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Factors Affecting the School Nurse's Role in Effectively Managing the Child with Asthma: A Dissertation

Susan S. Sawyer

University of Massachusetts Medical School

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FACTORS AFFECTING THE SCHOOL NURSE'S ROLE IN EFFECTIVELY
MANAGING THE CHILD WITH ASTHMA

A Dissertation Presented

by

SUSAN S. SAWYER

Submitted to the Graduate Schools of the
University of Massachusetts Worcester and University of Massachusetts Amherst
in partial fulfillment of the requirement for the degree of

DOCTOR OF PHILOSOPHY

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Collaborative PhD in Nursing Program

Worcester and Amherst

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SUSAN S. SAWYER

Approved as to style and content by:

Josephine Ryan, Chair

James A. Fain, Member

J. Kevin Nugent, Member

Eileen T. Breslin, Dean, School of Nursing

James A. Fain, Director, Doctoral Program
Amherst/Worcester Campuse

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ABSTRACT

FACTORS AFFECTING THE SCHOOL NURSE'S ROLE IN EFFECTIVELY MANAGING THE CHILD WITH ASTHMA

February 2002

SUSAN S. SAWYER, WORCESTER STATE COLLEGE

M.S.N. BOSTON UNIVERSITY

Ph.D. UNIVERSITY OF MASSACHUSETTS WORCESTER AND

UNIVERSITY OF MASSACHUSETTS AMHERST

Directed by: Professor Josephine Ryan

This study uses a descriptive survey design to describe and examine the relationship among school nurses' level of education, years of experience, knowledge of asthma and identification of the school nurse's level of proficiency based on Benner's (1984) model of Novice to Expert. A convenience sample of school nurses employed in public schools within the state of Massachusetts with an RN degree (registered nurse) were sampled. The demographic data revealed that of the 325 participants who participated in the study, the majority of school nurses were female ranging in age from 40 to 50 (M=47.0). The majority of nurses had a bachelor's degree in nursing and were employed in the nursing profession on an average of twenty-two years and in school nursing for ten years. Since the majority of the school nurses did not have a master's degree, they were not certified by a national certifying body. The majority of participants indicated that they had received certification through the Board of Education in Massachusetts. Most school nurses worked full time in a public school and were responsible for between six hundred and a thousand students. The majority of nurses

indicated that they did not have a school-based clinic on site, nor did they have a school-based health center or clinic to refer students. There was little variability among sample characteristics with school nurses employed in Massachusetts being a fairly homogenous group. Those surveyed were sent a packet containing four questionnaires including one on demographics, as well as an asthma questionnaire, a questionnaire assessing chronic health problems in the schools, and a self-reporting questionnaire based on Benner's (1984) model.

Further results of this study revealed that the majority of the school nurses had an average to above average knowledge of asthma. The three most common interventions performed by school nurses as well as non medical personnel for those students with chronic illness are nebulizations, inhalers, and peak flow meters. Based on the self-report model of Benner's (1984), these same nurses viewed themselves as expert in their level of practice. Mezirow's Adult Learning Theory as well as Benner's (1984) model of Novice to Expert were used to support the nurses level of practice based on experience, intuition and a constellation of meaning schemes developed from previous exemplars. Results of the study indicated that although the nurses surveyed were expert in their knowledge of basic nursing concepts, none had advanced practice level courses in advanced health assessment or clinical decision making in order to effectively manage the complexities of chronic illness such as ADHD, diabetes, and epilepsy, as well as asthma, the most common chronic illness in schools today

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CHAPTER I

INTRODUCTION

A. Statement of the Problem

School nurses have a major professional responsibility for the promotion of wellness, disease prevention and health education. Today due to the large number of students with chronic health problems, specifically asthma, and with a growing number of medically fragile students, the school nurses play an even more important role in the promotion of healthy development.

Based on the 1997 Report of Health Services Provided by School Nurses in Massachusetts, (Nov. 1997) documentation demonstrates that school nurses provide a wide range of health services, “they are not only the health professional in schools but they are the primary providers of health care in school.” This report emphasizes the fact that the role of the school nurse has expanded from one that focused upon task oriented duties to one that stresses independent decision making, physical assessment skills and expert nursing intervention. The survey further reveals that 9.3% of the students diagnosed with chronic health conditions require nursing assessment and or intervention in order to maximize their educational experience during the day.

In view of this report, school nurses are in an ideal position to ensure access and continuity of health care to those students with chronic illness along with implementing health promoting behaviors and disease prevention. As the school nurse’s role has evolved with the changing health-care needs of today’s students, he/she has gradually assumed more health related responsibilities such as sports physicals, scoliosis screens,

birth control education, as well as role of counselor and student advocate. According to The Committee on School Health, American Academy of Pediatrics, (1993), rapid social change and biomedical advances have created new sets of developmental, behavioral and social problems for the school nurse...the growing biosocial and developmental morbidity of the pediatric population, the placement of technology-dependent children in schools, the support for school health education to prevent drug abuse and other life-style diseases, and the use of school-based health services to overcome barriers to access to medical care emphasizes the importance of the role of the school nurse.

In order to effectively meet the needs of today's student population a level of expertness is necessary to ensure quality and credibility in the integration and interpretation of health care maintenance. In preparation to adequately safeguard the student's health, the school nurse should have a minimum of a baccalaureate education and completion of a master's degree with a concentration in school health. This specialty in school health guarantees to the public that a nurse has an expert level of knowledge and skill with the potential ability to diagnose and treat those illnesses for which a child should not miss school or a parent miss work.

With the nursing goal of optimal health care services combined with the mission of the school system to educate students, the overall purpose of this study is to examine the relationship among school nurse's level of education, years of experience, knowledge of asthma and identification of one's level of proficiency based on Benner's model of Novice to Expert.

B. Background and Significance

Children today attend school with developmental and physical disabilities, and learning and attention deficits. Immigrant children are faced with language barriers as well as cultural and social barriers. Mental health issues, drug problems and chronic health conditions also add to the potential to disrupt a child's ability to learn. In order to meet the educational needs of these students, school systems are developing new paradigms for health services that involve the development of school based health programs specifically designed to address the changing needs of its student population.

The challenge for the school nurse is how best to effectively meet these changing and diverse health needs of today's students. Early concepts of school nursing practice focused primarily on control of communicable disease, health education and nutrition, as well as the delivery of technical skills, as seen with hospital based programs, and an emphasis on psychomotor skills. This has gradually changed through the integration of clinical practice, knowledge development, and application of nursing science. With this change the elements of comprehension, integration, analysis and synthesis have become essential components of the expert nurse's clinical role. Today the school nurse's knowledge of nutritional, sociocultural and economic factors coupled with critical thinking promotes synthesis of the findings of the episodic visit, the physical examination, and psychosocial evaluation of the child.

Salmon (1994) pointed out that the current focus on reforming the health care system and the increasing interest in the role that schools will play in health care delivery provides tremendous opportunity for nurses in school settings. For example, asthma as the most common chronic childhood illness in the country today affects between 14 and

15 million Americans, 4.8 million of whom are children (Weitzman, et al, 1990, National Asthma Education and Prevention Program (NAEP, 1997) It is multi-faceted as well, in that it touches all aspects of a child's life. Research has demonstrated that physical and psychological health has a direct impact on children's abilities to succeed academically and socially in the school environment. (Wallace, et al 1992). Asthma impinges on learning and psychosocial development of the child; it interferes with play activities as well as the disruption of family life. Excessive absences from school due to asthma reduce the quantity and quality of education for that child. Due to the nature of asthma and its episodic exacerbations the school nurse is in a pivotal role to assess and manage the child during the school day.

The underlying pathology and acute exacerbations associated with asthma can be effectively managed; however, the morbidity and mortality from asthma has significantly increased during the past decade. The demographics of asthma have been demonstrated through the National Health Interview Survey that was given to approximately 20,000 individuals between 1980 and 1994. Results indicated that the incidence of asthma increased 160% for children aged 0 to 4 years with a corresponding increase of 74% for ages 5 through 14 years. Older children and adults had lesser increases, but rising rates were found in all age groups. (Surveillance for asthma: CDC 1960-1995).

School nursing today involves the integration of theory, research, and practice. It is the school nurse functioning in the expert role that affords the integration of complex patient information in the context of clinical practice and research findings. The expert nurse integrates and incorporates nursing care with problem solving, setting priorities and with managing time efficiently. The school nurse at this level of practice is able to

demonstrate proficiency in the integration of preventive care measures, and the evaluation and effectiveness of therapeutic interventions. The expert nurse is then able to break this information down into its component parts, which include identification of the parts, analysis of the relationships between parts, and recognition of the organizational principles involved (Reily & Oreman, 1990). He/she demonstrates knowledge acquisition and knowledge representation through the integration and synthesis of advanced critical thinking skills.

It has become evident on further examination, that the nurse in the school setting must have the appropriate educational preparation, possess a level of skill acquisition and expertise that provides him/her with the ability and independence of discretionary clinical decision making. (Igoe, 1990; Oda, 1993; Passarelli, 1995; Salmon, 1994) School health literature has addressed the administrative and legal impact that chronically ill and technology dependent children have on school systems. Children with complex medical disorders and graduates of NICU's (Neonatal Intensive Care Units) present the school nurse, as well as the educators with new challenges not previously addressed in a school setting (Palfrey et al, 1987).

In order to effectively assess and manage these children, specifically those with asthma, the school nurse needs to possess the intuitive links of clinical expertise that include an interpretive and analytic approach to one's nursing practice. As Benner notes in her works, (1984) nurses develop a continuum from novice to expert. The researcher goes on to note that clinical performance is initially observed through the external criterion of performance. An example is the proficient and expert nurse who will assess a situation more accurately and make decisions more efficiently than the novice, the

advanced beginner or the competent nurse. In addition there is an internal criterion, which is the mental processes characteristic of each stage. Where as the novice will rely on rules and follow them in a step by step fashion, the competent nurse is able to draw on his/her past experience and familiarity with a particular situation and formulate a plan based on that experience. The expert stage of conscious analysis is eventually displaced by intuition and replaced with highly skilled analytic ability.

As an expert nurse one's practice is characterized by practical reasoning, which relies on mature and practiced understanding and a perceptual grasp of similarities and differences in particular situations (Benner, et al, 1997). Although the expert nurse anticipates and plans how to respond to possible situations, when involved in an actual situation his/her performance demonstrates a heightened awareness to the patient's needs, as well as the ability to link the patient's condition with instant therapeutic responses. Benner (1997) particularly emphasizes that central to expert care is a concern for revealing and responding to the patient as a person, respecting their dignity, caring for them in ways that preserve their personhood, protect them in their vulnerability, help them feel safe, comfort their families, and preserve the integrity of relationships. The expert nurse, through his/her clinical experience and perceptual acuity, is able to maintain ethical responsibility. He/she is able to case manage patients and maintain involvement with families in order to work with and through others on the patient's behalf.

