clinical pathway development. However, more descriptive data collection regarding nursing activities is needed before clinical pathway development can begin.

Recommendations for future research includes an examination for relationships between nursing activities and patient outcomes, and for relationships between the characteristics of patients and caregivers (such as gestational age or income level) and the frequency and level of service provided by the home health agency. It would be useful to determine what the most frequently used services are, and what patient and caregiver characteristics are related to increased utilization of services.

This study demonstrates that pediatric home health professionals have much to do

towards defining standards of care and practice in regards to the premature infant.

Because there has been no published research, or even theoretical papers, regarding clinical pathway development for the premature home health patient, this study provides an important contribution to the body of knowledge required for development of effective clinical pathways and case management frameworks for premature home health patient.

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Appendix A
Chart Audit Tool

Chart Audit Tool

Date: _____

1 of _____

Research code #: _____

Agency Admission Date: _____ Discharge Date: _____ Total # Visits Made _____

days on service: _____ Insurance/Payor source Medi-cal CCS Private Self-pay Other _____

Age: _____ Gender: M F Caregiver(s): _____ Language: _____

County residing in: Santa Clara Contra Costa Alameda Napa

Ethnicity: Af-Am Cau Asian Hispanic Pacific Islander Native-Am Other _____

Diagnosis: 1. _____ 2. _____ 3. _____

		Visit _____	Visit _____	Visit _____
S K I L L & T A S K	VS			
	WT			
	HT			
	OFC			
	AB GIR			
	PHYS ASS			
	CHNG NC			
	CHNG MON LD			
	NG/GT CHNG			
	WND CARE			
	STOMA CARE			
	PERI CARE			
	UMB CARE			
	OTH SKIN CA			
	CPT			
	AEROSOL TX			
	CEW			
	VEW			
	IM/SQ INJ			
	DSG CHNG			
	TRACH CHNG			
	TRACH CARE			
	SXN			
	DAY ON SVC			

		Visit _____	Visit _____	Visit _____
T E A C H I N G	SAFETY-HOME			
	SAFETY-CHILD			
	SAFETY-G&D			
	BASIC CARE			
	G&D			
	S&S			
	NG GT FDG			
	NG GT CHNG			
	NG/GT MGT			
	STOMA CARE			
	COLOS CARE			
	CPR			
	MEDS			
	O2 USE			
	MON USE			
	MIX FORMULA			
	DIET/NUTRN			
	OFT/AEROSOL			
	SXN			
	FDGS/BF'ING			
	PARENT BOND			
	DAY ON SVC			

		Visit _____	Visit _____	Visit _____
C A S E M A N A G E M E N T	PT CG CT			
	ME CT			
	PT/OT/ST CT			
	MSW CT			
	CLS CT			
	COMM CT			
	PHARM CT			
	INSUR CT			
	OTHER CT			
	RECERT			
	CASE CONF			
	DME/SUPPS			
	REFER TO			
	SVC COORD			
	DOCMNTN			
	AG-DOC'D			
	GRWTH CHART			
	DAY ON SVC			

Appendix B

Interpretation of Abbreviated Terms on Chart Audit Tool

Interpretation of Abbreviated Terms on Chart Audit Tool

Skills and Tasks

VS (Vital signs)
 WT (weight)
 HT (height)
 OFC (occipitofrontal circumference)
 AB GIR (abdominal girth)
 PHYS ASS (physical assessment)
 CHNG NC (change nasal cannula)
 CHNG MON LD (change monitor lead)
 NG/GT CHNG (nasogastric/gastrostomy tube change)
 WND CARE (wound care)
 STOMA CARE (stoma care for colostomy/gastrostomy/ileostomy)
 PERI CARE (perineal skin care)
 UMB CARE (umbilical cord care)
 OTH SKIN CARE (other types of skin care)
 CPT (chest physiotherapy)
 AEROSOL TX (aerosol treatment)
 CBW (capillary blood withdrawal)
 VBW (venous blood withdrawal)
 IM/SQ INJ (intramuscular/subcutaneous injection)
 DSG CHNG (dressing change)
 TRACH CHNG (tracheostomy change)
 TRACH CARE (tracheostomy care)
 SXN (suction)