The school nurse demonstrates expert practice in caring for his/her patients through sharing clinical situations to both teach and learn from, learning to identify signs and symptoms in particular patient populations, knowing particular patients and learning to recognize how those patients respond, gaining practical knowledge about how

equipment works, identifying clinical experts with whom one can consult, and sustaining attentiveness of the group to notice changes in patients, (Benner et al, 1997). With the increasing level of acuity and growing number of children attending school with chronic illness, it is essential for the school nurse to demonstrate developing expertise in caring for these patients.

Beyond providing direct care to students with chronic conditions, school nurses spend a significant portion of their day on case management. This includes collaboration with the primary provider, the medical specialists, and other personnel such as physical and occupational therapists that are responsible for specific needs of the student (Schroer, 1991). Part of effective case management for the school nurse is patient education. Education of the patient is regarded as the first step to both addressing the awareness of the role stress and family interaction play in both the management of symptoms and improving patient compliance. (Brooks, 1999). Case management also includes assessment, planning, and implementation of therapeutic interventions for the child with a chronic illness such as asthma. The school nurse acts as an advocate by coordination and referral of students and their families for psychosocial, medical, and mental health services.

For example, in the role of case manager, the school nurse participates in the development of collecting, analyzing and sharing clinical data and/or observations in the early identification and diagnosis of the child with attention deficit hyperactivity disorder. (Odom, et al 1994). He/she is also instrumental in monitoring the effects of medication and/or other treatments, such as the student with diabetes (Rapone, et al 1997). Teaching and coaching both students and staff the implications of a chronic illness such as epilepsy

provides the school nurse opportunities for collaboration and consultation with other departments both inside and out of the school.

During the 1995-96 school year, school nurses in Massachusetts made a total of 4,224 home visits (Health Services Provided by School Nurses in Massachusetts, 1997). Since 1975 and the enactment of Public Law 94-142 (Education for All Handicapped Children Act,) school nurses have become responsible for meeting the complicated health needs of physically and mentally challenged students as they are mainstreamed into schools. Public Law 99-457 (Education of the Handicapped Act Amendment) in 1986 expanded the Public Law 94-142 to include identification of and the provision of services to children with disabilities from birth to age 5. Today approximately 30,000 school nurses address the health needs of more than 42 million students, a ratio of one nurse to every 1,400 students. (Payzant, 1996). In view of school nursing's enormous responsibility, it has become evident that the nurse as case manager must possess a level of clinical expertise that allows for the development and demonstration of theoretical, scientific and clinical proficiency.

A national survey conducted by the Office of School Health, University of Colorado Health Services Center, revealed that chronic health problems such as asthma ranked as the second most significant problem by school districts (Davis et al, 1995). Studies by Capen (1994) and Mellins (1989) demonstrated that asthma education in schools could improve the child's health, school attendance, and school performance. Current strategies to reduce asthma episodes during the school day and school absenteeism have focused on the parent, the child and the school. Education on asthma has focused on the pathophysiology, the epidemiology, signs and symptoms and etiology.

There is, however, lack of research addressing the asthma knowledge of the school nurse to effectively case manage the child with asthma.

As school health services have changed and broadened over the years, current advances in medical technology have influenced the school's ability, as well as the school's need to provide care to students with chronic health problems. Smith (1987) notes that children who would not have survived without the technological developments of the past two decades are now in the nation's school systems and have a substantial impact on the nursing services provided.

Asthma currently accounts for more than one hundred million days of restricted activity for both children and adults, and 470,000 hospitalizations annually (NAEP, 1997). It is the most frequent admitting diagnosis in pediatric hospitals (Behrman, Kleigman, Nelson & Vaughn, 1994). Asthma mortality rates for children 0 to 4 years obtained through state reports were 1.8 per million from 1993 to 1995 with corresponding rates of 3.7 per million for ages 5 to 14 years (Surveillance for asthma: CDC 1998). Morbidity and mortality are higher in lower income groups versus higher income groups and the socioeconomic factors of living conditions, education, and access to health care are believed to account for these differences (Williams, 1995). The disease has been especially severe for African-Americans and in 1993, blacks, both children and adults, were four to six times more likely to die of asthma than were whites. (Fowler, 1992) The epidemiology of asthma is most pronounced in the inner cities, but is not limited to the United States. Increasing asthma rates have been reported throughout the developing countries, although historians have noted that asthma was rare before the 20th century. (Weitzman et al, 1992). Although this is a chronic condition that cannot be cured, it can

be controlled with proper diagnosis, education, and management (Newacheck & Taylor, 1992).

In summary, the role of the school nurse is taking on new definition and being reshaped based on the increased medical acuity and emerging trends of chronic illness of today's student population. As a result, school nurses are increasingly called upon to intervene with complex medical problems, complicated psychosocial issues and heightening mental health problems. They must act as advocates, consultants, and case managers by addressing obstacles to classroom learning, as well as promoting healthy development.

There currently exists a plethora of literature addressing various approaches in managing the physical, psychosocial, and educational aspects of childhood asthma. In addition there is an abundance of research on issues concerning the expanding role of the school nurse. A salient point, however, is that the research has revealed a significant void in correlating the relationship between the school nurse's knowledge of asthma, his/her level of clinical expertise, and level of nursing education. The correlation between these components has considerable implications in regard to the care and well being of today's students. As the research has demonstrated, a level of expert nursing is imperative in order to ensure effective assessment and management of the child with a chronic illness, such as asthma as well as provide health promotion and disease prevention to a rapidly changing and diverse student population.

C. Research Questions:

With holding the nurse's knowledge of asthma, what has the greatest influence on his/her's ability to effectively manage the child with a chronic illness, e.g. asthma.

This statement will be answered by the following questions:

1. What are the health needs of students with chronic health problems in Massachusetts's schools that require advanced nursing interventions in the school setting as perceived by the school nurse?
2. What type of case management activities does school nurses become involved with when working with students with chronic illness in the school setting?
3. What type of nursing interventions do school nurses most often perform?
4. What is the school nurse's current knowledge of asthma?
5. Is there a relationship between the school nurse's years of clinical experience in school nursing and their self-reported level of nursing proficiency according to Benner's (1984) model Novice to Expert?
6. Is there a relationship between the school nurse's level of education, years of clinical experience, knowledge of asthma, and Benner's self-reported level of proficiency?

D. Operational Definitions:

A chronic health problem for purposes of this survey is defined as "an on going health condition that has a biologic, psychologic, or cognitive basis and has lasted or is virtually certain to last for at least 1 year..."(Stein, Bauman, Westbrook, Coupey, & Ivey, 1993, p. 345).

Knowledge of asthma is based on the author-developed questionnaire. The School Nurse's Knowledge questionnaire is a 25 item true/false self report measure focused on effective management of asthma along with recognition of common symptoms and triggers of asthma.

Level of nursing proficiency is based on Benner's (1974) Novice to Expert Model. which incorporates five stages of practice: novice, advanced beginner, competent, proficient, and expert.

CHAPTER II

REVIEW OF THE LITERATURE

A. Chronic Health Conditions

In order to develop a more complete picture of the evolving role of the school nurse one must be aware of the range of chronic health conditions that contribute to the health care needs of the students. For example, educating the child in the recognition of early warning signs and appropriate use of pharmacologic treatment is the cornerstone of health maintenance for children with asthma, the most common chronic illness among children today. (Haviland, M. 1997). Many children with asthma require nursing services that include assessment and administration of nebulizer treatments, use of inhalers and peak flow meters. The foundations of management by the school nurse should be laid early so as to prevent episodes of asthma exacerbation and to minimize the severity of those episodes. Asthma can impact a child's psychosocial development by fostering anxiety states, school phobias and achievement problems, dependency, and social isolation. (Brooks, 1999) For example, factors such as emotional disturbance, depression, and family conflicts can precipitate asthma exacerbations. They are factors that also contribute to noncompliance of medical management.

Type 1 diabetes mellitus, a common chronic illness, is an endocrine disorder frequently seen in adolescence. Careful control of glucose levels is essential in postponing the damaging long-term complications of the disease (Ahern and Grey, 1996) Children with diabetes require careful balancing of the factors that acutely affect blood sugar levels: insulin, food intake, and exercise. School nurses must become experts in

prevention, detection and treatment of low blood sugar. Their knowledge and expertise in regard to administration of glucagon, an intramuscular medication for treating hypoglycemia is crucial. It is the school nurse's role to initiate the implementation of policies and procedures for treatment of hypoglycemia during the school day.

The use of stimulant medication for the use of attention deficit hyperactivity disorder (ADHD) is one of the most common problems diagnosed among school children (Blondis, Accardo, & Show, 1989). It is a condition characterized by distractibility, impulsivity, short attention span, and a display of excessive activity that leads to interpersonal conflicts (Henker & Whalen, 1988). Assessment for ADHD cannot be done entirely in the physician's office. Standard assessment measures from parents and teachers are essential in the diagnosis. Treatment involves stimulant medication, such as methylphenidate hydrochloride (Ritalin), Dextroamphetamine sulfate (Dexedrine) or permoline (Cylert). The school nurse needs to be knowledgeable regarding ADHD and keep abreast of the latest medical and educational research. The school nurse needs to have the expertise to take a psychosocial history as well as to identify inappropriate behaviors through direct classroom observations. It may be the nurse's role to take a complete behavioral educational and psychosocial history to present to the clinician and to follow-up on the behavioral checklist done by parents and teachers. It is also necessary for the school nurse to possess the clinical expertise required to monitor and interpret the side effects of medications (Demma, 1989).

Other chronic health problems are the many types of developmental disabilities associated with being very-low birth weight (VLBW) (, 3lbs. 5 oz) and low birth weight (LBW) (5 lbs. 8 oz.) Common problems encountered by the school nurse include: low-

average intelligence, mental retardation, seizure disorders, behavior disorders, learning disabilities, speech delays and peripheral or central visual and auditory impairments, (Desmond, 1980). In addition, cerebral palsy, primarily spastic diplegia has been the most common long-term form of disability reported in the preterm infant (Eicher & Barshaw, 1993).

Learning disabilities and school problems are seen in 20-65% of children born prematurely. They present with neurobehavioral and temperament differences such as less adaptability more impulsiveness, more temper tantrums, shorter attention span and decreased social competence (Bernbaum & Hoffman-Williamson, 1989). It is the role of the school nurse to coordinate this child's care. In order to do so, one must possess the case management skills necessary to act as liaison between the physician, parent, teacher, as well as interact with other medical personnel. It is the school nurse who is representative of the child on the interdisciplinary team in evaluation and assessment of the HEP (health education plan) and IEP. (Individual educational plan).

With the influx of a large immigrant population, many students are at risk for academic failure, social problems, lack of health care and mental health problems. (Hodgkinson, 1993) The number of schools serving low-income populations with students living in improvised rural areas and inner cities has climbed over 50% (Hodgkinson, 1993). These students bring with them conditions associated with poverty, difficult and diverse family circumstances, lack of English language skills, physical and emotional problems and lack of adequate health care. Subsequently these trends are placing students both academically and socially at a disadvantage. They are reshaping the work of school nurses, from direct services to more of student and family advocate,

addressing mental health and psychosocial needs, as well as identifying community resources, and assisting families to connect with services.

The school nurse acts as case manager for chronically ill students by complete assessment, referral to appropriate disciplines, monitoring effects of medications, and coordination of care with other disciplines. The school nurse also provides support and education for these children and their family as well as evaluation of progress on a day-to-day basis (Odom, Holman, & Clements, 1994).

Assuming the role of effective case manager for children and their families is challenging. The Urban Institute Policy and Research Report (1996) indicated that inner-city school systems have a poor quality of health resources available to them and that urban areas have higher infant mortality rates, lower access to adequate health care and five times as many cases of AIDS as non-urban communities. The school nurse in this setting acts as both coordinator and provider. The role includes the integration of diverse services dependent upon the level of health care needed, parent support and participation, immunizations and screenings, and referrals to a variety of agencies. Based upon a study by Anderson, (1994), this role description supports that of the advanced practice nurse. It identifies the dimensions of the scope of practice as an independent autonomous role that encompasses many dimensions of advanced nursing care, from primary care provider, to case manager, to educator, to coordinator, to liaison clinical expert in decision making.

B. History of School Nursing

The concept of school nursing had its inception in 1902 when the work of Lillian Wald, nursing director for Henry Street Settlement House, led to the placement of nurses in the public schools in New York City. She proposed sending a nurse to each school to

assist the students in following the physician's advice and for follow-up home visit assessments to encourage the child to return to school. At the turn of the century, the school nurse's role was based in home care, with home visits to sick students.

During this period there was an influx of immigrants into the United States resulting in crowded living conditions and poverty. This resulted in high rates of morbidity and mortality due to infectious and communicable diseases such as mumps, measles, scarlet fever, tuberculosis and diphtheria. Conditions related to sanitation such as scabies, ringworm, impetigo, and head lice were rampant in the schools as well.

To help remedy the concerns regarding sanitation, New York City's health commissioner appointed a nurse from the Henry Street Settlement to go into the schools to help and treat these children. In October 1902, Lina Rogers was appointed the first school nurse in the United States (Pollitt, 1994). The work of the public health nurse was so successful in getting children back to health and to school that by 1910, school nurses were being employed throughout the country (Igoe, 1994).

As the scope of school nursing practice expanded, school nurses were performing vision and hearing screenings, counseling students, and teaching health education classes. With the advent of antibiotics and immunizations, the health care focus shifted toward disease prevention and health promotion. As an outcome of this change, the school nurse's role was confined to health screenings and primary health education. The role of the school nurse has continued along this continuum until the early 1970's with the emergence of the expanded role of nursing into clinical specialists and nurse practitioners.

Historically health programs in schools included three components: health education, health services, and school environment. Today the comprehensive school health program model proposed by Kilbe and Allensworth (1987) includes eight essential components. These eight components include health education, health services, nutrition services, physical education, health school environment, counseling, psychological and social services, health promotion for staff, and parent, and community involvement.

Over the years the scope and focus of school nursing has changed.

Hawkins (1988) defined the scope and practice of school nursing on the following clusters: public health, adaptation, helping relationships, tools, and systematic process. To clarify, the public health cluster supports students, families, school personnel, and the community. Adaptive interventions help students adapt to their internal and external environments. The nurse's use of interviewing and listening techniques describes the helping cluster, and the nurse's ability to form relationships. Tools refer to history taking and assessment interventions, and the systematic cluster incorporates the nursing process, legislative process and research process.

A similar study by White (1985) identified school-nursing activities. School nurses were asked to estimate the amount of time spent yearly on five major areas: physical care, facilitation, instruction, administration, and clerical. The researcher ranked the activities from the most to the least frequently performed. The majority of time was spent on physical care, namely assessing health complaints, administering first aid and screening. The least amount of time was spent on administration. Thurber, Berry, and Cameron (1991) took these same five areas and investigated the role of the school nurse in carrying out state-mandated activities. They contacted the Departments of Education

in all 50 states. Physical care activities were the most frequently reported, while activities associated with facilitation which included home visits, referrals, and health consultation were the least reported.

Nursing diagnosis and interventions have been used to identify and categorize school-nursing practice. Shiao and McKaig (1989) identified eight nursing diagnoses as the basis of categorizing reasons why students visited the nurse's office. They described four broad categories of school nursing interventions: safety and education, injury prevention, stress management, infection control and education, and assisting students with self-care activities. Jones and Clark (1993) found that the most frequently performed intervention at the elementary school level was administration of medication, at the middle school level, the intervention used most frequently was "monitoring condition", and at the high school level, "counseling with the parent" was the most frequent intervention reported. In conjunction with interventions, Felton and Keil (1998) asked school nurses about perceptions and visions of their practice. Five conceptual categories were revealed: preparation for school nursing practice, essence of school nursing, scope of practice perceptions, powerlessness, and future outlook. An implication of this study was the need for practice-based research on interventions carried out by school nurses and the outcomes of these interventions for students.

In addition to clusters, and interventions it is important for school nurses to document their practice. Lowe and Miller (1998) examined the nature and extent of nursing services provided to students with chronic health conditions. Their results demonstrated that school nurses delegate a large number of nursing services, while spending a great deal of time themselves on case management. Their concern was that

without documentation of nursing services, it is difficult to receive financial support for school nursing services.

Current advances in medical and information technology influences the school's ability, as well as the need for the school to provide the scope of care required by a substantial number of students with chronic illnesses. As Smith (1987) notes, if school nurses are not prepared for evolving roles, they may not be included in school-based multidisciplinary teams, and students will lose the benefit of nursing's holistic approach to care. Avrey (1989) conducted a Delphi study to determine consensus among a nation wide panel of expert school nurses to determine developments that will influence and thus change the role of the school nurse. The items that emerged addressed such issues as: health record computerization, increased number of medically fragile students, expanded roles for the nurse in health education and community health, and more expert levels of practice requiring advanced levels of education.

Based on the Delphi study, a similar study by Iverson and Hays (1994) conducted in the state of Nebraska revealed that school nurses there believe that the same changes will occur in their school nursing practice by the year 2005. In addition, the survey revealed the disproportionate nurse: student ratio the large number of sites served per nurse, and the predicted increase in the number of students.

C. Education of the School Nurse

Although there are proposed recommendations for school health coverage, there are no national standards that specify entry-level education and experience required for school nurses who provide school health service (Bradley, 1997). The predominant professional preparation for nurses who practice in schools is a current license as a

registered nurse and a baccalaureate degree, most often in nursing (Passarelli, 1995). A nurse who provides school health services may be a licensed practical nurse (LPN), a registered nurse (RN), or a nurse practitioner (NP). The School Nursing Practice Roles and Standards emphasize the importance of having adequately trained and certified health service professionals working in the schools. While only 7.8% of all states require school nurses to be certified through the American Nurses Association (ANA or the NASA), 62% of all states offer their own certification for school nurses. Of those states that offer their own certification, 65.6% require it for employment as a school nurse. (Small, et al., 1995).

In a recent national survey of the US Dept. Of Education, Thurber et al., (1991) note that of the 19 states responding, only 10.5% require a baccalaureate in nursing and 31.6% require a baccalaureate in nursing plus certification as minimal educational preparation for school nursing. Based on statistics from Fryer and Igoe (1995) approximately 30,000 nurses currently provide services in 110,000 elementary and secondary schools. With more than 95% of American youth ages 5-17 enrolled in school, it is logical to consider schools as major sites for the delivery of health care (Kann, 1995). In addition, approximately 10-15% of these children have chronic health conditions, and/or complex severe illnesses (Passarelli, 1995).

In view of these statistics, Passarelli (1994) points out significant issues that must be addressed for the future of school nursing. One of the major considerations is the concern that the school nurse is often geographically as well as professionally isolated from other nurses. Collegial support and collaboration with other health professionals is not always readily available. In addition it is often difficult for the educator to

understand the implications of specific health problems of the student and how they may affect the student's learning and success in their educational program

There is also much role confusion in school nursing that is influenced by the particular practice setting and educational preparation of the nurse. The diversity in nursing preparation only adds to the role confusion for nurses as well as for those interacting and communicating with nursing. Provision of health care services in a non-health care setting poses still additional challenges to the school nurse. This confusion reinforces an unclear role definition and interferes with developing a standardized conceptual framework for school nursing. Administration and supervision of the school nurse poses still another dilemma in view of the political context and governing structure of the school system. In some settings school nursing comes under the direct supervision of education, in other settings, nursing comes under the department of public health.

The economics of funding school nursing services is a monumental problem that varies from system to system and state to state. Historically, school health services including the number of school nurse positions and their educational preparation were usually generated from education dollars set by town/city budgets. Today these decisions are determined annually by the current budgetary constraints.

The legal issues of clinical practice present school systems with yet another dilemma related to school health records, collection, storage and release of confidential student health information, and delegation of nursing care responsibilities to non-licensed personnel to name just a few. In spite of the many issues confronting health services in school, today's schools have more influence on the lives of youth than any other social institution except the family (Kann, Collins, Pateman, Small, Ross, Kolbe, 1995). The

goals of schools are consistent with the goals of health promotion as noted by Shalala (1994) “our children need consistent, sound health information and access to health services, beginning in their families and continuing in their schools, and communities.”

D. Theoretical Framework

The theoretical framework for this research is based on Benner’s (1984) Novice to Expert Model, which emphasizes the movement from focused protocol, and scientific based thinking to holistic critical thinking and intuitive decision-making. The movement toward an intuitive grasp of a situation becomes clearer as the nurse progresses from novice to expert in their practice, which in turn is based on one’s education, knowledge, and experience. A review of the literature provides an overview of clinical decision-making as well as a discussion of the research on intuition in clinical judgement and in Adult Learning Theory.

E. Dreyfus Model of Skill Acquisition

Based on the Dreyfus Model of Skill Acquisition (Drefyus & Dreyfus, 1980) as applied to nursing by Benner (1984) the process of clinical decision making is dependent upon the nurse’s experience, education and knowledge. Hubert Dreyfus, a philosopher and Stuart Dreyfus, a mathematician and system analyst developed this model of skill acquisition based on the study of chess players and airline pilots. . The premise of this model is that in the acquisition and development of a skill, a student passes through five levels of proficiency: novice, advanced beginner, competent, proficient, and expert. Their model postulates that in learning a particular skill, changes in performance are reflected in four general aspects: (1) movement from a reliance on abstract principles and rules to use of past, concrete experience; (2) shift from reliance on analytic, rule-based

thinking to intuition; (3) change in the learner's perception of the situation from one which is viewed as a compilation of equally relevant bits to an increasingly complex whole in which certain parts are relevant, and (4) passage from detached observer, to one of a observer involvement, fully engaged in the situation.