Teaching

SAFETY--HOME (safety in the home: e.g., smoke detectors, disaster plan, etc.)
 SAFETY--CHILD (general child safety: e.g., child-proofing house, crib safety, etc.)
 SAFETY--G&D (safety specific to patient's age, developmental level, or special needs)
 BASIC CARE (well-baby and well-child basic care: e.g., bathing, mouth care, etc.)
 G&D (growth and development)
 S&S (signs and symptoms of compromise: e.g., fever, dyspnea, changes in behavior, etc.)
 NG/GT FDG (nasogastric or gastrostomy tube feedings)
 NG/GT CHNG (nasogastric or gastrostomy tube change)
 NG/GT MGT (nasogastric or gastrostomy tube management: e.g., taping, flushing, etc.)

continued on next page

STOMA CARE (care of stoma site)
 COLOS CARE (colostomy care)
 CPR (cardiopulmonary resuscitation)
 MEDS (medication administration, effects, and side effects)
 O2 USE (oxygen use)
 MON USE (monitor use)
 MIX FORMULA (how to mix and store formula)
 DIET/NUTRITION (diet and nutrition)
 CPT/AEROSOL (chest physiotherapy and aerosol treatment)
 SXN (suction)
 FDGS/BFING (feedings and breast feeding)
 PARENT BOND (parent-infant bonding)

Case Management

PT/CG CT (contact with patient/caregiver by telephone)
 MD CT (contact with the patient's physician)
 PT/OT/ST CT (contact with the patient's physical, occupational, or speech therapist)
 MSW CT (contact with a medical social worker)
 CLS CT (contact with a child life specialist)
 COMM CT (community contact--specified on Chart Audit Tool)
 PHARM CT (contact with a pharmacy/pharmacist)
 INSUR CT (contact with insurance company)
 OTHER CT (contact with other parties--specified on Chart Audit Tool)
 RECERT (recertification of plan of treatment and physician's orders)
 CASE CONF (case or team conference)
 DME/SUPPS (durable medical equipment or medical supplies)
 REFER TO (referrals made--specified on Chart Audit Tool)
 SVC COORD (service coordination: e.g., scheduling visits)
 DOCMNTN (documentation)
 AG-DOC'D (documentation of agencies involved with patient)
 GRWTH CHART (growth chart plotted and updated)

 DAY ON SVC (day on service in which the visit occurred)

Appendix C

Nursing Activities Added to Chart Audit Tool

Nursing Activities Added to Chart Audit Tool

The following nursing activities were added to the Tool during the chart audit. These include activities documented by the HHRN but not found on the Tool. Therefore, they were manually written in.

Skills and Tasks

- Assess bonding between caregiver and infant
- Assess coping of caregiver
- Assess number of apnea monitor alarms
- Assess safety (environment and caregivers)
- Measure chest circumference
- Check gastrostomy tube balloon
- Perform growth and development assessment
- Administer immunization
- Measure hemangioma
- Observe feeding
- Collect urine specimen

Teaching

- Activity intolerance
- Circumcision care
- Cord care
- Counting respiratory rate
- Disease process
- Elimination
- Handwashing
- Hydration
- Infection control
- Immunizations
- M.D. appointments
- No smoking in household
- Ordering medical equipment/supplies
- Measuring head circumference
- Use of pacifier
- Positioning

continued on next page

S&S: Interventions**Skin care****SQ injection****Taking temperature****Regulating temperature****Care of terminally-ill infant****Umbilical hernia****Universal precautions****When to call 911****Case Management****Visit nurse report to case manager****Contact with discharge planner****Contact with fire department****Contact with hospital****Contact with public health nurse****Contact with social worker****Documented: infant in High-Risk Infant Follow-up Program****Documented: Immunizations received or planned****Documented: Public health nurse involved****Documented: M.D. appointments****Documented: Regional center involved****Documented: Caregiver receiving WIC services****Referral to social worker****Referral to occupational therapist****Referral to physical therapist****Referral to speech therapist****Referral to Parents Helping Parents****Referral to Regional Center****Referral to public health nurse****Referral to WIC**