An important assumption of the Dreyfus model as noted by (Benner 1984) is that with experience and mastery skill is transformed. As a result of this transformation one brings improved skill to their performance. Dreyfus & Drefyus point out that formal structural models and decision models cannot account for actual observable clinical performance in practice. Benner (1984) emphasizes that an interpretive approach to describing nursing practice is inherent in actual clinical practice in holistic, rapid decision making captured in the context of the clinical setting.

The results of numerous nursing studies indicates that decision-making varies from the rational-analytical decision making model to an intuitive decision making model. The rational-analytical decision making model is an inductive process where reasoning proceeds from a specific event to a broader more general situation. Analytical judgment making, also called systematic, logical rational, linear, and left-brain thinking, is a conscious, cognitive and sequential thought process (Corcoran-Perry & Bungert, 1992). Intuition as another form of problem solving is based on perceptions, hunches, insight and "gut reaction." (Umiker 1989) It is the act of drawing conclusions, making decisions, and developing courses of action about situations confronting nursing practice through the process of intuitive judgment making. (Rew 1988).

As reported in the literature, clinical decision-making is based on both general and specific factual knowledge and skills as well as practical experience. Examination of

intuition and clinical decision making of school nurses and where one fits along the continuum of novice to expert will help to provide information about the reasoning processes and explain the strategies that school nurses use in their assessment and management of the child with a chronic illness.

F. History of Clinical Decision Making

Clinical decision making in nursing has experienced significant changes in both the direction and substance of nursing curriculums. The earliest documentation of clinical decision-making in nursing curriculum was in the 17th century from the French Sisters of Charity when untrained helpers, mostly servants, were considered nurses. Their prescribed course of study included supervision of patient care as well as lectures, quizzes, and religious exercises (Bevis & Watson 1989). With the advent of Florence Nightingale in 1860, the nursing role developed formal clinical competencies and characteristics more comparable to today's clinical practice. In 1917 and publication of the Standard Curriculum by the Education Committee of the League of Nursing, objectives, content and methodology for nursing curriculum and clinical decision making was more clearly defined and established. As clinical competencies and behavioral objectives for nursing practice gained recognition and credibility, the Tyler Model in 1949 was adopted as the gold standard in nursing curriculum and methodology. It was based on behavioral objectives that all learning and clinical decision-making is manifested in changes in behavior and that change in performance is indicative that learning has occurred (Bevis & Watson, 1989).

G. Experiential Learning

Benner's novice to expert model of nursing practice determines what level of expertise the school nurses is performing in order to effectively manage the child with a chronic illness. This model defines the active process of refining and changing preconceived theories, notions and ideas when confronted with actual clinical situations. Theoretical and scientific knowledge is paramount for directing the school nurse where to look in identifying problems, asking questions, and anticipating events. It is through the clinical experience that the nurse develops a sense of intuition so critical to clinical decision-making.

This concept is essential to Benner's view of experiential learning and knowledge development. In assessment of the levels of proficiency, advanced beginners are those who demonstrate marginally acceptable performance and relate with recurring meaningful situational components. Nurses at the competent stage begin to see their action in terms of deliberately planned, long-range goals with clear priorities. Proficient nurses perceive situations as wholes and their performance is guided by maxims and keen perception, whereas, nurses at the expert level have an enormous background of experience with an intuitive grasp of each situation. They zero in on the accurate region of the problem and are fluid, flexible, and highly proficient. (Benner, 1984).

The concept of clinical decision-making was initially described in the literature by Polanyi (1958) as "transaction with personal knowledge." stating that each person brings his own particular history, intellectual commitments, and readiness to learn to a particular clinical situation. He emphasizes that the clinician's knowledge is embedded in perceptions rather than precept, and calls this perceptual recognitional ability of the

expert clinician “connoisseurship.” This term implies descriptive and interpretive clinical knowledge of the expert nurse that one is able to demonstrate through skill refinement and intuitive grasp of the clinical situation.

Practitioners functioning at different levels of skill acquisition, respond differently, noticing and responding to different clinical situations. Principles, rules, and practical structures for reporting actions, such as flow sheets, charting, and schedules guide the new graduate. In contrast the expert nurse is guided by direct interpretation and integration of the clinical situation at hand (Benner, Tanner, Chesla, 1992).

This model identifies factors such as experience, knowledge, and education that affect the nurse’s clinical judgment and intuition in clinical judgment making. Central to this concept is the development of experiential learning and clinical knowledge development. Experience or experiential learning has phenomenological underpinnings that contain a subjective assessment of one’s own experience. One’s own experience is dependent upon judgmental heuristics a form of decision-making. Kahneman and Tversky (1982) describe such judgement heuristics as an important component of judgements or decision making made by nurses for three reasons: (1) heuristics are used in uncertain decision making environments and the nurse most often makes judgements under such conditions, (2) the probability assessments or heuristics that determine subjective responses are often decision making without use of analytical methodology, and (3) probability judgements often depend upon examples nurses have retrieved from their memories or from the interpretation of past experiences. Benner, Tanner, & Chesla (1992) describe experience-requiring openness to a new situation that is constituted by what has gone on before; ‘it is not naïve and undifferentiated.’ This experience according to Benner (1984)

reveals the knowledge that is embedded in actual nursing practice accrued over time. As nurses gain experience, they change their intellectual orientation, integrate and sort out knowledge and refocus clinical decision-making based on perceptual awareness rather than on process orientation.

H. Adult Learning Theory

In conjunction with this concept is transformation theory, a concept inherent in Adult Learning Theory. Mezirow (1994) postulates that transformation theory is comprehensive, idealized, and a universal model consisting of the generic structures, elements and processes of adult learning. Central to this theory is critical reflection, rational discourse and decision making which are processes of adult learning based on the interpretation and meaning of one's experience, which in turn guides one to action. More specifically are meaning schemes, or constellations of concepts, beliefs, judgments, and feelings which shape a particular interpretation (Mezirow 1991), and which are transformed through reflection and through previous experience.

This researcher points out that adult learning means the progressive realization to achieve a broader, more discriminating and integrative understanding of one's experience. The school nurse in clinical practice applies reflective action as part of one's clinical decision making. One's action is based on past experience and on reflection and critique of those actions. Meaning schemes are shaped by one's past clinical experience, by current context and by personal experience. Meaning schemes are basically conceptual identification judgments about a specific situation. Barsalou (1989) notes that meaning schemes or structures are units of human information that undergrid memory and intelligence. Meaning schemes allow the nurse clinical decision making based on

comparison or properties of inductive reasoning and judgment which are based on previous exemplars. Meaning schemes can vary in complexity and organization and are influenced by the type and amount of information present.

I. Andragogy

Along this same line of reasoning, Knowles (1980) described the term andragogy as the art and science of helping adults learn. This researcher posits that the adult learner has a multitude of life experiences on which to build. These life experiences are based on four assumptions: (1) as a person matures, his concepts of self changes from dependency to increasing self-directedness, (2) he accumulates a reservoir of experience that provides a broadening base to which he can relate new learning, (3) his readiness to learn is decreasingly the product of biological development and increasingly the product of tasks required for his social roles, and (4) an adult tends to have a problem-centered orientation to learning. Life experiences of the school nurse enhances one's perception and interpretation of a situation. Perceptions are selectively chosen and are influenced by both internal and external variables, such as culture, maturity, developmental level and educational level (Knowles 1980). Knowles (1980) also notes that the climate for andragogy is collaborative and informal and allows life experience to influence how one responds. One interprets an experience based on meaning structures that are discriminating and integrate one's past experience.

The school nurse responds to a particular situation by reflection and inference within the context of problem solving. Mezirow (1991) emphasizes the premise that reflection can transform meaning perspectives into a less common or more significant experience. Perspective transformation may be the result of a major event in one's life or the

accumulative result of related transformations in meaning schemes. The researcher identifies four ways of learning that influence the conceptual identification of one's knowledge structures or meaning schemes: (1) refining or elaborating meaning schemes, (2) learning new meaning schemes, (3) transforming meaning schemes, and (4) transforming meaning perspectives.

Transformative learning involves sociological perspectives which results in the learner motivated to take collective social action to change practice, institutions or systems. Action in transformation theory means making a decision, not necessarily an immediate behavior change. The decision is reflective action involving overcoming a situation, knowledge and emotional constraints. This action also reflects change in oneself and in the way one learns. It incorporates cultivating the learner's ability to negotiate meanings and purposes instead of passively accepting the realities defined by others. The emphasis is in critical reflection of assumptions that support one's beliefs. It allows for discourse to validate these beliefs and for assessment, definition, and evaluation. Transformations in learning allows one to participate in rational dialogue to achieve a broader, more discriminating and integrative understanding of one's experience.

J. Intuition in Clinical Decision Making

Intuition in nursing practice was initially identified by Carper (1978) who identified the fundamental importance of intuition in ways of knowing in nursing and which today remains a seminal work in this area. Benner in (1984) explored intuition within the clinical expertise in nursing and applied the four aspects of skilled performance found within the Dreyfus & Dreyfus (1980) model of skill acquisition. An important aspect of

this model as noted by Benner was the identification of movement from analytical thinking to intuitive decision-making which appears to develop as a practitioner moves from novice to expert in one's clinical level of expertise. The nurse, often with many years of experience, is guided in practice by refinement of preconceived notions and through encounters with many practical situations that add nuance to one's intuitive grasp of a situation (Benner & Wrubel, 1982).

In furthering this concept, Benner's (1984) Novice to Expert Model of clinical decision-making was based on a qualitative review of over 100 interviews and observations in which nurses shared exemplars of their clinical nursing practice. The model specifically describes seven domains of practice: helping, teaching-coaching, diagnostic and patient monitoring, effective management of rapidly changing situations, administering and monitoring therapeutic interventions and regimens, monitoring and ensuring the quality of health care practices, and organizational and work-role competencies. Each of these domains is defined within the five stages of nurse development: novice, advanced beginner, competent, proficient, expert (Benner, 1996).

Similarly, Rew in her early work (1986) identifies three defining attributes of intuition: (a) knowledge is received as a whole; (b) awareness of knowledge is immediate; and (c) knowledge is not acquired through analytic reasoning. Rew (1991) in her study of intuition in psychiatric-mental health nursing, demonstrates that clinical decision making comprises more than a linear collection of data collection, but rather represents a valid type of nursing knowledge based on past experiences associated with strong emotional and physical response by the nurse. She specifically points out that nurses working with

children with mental health problems need to be sensitive to nonverbal clues and be willing to act on their hunches.

The concept of past experience as noted by (Rew, 1990; Benner & Wrubel, 1982; Mezirow 1981; Knowles, 1980; Tversky & Kahneman, 1983) plays an important role in contributing to clinical knowledge and decision-making. Embedded in past experiences is knowledge and a perceptual awareness that allows the nurse to sort out relevant from irrelevant information, and assess the situation as a whole, rather than in isolated bits and pieces. The experienced nurse has developed preconceived ideas and expectations through actual encounters in clinical practice. Benner, Tanner, and Chelsa (1992) have identified three characteristics of expert intensive-care unit nurses that demonstrate this concept: (1) the ability to anticipate the clinical trajectory based on pattern recognition from extensive prior experience, (2) an action orientation based on the capacity to manage highly complex clinical situations fluidly and skillfully, and (3) a sense of agency and responsibility for the patient's well-being.

Nurses in a school setting are confronted daily with situations that demand the interpretation and synthesis of a clinical situation with integration of one's knowledge base, experience and intuition. The school nurse makes decisions based upon his/her experience and upon the salient features of a clinical situation and in conjunction with awareness of the surroundings. According to Benner and Wrubel (1989) contextual awareness is derived from in-depth clinical experience with particular patient populations.

Haggerty (1996) supports these findings of experience by noting that contextual features of clinical problems are key links in the decision-making processes of expert

clinicians, whereas the novice relates the clinical problem to theory and textbook knowledge. The expert modifies and fine tunes such knowledge based on extensive clinical experience, the novice methodically deliberates. The researcher points out that contextual features of clinical problems are key links in the decision-making process of expert clinicians. The blinding of theoretical and experiential knowledge allows the expert to access familiar clinical patterns or meaning schemes from one's memory bank.

A similar view by Neuberg and Newson (1993) termed cognitive structuring involves the use of mental representations such as schemata, prototype, scripts, attitudes, stereotypes, and simplified examples of previous experiences that are all dependent upon the experience of the nurse. The researchers note that a major influence of cognitive structuring (CS) is the level of expertise, and that this is demonstrated in the development of cognitive schema based on past experiences and acquisition of knowledge, which ultimately affects decision-making. Benner (1984) lends support to this view by acknowledging that the expert nurse's knowledge base is more organized, abstract, and structured, and that experts, therefore, organize information better than novices. They are able to better categorize and then generalize the information for future use. In contrast, the novice has difficulty sorting out irrelevant information, has the tendency to deal with one issue at a time, and expends much energy in the conscious process of decision-making.

Research by Schraaeder and Fischer (1987) also supports these characteristics of intuition demonstrated by the experienced nurse in clinical decision-making. They further demonstrate that intuitive knowing involves feelings of knowing, sensing subtle qualitative changes, and linking perceptions from the past with an anticipated event. The

expert nurse uses concrete examples to guide her practice. Her level of performance is directed by an intuitive grasp of the situation based on assessment of the qualitative differences, the relational and interpretive nuances she infers from the clinical situation.

The school nurse who is a novice and new to the role will use the conceptual framework of inferential strategies, skill acquisition and clinical decision making, but will ask questions about relationships of specific events or conditions that may influence the extent, progression or remission of the clinical problem. The novice nurse is more systematic in making observations about events, and will collect and remember information regarding the effectiveness of specific nursing actions. (Carrieri-Kohlman, 1993). McCormack (1993) expanded upon this view and explored the concept of intuition among novice nurses by conducting a qualitative study examining student nurses' accounts of intuitive incidents in their practice. The findings indicated that student nurses thought intuitively with patients they had come to know very well. They found much difficulty, though, in describing intuitive thoughts through the nursing process.

Similarly, Rew (1990) describes the intuitive experiences of novice nurses in critical care settings by encouraging them to discuss both their objective findings and subjective impressions of a patient's status. Expert critical care nurses in this study describe their intuitive experiences as "strong feelings of perceptions about their patients, about themselves, or about the future without going through the usual analytic reasoning process." This research further demonstrates that critical care nurses recognize intuition as a legitimate component of complex clinical judgment.

In conjunction with these views, Polge (1995) conducted a study on 179 critical care nurses to examine the relationship between the use of intuition in clinical judgment and characteristics of the nurse, such as level of nursing proficiency and years of clinical experience. Findings demonstrated that as the nurse's level of expertise increased and years of experience grew, so did their use of intuition within their clinical judgments. The researcher further points out that the development of intuitive critical thinking is essential for the attainment of the expert level of nursing proficiency. Recognition, acceptance, and valuation of intuition by nurses encourages use of positive and observable behaviors to anticipate changes in a patient's condition before measurable objective data can be obtained, encourages the nurse to advocate for alternative treatment plans, and allows the nurse to potentially prepare for crisis situations.

Summary

In summary, the organizing framework for this review of literature addresses intuition and clinical decision-making based on the assumption that one's nursing knowledge evolves through the experience of clinical decision-making and analytical nursing knowledge. It is through these components that the expert nurse utilizes the integration of theory, research and practice into the care and case management of children with chronic illness. Through advanced practice in nursing, experiential, philosophical and theoretical perspectives provide a critical foundation upon which to build advanced competencies.

Clinical decision making and the use of intuition by nurses emphasizes a combination of both conceptual and expressive knowledge, a synthesis of both logical analysis and intuitive sensing as noted by Rew (1989). Whereas the novice nurse is

systematic in one's critical thinking and bases clinical decision making on basic scientific knowledge, the expert nurse uses an intuitive grasp of situations that involves seeing the whole picture and recognizing patterns and behaviors inherent in previous experiences.

Findings from the literature review emphasize that intuition and clinical judgment are important phenomenon in determining the nursing care provided to clients, specifically in a critical care setting, and that nurses make clinical judgments and use intuition on a continual basis during the assessment and management of their clients. Nurses apply personal and intuitive knowledge gained from experience to enhance the linear analytical approach of the nursing process, which is then followed by a reflective period that involves being open to incomplete and unclear data and validating intuitive feelings against objective data. (Rew & Barrows 1989).

Based on the literature review; (Benner, P. 1984; Igoe, J. 1990; Oda, D. 1993; Passarelli, C 1995; Salmon, M. 1994) it becomes evident that the nurse in the school setting caring for the child with asthma has a major responsibility for assessment, management, and health promotion. The nurse must possess a level of skill acquisition and expertise that provides him/her with the ability and independence for discretionary clinical decision-making. The difference in a school nurse as an expert versus a novice can significantly affect the health state of the child with asthma, the case management for that child, the cost effectiveness of care, the learning curve of the child, and the successful achievement of the social and emotional goals of the child.

In view of the current research, there is much information addressed to the parent, the physician, the hospital nurse, and the child on management, compliance, and education of asthma. There is, however, a tremendous gap in the literature addressing the

school nurse's knowledge of asthma, educational level, and experience necessary to effectively manage the children with this chronic illness.

. The expert nurse is able to provide proficiency in caring for these children based on Benner's (1984) Novice to Expert Model, by assessing their clients, synthesizing and analyzing data and understanding and applying nursing principles at an advanced or expert level. Based on the position paper on the regulation of advanced nursing practice, taken from the National Council of State Boards of Nursing (1993), skills necessary for the advanced practice nurse include assessing, synthesizing and analyzing data and applying nursing principles at an advanced level. Working effectively with patients and families, providing expert guidance and managing both their physical and psychosocial illnesses. Also included in the position paper is the advanced practice nurse's need to make independent decisions in solving complex patient care problems, as well as diagnosing and prescribing therapeutic measures.

Overall, the role of the expert nurse goes beyond core qualifications and includes key skills and competencies integral to advanced practice. It is this level of expertness that is needed in order to ensure quality and credibility in the integration, synthesis and interpretation of effective assessment and management of the child with a chronic illness, such as asthma.

CHAPTER III

METHODOLOGY

A. Research Design

The purpose of this research study was to determine the school nurse's knowledge of childhood asthma, their ability to effectively manage the child with asthma, and identification of the school nurse's level of practice based on Benner's (1984) model of Novice to Expert.

A descriptive survey design was used to describe and explain the health needs of students with chronic health problems that require nursing interventions in the school setting. In this descriptive research design no attempt was made to control or manipulate the situation. Utilizing a descriptive survey design provides the opportunity to collect detailed descriptions of several variables and use the data to justify and assess current practices in a school setting and develop a plan to improve health care practices.

B. Research Questions

1. What are the health needs of students with chronic health problems in Massachusetts's schools that require advanced nursing interventions in the school setting as perceived by the school nurse?
2. What type of case management activities do school nurses become involved with when working with students with chronic illness in the school setting?
3. What type of nursing interventions do school nurses most often perform?
4. What is the school nurse's current knowledge of asthma?

5. Is there a relationship between the school nurse's years of clinical experience in school nursing and their self-reported level of nursing proficiency according to Benner's (1984) model Novice to Expert?
6. Is there a relationship between the school nurse's level of education, years of clinical experience, knowledge of asthma, and Benner's level of practice.

C. Setting/Sample

A convenience sample of school nurses employed in a public school setting within the state of Massachusetts was sampled for this study. Inclusion criteria involved school nurses who are (a) registered nurses (RN), (b) currently employed in a public school system in the state of Massachusetts.

D. Data Collection Procedure

The population for this study is school nurses employed in public schools in the state of Massachusetts. The population size is approximately 1600 school nurses. The mailing labels were obtained from the Department of Education. A packet was sent to a systematic sampling of school nurses.

A letter was sent to the systematic sampling of school nurses explaining the purpose of the study and inviting them to participate in the study by completing all four questionnaires. The questionnaires took approximately 30 minutes to complete.

Two weeks after the initial mailing, a reminder in the form of a letter was sent to the systematic sampling of school nurses thanking them for returning the questionnaires if they had and asking them to do so if they had not. Data was collected from October 2000, to December 2000.

E. Data Collection Questionnaires

1. Demographic Questionnaire (Appendix A)

A standard 20 item demographic questionnaire included questions of age, education, experience, area of certification, type of school employed, ethnic ratio of students, availability of school based health center.

2. The School Nurse's Knowledge of Asthma (Appendix B)

The School Nurse's Knowledge of Asthma is a twenty-five item true or false self-administered questionnaire designed by the researcher. Face validity of the questionnaire was measured by an expert clinician. The questionnaire focused on effective management of asthma with recognition of common symptoms and triggers associated with asthma. The School Nurse's Knowledge of Asthma Questionnaire was piloted with 10 school nurses. An item analysis was done and changes were made on two questions in order to improve clarity and understandability.

3. The School Health Services for Children/Youth with Chronic Health Problems: (Appendix C)

The School Health Services for Children/Youth with Chronic Health Problems developed by Lowe and Miller (1996) is a 79 item questionnaire divided into three segments: (1) Case Management, (2) Monitoring and Assessment, and (3) Nursing Services. This instrument was peer reviewed and was initially piloted to measure content validity by five persons considered experts in the content area. Subsequent recommendations and changes were made to the survey items based on the expert's recommendations. Face validity of the survey was measured by an expert clinician. .

Nursing case management activities are described as time spent on managing cases including documentation, such as charting, writing of Individual Healthcare Plans, (IHPs), emergency plans, and the health portion of the Individualized Educational Program (IEP). In addition, communication, including home visits, telephone calls and conferences with family, teachers, and other allied health personnel (i.e. physical, therapy, speech therapy, occupational therapy) will be recorded. (Lowe & Miller, 1998).

Monitoring and assessment refers to the nursing services provided for students with chronic health problems. Examples noted in the survey include: seizure patterns, medication response, tolerance for activities, respiratory status, growth patterns, vital signs, blood glucose levels, and assessment of skin integrity. In order to measure nursing services, there will be questions focused on the number of nursing services that the school nurse provides and delegates in a routine day.