Appendix D

Comprehensive List of All Nursing Activities Recorded on the Chart Audit Tool

Comprehensive List of all Nursing Activities

The following is a complete list of all nursing activities recorded by the Chart Audit Tool.

This list combines activities found on the Chart Audit Tool and those added to the Tool during data collection.

Skills and Tasks

Vital signs	Umbilical Care	Assess Monitor Alarms
Weight	Other skin care	Chest Circumference
Height	CPT/Aerosol	Check GT Balloon
OFC	Capillary Blood Draw	G & D Assessment
Ab Girth	Venous Blood Draw	Immunization
Physical Assessment	IM/SQ Injection	Measure Hemangioma
Change nasal cannula	Dressing Change	Observe Feeding
Change monitor leads	Trach Change	Collect Urine Specimen
NG/GT Change	Trach Care	Assess Safety
Wound Care	Suction	
Stoma Care	Assess Bonding	
Peri Care	Assess Coping	

Teaching Activities

Home Safety	Diet/Nutrition	Physician Appointments
Child Safety	CPT/Aerosol	No Smoking in House
G & D Safety	Suction	Ordering Equipment
Basic Care	Feedings/Breast Feedings	OFC Measurement
G & D	Parent Bonding	Pacifier Use
Signs and Symptoms	Activity Intolerance	Positioning
NG/GT Feedings	Circumcision Care	S & S: Interventions
NG/GT Change	Cord Care	Skin Care
NG/GT Management	Counting Respiratory Rate	SQ injection
Stoma/Colostomy Care	Disease Process	Taking Temperature
CPR	Elimination	Temperature Regulation
Medications	Handwashing	Terminal Care
Oxygen Use	Hydration	Umbilical Hernia
Monitor Use	Infection Control	Universal Precautions
Mixing Formula	Immunizations	Calling 911

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Case Management Activities

Pt/Caregiver Contact	Documentation	Documented: M.D.
Physician Contact	Growth Chart	Appointments
PT/OT/ST Contact	Community Contact	Documented: Regional
MSW Contact	Contact with D/C Planner	Center
CLS Contact	Contact with Hospital	Referral to MSW
Pharmacy Contact	Contact with PHN	Referral to OT
Insurance Contact	Contact with MSW	Referral to PT
Other Contact	Documented: High-risk	Referral to ST
Case Conference	Infant Follow-up Program	Referral to PHP
DME/Supplies Contact	Documented: Immunizations	Referral to Regional Center
Service Coordination	Documented: PHN	Referral to PHN
Report to Case Manager	Documented: WIC	Referral to WIC

Appendix E
Categories of Case Management Activities

Categories of Case Management

For ease of interpretation, some case management activities were collapsed into categories. The following lists each case management activity under the category into which it was collapsed. All other case management activities were analyzed and reported individually.

Documentation of Community Services

Documented: High risk infant follow-up program

Documented: Immunizations

Documented: PHN

Documented: WIC

Documented: Regional Center

Contact with Community Services and Agencies

PT/OT/ST contact

MSW contact

CLS contact

Pharmacy contact

Case conference

Contact with DME or medical supplier

Contact with discharge planner

Contact with hospital

Contact with PHN

Contact with MSW

Referrals for services

Referral to MSW

Referral to PT/OT/ST

Referral to PHP

Referral to Regional Center

Referral to PHN

Referral to WIC