4. Benner's (1984) Novice to Expert Questionnaire (Appendix D)

The Novice to Expert Questionnaire is based on Benner's (1984) Novice to Expert model. This was created by the researcher using Benner's five levels of practice. Participants were asked to select from five short statements the one that best describes the way they would make clinical judgments based on Benner's description of the main characteristics of the nurse and the different critical thinking processes at each level of proficiency. To control for biased self-report, category names (novice, advanced beginner, competent, proficient, and expert) were not used within the statement. Efforts were taken by the investigator to prevent social desirability biases by presenting the categories in a factual, value-free way. In addition, the categories were listed in a random rather than hierarchical manner. It was given to 10 school nurses to be piloted

for clarity and understandability. The results indicated the majority of respondents circled E indicating a level of proficiency based on Benner's Novice to Expert Model.

F. Ethical Considerations:

Respondents returned packets were protected by the investigator by giving each subject a code number. Participation was anonymous. Return of the four questionnaires was considered consent to participate. Data from the study was stored in a locked container in the researcher's office. Data will be stored for 3 years after completion of the research. After 3 years, the data will be destroyed.

G. Protection of Human Subjects

Subjects were school nurses employed in public school in the state of Massachusetts. No experimental treatments were used. The study involved four self-administered questionnaires that did not pose any psychological, physical, social, or legal threat to the participants. The instruments were completed on a voluntary basis by each participant. A form outlining the protection of subjects was sent to each participant with the questionnaires. An approval form for nursing research was submitted to the Scholarship and Human Subjects Review Committee at the University of Massachusetts Amherst School of Nursing. Approval of the proposal by the Internal Review Board was granted on October 2000.

H. Data Management and Analysis

Data from each of the questionnaires along with demographic data was entered into a research database for analysis using SPSS Version 10.0 for Windows.

Research Question 1-3: Key attributes (i.e. health care needs; case management activities, monitoring and assessment activities; nursing services activities; nursing

interventions) of the sample were described using appropriate measures of central tendency and measures of dispersion. Frequency distributions for nominal data were constructed while means and standard deviations were employed for interval/ratio data. Data associated with interval/ratio levels of measurements were also examined for normality using descriptive statistics and histograms.

Research Question 4: A total score was obtained on the School Nurse's Knowledge Scale. Reliability of the School Nurse's Knowledge scale (internal consistency reliability) was determined utilizing Cronbach's alpha coefficient.

Research Question 5 & 6: Pearson correlations were employed to examine the relationship between interval/ratio data (i.e., level of education, years of clinical experience, years employed in school nursing). Chi-square analyses () was performed to detect possible relationships or differences when dealing with nominal or ordinal levels of measure.

CHAPTER IV

RESULTS

The purpose of this study was to examine the relationship among school nurse's level of education, years of experience, knowledge of asthma, and identification of the school nurse's level of practice based on Benner's (1984) model of Novice to Expert. Data were collected from several questionnaires administered to school nurses in public school settings in the state of Massachusetts. Data for the study was collected over a three-month period, from October 2000 to December 2000.

A. Description of the Sample

A systematic sample of 1600 school nurses were selected from a computer list generated by the Massachusetts Department of Education. Systematic sampling involves the selection of every *k*th case from some list or group (Polit & Hungler, 1999). In this study, every other person listed in the Directory of School Nurses in the state of Massachusetts was chosen. Thus, 800 questionnaires were mailed to school nurses. Of those sampled (n=800), a total of 325 school nurses returned completed questionnaires, resulting in a useable return rate of 40.6%. The majority of participants were female (n=323). Ages ranged from 22 to 68 years with a mean age of 47 years. Job titles included school nurse (n=285; 89.1%), school nurse coordinator (n=22; 6.9%), and school nurse practitioner (n=7; 2.2%).

The school nurse's educational background ranged from being a diploma graduate to varying areas of graduate education. The majority of participants responded to holding a baccalaureate degree in nursing (n= 166; 51.9%). Those school nurses graduating with a diploma comprised the second highest level of educational attainment (n=52; 16.3%),

followed by those school nurses having an associate's degree in nursing (n=29; 9.1%). The remaining participants indicated they had a baccalaureate degree in a field other than nursing (n=28; 8.8%), with only 22 school nurses (7.2%) having a master's degree in nursing. The average number of years employed in nursing was twenty-two years, with a range of 22 to 45 years. The average number of years employed in school nursing was 8 years, with a range of one to thirty years. A majority of participants were certified through the Department of Education in Massachusetts as school nurses (n=215; 67.2%).

B. Research Questions

Research Question 1

1. What are the health needs of students with chronic health problems in Massachusetts schools that require advanced nursing interventions in the school setting as perceived by the school nurse?

Table 1 illustrates the top five health care needs of students with chronic health problems. The most frequent health care need that required monitoring and assessment was medication response that included side effects and effectiveness with (n=306; 94.2%). The second most frequent health need of students with chronic health problems was respiratory status (n=298; 93.7%). The remaining top health care needs of students with chronic health problems are displayed in Table 1.

The most frequently occurring chronic health problems of students in school are presented in Table 2, with asthma being the number one. School nurses reported significant numbers of students with asthma, ADHD, seizures, and diabetes. The total

number of school nurses managing children with these chronic illness, along with the mean number of cases per nurse are presented in table 2.

Medication response includes primarily assessment for the need of asthma medications such as Albuterol and or nebulizer treatments. It is the responsibility of the nurse to assess the respiratory status of the student with shortness of breath, wheezing or other change in respiratory status, to institute the appropriate intervention, and to reassess for medication response. Since asthma is reported to be the most common chronic health problem as noted in Table 2, administration and response of medication to alleviate symptoms is the number one health care need of students.

The second most common chronic health problem of students is ADHD (attention deficit hyperactivity disorder) which contributes to the number of students the school nurse assesses for medication response. Students receive stimulant medication in the morning before they come to school and then again at noon. Assessment and response to these medications is based on behavior both in and out of the classroom with ultimate intervention by the school nurse. Between the large numbers of students requiring nursing intervention to manage their asthma, and the rapidly increasing number of students taking stimulant medication to help with behavioral/learning issues, the school nurse spends a great deal of time dispensing medication.

Table 1: Top five health care needs of students with chronic health problems

Health Care Needs	Frequency	Percentage
Medication Response	306	94.2
Respiratory Status	298	93.7
Fluid Intake and Output	18	5.7
Oral Feedings and Evaluation	16	5.0
Seizure Patterns	13	4.1

Table 2: Major chronic health problems of students in the school setting

Most Chronic Health Problems of Students	Number of Nurses Reporting	Mean Cases per Nurse
Asthma	315	44.0
ADHD	313	22.0
Seizures	311	3.3
Diabetes	302	1.5

Research Question 2

2. What type of case management activities do school nurses become involved with when working with students with chronic illness in the school setting?

Case management questions include time spent on managing cases as well as charting, individual healthcare plans (IHPs) and the health portion of IEP's (Individualized Education Programs plan). Case management also includes communication, including telephone calls and conferences with family and teachers, allied health personnel (e.g. occupational therapy, physical therapy, speech therapy), health care providers, and other outside agencies. For purposes of this study, a chronic health problem is defined as an illness, impairment, disability or health condition that has lasted or is virtually certain to last for at least one year (e.g., seizures, asthma, ADHD, cerebral palsy, spina bifida, diabetes).

To begin, school nurses were asked, "Do you provide case management for children/youth with a chronic health problem?" The majority of school nurses answered yes (n=314 96.6%). Various types of case management activities, along with frequencies and percentages are displayed in table 3.

Communication with families is the most frequent case management activity reported. This included telephone calls regarding episodic illnesses the student's presents with during the school day, as well as accidents that occur while on the school ground.

More frequent communication addressed issues such as concerns regarding asthma medication and respiratory status during the school day. Communication with teachers frequently focused around behavioral issues such as those associated with ADHD and medications associated with the treatment of seizure disorders. The interaction with health providers focused on updating medical orders for medications and treatment modalities, particularly for asthma.

The most frequent case management activity addressed issues regarding the student's respiratory status and the need for asthma medication during the school day. Case management activity included telephone calls and letters to both families and primary providers addressing compliance of asthma regimens.

The second most frequent case management activity focused around medication dosing and behavioral issues such as those associated with ADHD and seizure disorders. The interaction with teachers, parents and outside specialists often required nursing intervention necessary to accommodate for the student's educational needs.

Table 3: Case management activities of school nurses

Case Management Activities	Number	Percentages
Communication with Families	324	99.7
Communication with Teachers	323	99.4
Communication with Health Providers	310	95.4
Coordinating Adaptations for Field Trips	316	97.2
In-services on Health Problems	291	89.5

Research Question 3

3. What type of nursing interventions do school nurses most often perform?

School nurses were asked to indicate the number of nursing services they provided. In addition, school nurses were asked to indicate the number of nursing services delegated to other health professionals and school personnel. The list of twenty-one nursing interventions provided by school nurses are presented in table 4. A list of nursing interventions delegated in one day to other school health or educational personnel are presented in table 5. Other school health personnel include licensed practical nurses (LPNs) and health aide (HA). Educational personnel include educational aide (EA), teacher or principal (T/P), and secretary (Sec).

Table 4: Nursing interventions performed by school nurses

Intervention	Frequency	Percentage
Nebulizations	115	35.4
Inhalers	264	81.2
Peak Flow meters	122	37.5
Tracheostomy care	10	3.0
Tracheal suctioning	6	1.8
Bronchial drainage	7	2.1
Oral suctioning	4	1.2
Oxygen administration	5	1.5
Mechanical ventilation	1	3.0

Gastrostomy feedings	23	7.0
Specialized oral feedings	19	5.8
Oral medications	298	91.6
Rectal medications	3	0.92
Tube feeding medications	17	5.2
Injections	44	13.5
Catherizations	19	5.8
Ostomy care	12	3.6
Glucose testing	169	50.1
Range of motion	29	8.9
Bowel/bladder training	32	9.8
Orthotic application	54	16.6

The most frequent nursing interventions was administration of oral medications followed by use of medication dose inhalers (MDI's), glucose testing and asthma related treatments of peak flow meters and nebulizations. The oral medications consisted primarily of dispensing analgesics such as Tylenol or NSAID (nonsteroidal anti-inflammatory medication) followed by asthma management medications and monitoring of childhood diabetes.

In addition to nursing interventions provided by school nurses, the two most frequently occurring PRN orders that were carried out by school nurses included administration of epinephrine (n=287; 88.3%) and administration of medication for fever/pain (n=251; 77.2%). Use of epinephrine via epi pens is for life-threatening or anaphylactic allergic reaction to environmental allergies and more specifically peanut allergies. This brings into question the increasing number of children presenting with life-threatening allergies and concern regarding alterations in one's immunologic status.

Table 5: Nursing interventions delegated in one day to allied health or educational personnel

Intervention	LPN (n)	HA (n)	EA (n)	T/P (n)	SEC (n)	Other (n)
Oral medication	4	9	2	7	4	4
Inhalers	13	12	1	7	9	10
Glucose testing	3	7	0	2	2	3
Peak Flow meter	5	8	2	0	5	0
Nebulization	7	13	5	7	12	4

LPN – Licensed practice nurse

T/P – Teacher/Principal

HA – Health Aide

SEC - Secretary

EA – Educational Aide

The most frequent intervention by allied health or educational personnel was reported to be performed by a health aide or a secretary. This behavior is of major concern as it puts the student at risk for inadequate or inappropriate medical intervention. In addition it places undue responsibility on personnel not trained to assess and manage chronic health problems, and politically places the school in jeopardy for legal action. More importantly, it emphasizes the fact that there are insufficient nursing personnel available to meet the needs of the student population.

It was not determined in the questionnaire whether delegation of allied health or education personnel were adequately trained according to guidelines established by the Department of Public Health.

Research Question 4

4. What is the school nurse's current knowledge of asthma?

Knowledge of asthma was measured by an author-developed questionnaire. The School Nurse's Knowledge questionnaire is a 25-item true/false self-report measure focused on effective management of asthma along with recognition of common symptoms and triggers of asthma. Subjects responded to each item by answering true or false. A mean score was calculated with higher scores indicating a higher knowledge base of asthma. Scales or questionnaires that involve a summation of items are evaluated in terms of their internal consistency. The most widely used method of evaluating the internal consistency of a scale is the coefficient alpha (Cronbach's alpha) and Kuder-Richardson formula 20 (KR-20). In this study, the KR-20 was used. The KR-20 is a specialized version of coefficient alpha, used with scales that are scored dichotomously

for a right or wrong answer (i.e., true/false). The KR-20 reliability coefficient for the School Nurse's Knowledge questionnaire in this study was 0.66.

The scores ranged from 44 to 100 with a median of 88. Out of a total of 317 school nurses who completed the questionnaire, approximately 20% (n=63) received a total score of 88 with one-third of the school nurses (n=100) scoring between 90 and 100. Results revealed that school nurses with twenty-five years or greater of nursing experience had an average to above average knowledge of asthma, the most common chronic illness to which they have to respond. An item analysis of the asthma questionnaire indicated that the questions that posed the most difficulty were those addressing the differences and use of inhaled anti-inflammatory agents versus beta₂ agonist or short acting medications.

Research Question 5

5. Is there a relationship between the school nurse's years of clinical experience in school nursing and their self-reported level of nursing proficiency according to Benner's (1984) model of Novice to Expert?

A correlation coefficient was used to quantitatively describe the strength and direction of school nurse's years of clinical experience in school nursing and Benner's level of nursing practice. A Pearson product-moment correlation coefficient was calculated to assess the relationship between years of clinical experience in school nursing (interval/ratio level of measurement) and Benner's level of practice (ordinal level of measurement). No significant relationship between years of clinical experience in school nursing and Benner's level of practice was found. In this study, the majority of

school nurses (n=260; 85%) indicated that they had twenty-two or more years of nursing experience. Thus, this was a very homogenous group with little variation in years of clinical experience. This supports Benner's theory that experience provides the nurse with intuitive skills as well as the ability to grasp the important aspects of a situation and trust his/her judgement to act accordingly.

Research Question 6

6. Is there a relationship between the school nurse's level of education, years of clinical experience, knowledge of asthma, and Benner's level of practice performed by school nurses?

Correlational analysis was used to examine a matrix of intercorrelations among study variables (i.e., level of education, years of clinical experience, knowledge of asthma, and Benner's level of practice). Intercorrelations are presented in table 6. The values on the diagonal are 1.00, representing the perfect correlation of each variable with itself. The values off the diagonal are the correlation coefficient for each pair of variables. No significant relationships were found among the study variables. Once again, study results indicated that school nurses participating in this study were very homogenous. A majority of school nurses held a baccalaureate degree in nursing (n=166; 51.9%), had twenty-two or more years of nursing experience (n=260; 85%), and practiced at an expert level of nursing practice as defined by Benner (n= 247; 79%) Thus, there was little, if any variation among responses for all study variables resulting in no significant findings.

Table 6: Correlation's among study variables

Variables	1	2	3	4
1. Level of Education	1.00			
2. Yrs. Of Clinical Exper.	0.14	1.00		
3. Knowledge of Asthma	0.05	0.06	1.00	
4. Benner's level of practice	0.04	0.03	0.11	1.00

CHAPTER V

DISCUSSION AND IMPLICATIONS

This study used a descriptive survey design to describe and examine the relationship among school nurses' level of education, years of experience, knowledge of asthma, and identification of the school nurses' level of proficiency based on Benner's (1984) model of Novice to Expert. A convenience sample of school nurses employed in public schools within the state of Massachusetts with an RN degree (registered nurse) was sampled. Data were collected from a systematic survey administered to a total of 1600 school nurses with a return rate of 325 questionnaires. Six research questions were addressed:

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1. What are the health needs of students with chronic health problems in Massachusetts's schools that require advanced nursing interventions in the school setting as perceived by the school nurse?
 2. What type of case management activities do school nurses become involved in when working with students with chronic illness in the school setting?
 3. What type of nursing interventions do school nurses most often perform?
 4. What is the school nurse's current knowledge of asthma?
 5. Is there a relationship between the school nurse's years of clinical experience in school nursing and their self-reported level of nursing proficiency according to Benner's (1984) model Novice to Expert?
 6. Is there a relationship between the school nurse's level of education, years of clinical experience, knowledge of asthma and Benner's level of practice?

A. Sample Characteristics

The demographics revealed that of the 325 participants who participated in the study, the majority of school nurses were female ranging in age from 40 to 50 (M=47.0). The majority of nurses had a bachelor's degree in nursing and were employed in the nursing profession on an average of twenty-two years and in school nursing for ten years. Since the majority of school nurses did not have a master's degree, they were not certified by a national certifying body. The majority of participants indicated that they had received certification through the Board of Education in Massachusetts. Most school nurses worked full time in a public school and were responsible for between six hundred and a thousand students. The majority of nurses indicated that they did not have a school-based clinic on site, nor did they have a school-based health center or clinic to refer students.

There was little variability among sample characteristics with school nurses employed in Massachusetts being a fairly homogenous group. This information is commensurate with data from the 1997 Health Services Executive Summary. The Executive Summary was established to study the resources available to school children in the state of Massachusetts relative to school nursing services. The study emphasized that school nurses are not the only health care professionals in schools, but are the primary health providers of health care in school settings. Findings from the Executive Summary were consistent with this research by complementing the underlying concern of caring for children with special needs, as well as children with chronic conditions that require frequent nursing interventions.

B. Implications

School Nursing Education:

This study indicated that school nurses surveyed in this study had an average to above average knowledge of asthma. In addition these same nurses perceived themselves as expert in their level of practice. The study further indicated that these nurses had a diploma and/or a bachelor's degree in nursing and twenty-two years of nursing experience. Although these phenomena can be confirmed by Benner (1984) who defines expert level of practice as one who no longer relies on analytical principles or rules, but has an intuitive grasp of the situation and is able to zero in on the specifics of a problem, the interventions required to care for today's school children with a chronic illness require skills/interventions at the advanced practice level. This implies, for example, making clinical decisions regarding treatments and determining effectiveness of those treatments. These skills demonstrate a heightened awareness of the patient's needs as well as the ability to anticipate the patient's condition with immediate therapeutic responses. Nurses with many years of experience are guided in practice by refinement of preconceived notions and through encounters with many practical situations that add nuance to one's intuitive grasp of the situation. These same nurses, though, with many years of experience do not have advanced level nursing education that supports critical thinking and advanced clinical decision making.

In addition to Benner's view, is Mezirow's Adult Learning Theory. This theory also demonstrates that although the nurses have the ability based on the theory of

experience and intuition, it does not assure that one's knowledge is sufficient to assess and provide interventions necessary to meet the health care needs of today's students with chronic illness. Mezirow's theory implies that one's action is based on past experience and on reflection and critique of those actions. The expert school nurse is able to pull from numerous constellations of experience and meaning schemes that directed them toward clinical decision making based on comparison of inductive reasoning and judgments that were based on previous exemplars. These previous exemplars were developed over years of nursing at the RN and bachelor's degree level of education. They were not based on the level of advanced nursing practice which suggests that although students are being cared for, the level of care is not adequate to meet the increasing complexity of today's student's health care needs.

Recommendations for School Nursing Education:

Recommendations for school health education indicates that school nursing demands that the skills of a master's prepared nurse with advanced practice education and the legal certification to make clinical decisions and treatment changes is necessary in order to effectively care for today's medically complex students. It is the advanced practice nurse who has the skills and licensure to prescribe and/or change clinical treatments which is often needed in relations to prescribed interventions. The bachelor's prepared nurse must follow the stated physician's orders. He/she does not have the education and or legal certification to provide advanced level nursing interventions.

(American

College of Nurse Practitioners, American Nurse Association, 1993)

With new certification guidelines for the school nurse established by the Massachusetts Department of Education (7/2001) initial licensure requires that all school nurses have a bachelor's or master's degree in nursing with a minimum of two full years of employment as a Registered Nurse in a child health, community health, or other relevant clinical nursing setting. It does not, however, assure that all school nurses will have the advanced practice skills such as advanced health assessment, advanced pathophysiology, and diagnostic reasoning necessary to care for the growing number of students medically at risk. Further recommendations from this study are that all school nurses have for initial licensure what the state terms professional licensure. This implies possession of an initial license, employment as a school nurse for three years, plus achievement of certification by a nationally recognized professional nursing association as a school nurse, community health nurse, or a pediatric/family school nurse practitioner.

To further emphasize this point, historically school health dealt with three areas: health services, health education, and a healthy school environment (School Health, 1993). Today professional role shift in school health has broadened to include counseling, screenings, case management, immunizations, nutritional assessment, physical examination and diagnosis and treatment of acute health problems, as well as supervision of clerical and paraprofessional personnel. (Redesigning School Health Services, 1983) In order to maximize the health and educational outcomes of today's school children, the school nurse must possess expert nursing knowledge. He/she must be able to meet the challenges formulated by the changing definition of school health programs.

School health programs today are treading into new territory requiring new and advanced skills for the school nurse. What was acceptable ten years ago, is fast becoming outdated. Historical background in nursing education demonstrated that the majority of school nurses surveyed enrolled into nursing programs at a time when diploma schools were the accepted 'norm' by both the National League of Nursing and the American Nursing Association. Throughout the 1960's and 1970's there was evidence of increase development of college-based programs and a corresponding decrease in hospital schools. Subsequently, in 1965 the baccalaureate degree was designated by the American Nurses Association (ANA) as the entry point into professional nursing practice.

In order for school nurses to assume this role of expert, recommendations are that one's educational preparation must prepare them at the advanced level in the biologic sciences such as anatomy, physiology, pathophysiology, immunology, genetics, and pharmacology. Knowledge in these areas provides not only a better understanding of disease processes and treatment plans, but also a common ground for communicating effectively and collaboratively with physicians, and other health care professionals. If school nurses are to assume responsibility and be accountable for diagnoses and treatment, advanced critical thinking skills are necessary to process clinical data quickly and accurately.

With the recommended changes in educational preparation, the school nurse of today has a minimum of a baccalaureate degree and completion of a master's degree in nursing. The focus of health care and nursing education today is out of the hospital and into the community which allows nursing a broader perspective on health care issues and

fosters both an interdisciplinary and intradisciplinary approach to care. The school nurse of the 21st century must gain knowledge and understanding of the community in which he/she is working, as well as gain an appreciation for the social and political environment of the school setting.

School Health Policy

This study indicated that many non-medical personnel are responsible for administering interventions that require, at a minimum, licensure as a registered nurse. These personnel include an LPN as well as a health aide, an educational aide, secretary and the teacher and/or principal. The three most frequently performed nursing interventions are nebulizations, inhalers, and peak flow meters. In addition administrations of oral medications, glucose testing and injections are also the more frequently performed interventions. This is of major concern from a legal standpoint as it places the child at risk for inadequate or inappropriate medical intervention. It also places undue responsibility on personnel not trained to assess and manage these chronic health problems. and ultimately places the school in jeopardy for legal repercussions.

To further emphasis the need for skilled nursing interventions, the survey results demonstrated that asthma, ADHD, seizures, and diabetes were the four most common chronic illnesses in schools in Massachusetts. The health needs of these students is specifically dependent upon the skills and interventions of both the (RN) registered nurse and the advanced practice nurse who together can effectively assess and provide appropriate interventions. The skill level required to manage these students on a daily basis, as well as the need for treatments has changed in accordance with growth in

medical technology. Although the nurses surveyed were expert in their knowledge of basic nursing concepts, today's school nurse needs to be an advanced practice nurse and to be expert in clinical decision making in order to effectively manage the complexities of these common chronic illnesses.

Another indication of this study in regard to school health policy is the concern of the high student/nurse ratio. Many of the nurses responded that they are responsible for between 600 and 1200 students on a daily basis. This is well beyond the ANA recommendations of a ratio of 1 nurse to 750 students for the regular education population and 1 nurse to 225 for special needs students. (Standards of School Nursing Practice, Kansas City, MO. 1983.) With the number of special needs students increasing and the growing number of students with chronic illnesses, the student population has changed dramatically since 1983 subsequently requiring a more expert level of nursing care. In addition, the complexity of many family systems, and the large number of immigrant students enrolled in the schools requires smaller nurse/student ratio in order to ensure both effective and adequate health care services.

Recommendations for School Health Policy

In view of the need for increasing nursing interventions, is the changing role of the school nurse. A recommendation is that one must be sensitive to and guard against replacing the RN (registered nurse) in the school setting. Public policy regulating educational requirements for the school nurse, must emphasize the role of the registered nurse while at the same time advocating for highly educated nurses necessary to meet the complexity of the changing health needs of today's students population. The more traditional role of the school nurse as health educator, counselor, provider of first aid,

triage and referrals, must not be overlooked. As it is often the RN (registered nurse) whose familiarity with the culture of the school community and nuances of the school environment that compliment and promote the role of the advanced practice nurse.

To compliment this collaborative role is the recommendation of linking primary health care services to the school setting, which not only solves the problems of accessibility, but has the potential to provide multidisciplinary and comprehensive health care to a population that may otherwise not receive care. As noted earlier in this study, children cannot learn well or adapt emotionally or socially if they carry the burden of physical and chronic health problems into school. Providing an extension of primary health care services in the school makes it possible for students to access immediate care and hopefully defer and /or prevent the advent of developing medical and emotional issues as well as decrease school absences.

A recommendation is the idea of a health care linking model. This concept was introduced in 1998 based on a study titled (Nine State Strategies to Support School-Based Health Centers, 1998) sponsored by The George Washington University. This model is meant as a guide, and not to be viewed as a replacement for the ongoing relationship a child has with their primary care provider. It is based on the concept of linking services provided in the school between those provided in the community. The model assists in providing a primary provider for those children without one and encourages frequent collaboration, thereby, strengthening the link between school and community.

NAPNAP (National Association of Pediatric Nurse Associates and Practitioners) supports this concept of school based health centers. In a summary of their 1998 position statement they emphasize the points that school based health services should be delivered

to all children including those who have inadequate or no health insurance, that a multidisciplinary team approach can effectively treat problems affecting a child's health and school performance, and that access to health care services be available during a caretaker's absence, and most importantly that school health centers provide a comprehensive range of services that specifically meet the health needs of children. This position statement reaffirms that school nurses are in an ideal position to provide comprehensive physical and mental health services to children in need of care and at locations accessible to them.

Since children spend the majority of their day in the school building they need to have direct access to the expert skills of the school nurse. This emphasizes the concern of grossly understaffed schools. Based on findings from this study, recommendations are to address the outdated staffing patterns in today's schools and decrease the student/nurse ratio. This can be accomplished through the collaborative effort of employing both RN (registered nurses) and master's prepared or advanced practice nurses in the schools. This allows for coverage of first aid, triage and referrals, as well as coverage of the more involved student issues. This new approach insures more realistic and appropriate staffing patterns necessary to provide effective care for the rising medical and social complexity of today's student population.

Immediate availability of health care services allows for early identification and treatment of illness that may otherwise go unchecked. It allows for direct nursing intervention that ultimately will decrease school absences and provide for better educational and social adjustments. As the school nurse assumes the role of educator, consultant, and advocate he/she has the potential to overcome the barriers of access to

care for school-aged children by linking acute and chronic care needs in the school to community based primary care services.

Future Research for School Health Nursing

This study indicated that numerous health services and nursing interventions provided by the school nurse are not being assessed in view of cost containment. A recommendation regarding the reimbursement of billable services provided by the school nurse needs to be assessed in view of student health outcome benefits. To ensure reimbursement it is important that school nurses use standardized language. Reimbursement is dependent upon uniformity of language used for coding in school nursing databases, as it is in any health care setting. Research based on outcome data of services provided in the school will confirm the type of services provided as well as the number and type of interventions needed on a regular basis. School nurses awareness and involvement in nursing research, health and social policy, scholarly inquiry, and leadership activities provides increased visibility to the importance and necessity of their role. With expanded accountability and the skills to carry out research, school nurses will affect a major influence on the health and education of today's students. School nurses today need to be familiar with managing emergencies in school, with school policy development, as well as legal issues for both elementary and high school students. In addition, it is important to educate those in decision making positions such as legislators and those active in lobbying to promote the importance of billable school health services.

Today with health care reform emphasizing integration of health care into the flow of American life styles (American Nurses Association, 1992) it is imperative that

the role of the school includes a focus on the community with increased interdisciplinary collaboration.

Another recommendation for school nurses is based on computer literacy. As societal and health care trends are evolving so to is the future of school nursing and in order to keep pace and practice in a technology dependent society the school nurse must be computer literate and comfortable with computer applications to clinical practice and documentation of patient data. Computer literacy is necessary for access to current information on patient management as well as communication with other health professionals. Development of new computer programs for patient records, immunizations, screening and laboratory data, as well as case studies and journal articles are all accessible through the use of soft ware and use of the World Wide Web.

In addition, a focus on continuing education with a means to streamline opportunities for school nurses to obtain a master's degree and advanced practice credentials is vitally important in order to maintain the required level of care needed in today's schools. There needs to be a commitment on the part of school departments to support the professional development of their school nurses.

Recommendations from this study further indicate that in order to raise awareness of the need for school-based health centers managed by nurses with advanced training, one must be well versed in health policy, financial management and most importantly the politics of the community. Community support is essential for the development of school based health centers as noted in a report by the grantee in the Robert Wood Johnson Foundation's School-Based Adolescent Health Care program in Washington, DC. Community support is essential in establishing a foundation. Working with the school's

academic and administrative staff and encouraging their participation is equally important as it is through their communication and advise to students that leads to growth of a health center's referral base. Working with community advisory boards, building alliances, focusing on long range goals, and strategically planning ways to secure funding is a corner stone to the maintenance of school based health centers. Encouraging community support and parental consent is vital to ensure continued growth and advise to students that lead to growth of a health center's referral base. Participating in school life, attending meetings, sporting events, and staff workshops, as well as conducting health fairs, and in-services to faculty all highlight the presence and important contribution of the role of the expert school nurse. The school based health center is at the center of this model linking together communication and collaboration with the school nurse, the school administrators, community resources, and medical personnel.

Future research in school health nursing would be to replicate this study for those states that do not currently require a bachelor's degree in nursing. This would help to demonstrate whether the Massachusetts' DOE's (Department of Education) regulatory changes in the state of Massachusetts have, in fact, demonstrated a positive relationship for the practicing school nurse.

The sample surveyed for this study, unfortunately, did not have a sufficient number of master's prepared nurses to adequately compare the level of proficiency and asthma knowledge. As a result of these new guidelines, there will eventually be more advanced practice nurses employed in the Massachusetts schools. With this in mind, future research will afford comparison between the advanced practice nurse and the

bachelor's prepared nurse with regard to perceived level of proficiency and knowledge of asthma.

Summary

In conclusion, those surveyed for this study were a homogenous group of school nurses 40-50 years of age with an average of twenty-two years of nursing experience, ten of which was in school nursing. The majority held a baccalaureate degree in nursing, although indicated that they initially entered the field of nursing from a diploma program.

The majority viewed themselves as expert in their level of practice and possessing an average to above average knowledge of asthma.

Today school nurses are entering the profession better prepared both academically and clinically. New guidelines established by the Massachusetts' DOE (Department of Education), mandate that initial licensure require a bachelor's or master's degree in nursing, and professional licensure requires national certification as a school nurse, community, pediatric or family nurse practitioner. These educational requirements are more in keeping with the changing role and expectations of today's professional school nurse, which focuses on the advanced biologic sciences, disease prevention, and outcome research. Advanced critical thinking is essential today in caring for the child with asthma, as well as treatment and management of those with other acute and chronic illnesses.

As the requirements of the school nurse has changed, so too has the role. School nurses not only provide health care, but also act as advocates by communicating with community resources through interdisciplinary and intradisciplinary collaboration.

Aware of the fact that school nurses are often the first line source for access to health care, their role has expanded even further by linking primary health care services with those in the community. This allows for early identification and treatment of illnesses that may otherwise go untreated and ultimately lead to school absences.

To ensure adequate school nursing coverage, the student to nurse ratio must be decreased in order to adequately meet the needs of the changing school population. Billable services provided by the school nurse must be assessed and reimbursed based on cost containment. Computer availability and literacy are imperative for patient case management and communication.

The school nurse of today must possess a broad understanding of the interdisciplinary nature of the role as leader in school nursing as well as take an active role in political forums. It is through development of political acumen and professional growth that one develops confidence and accountability in the political arena. Accountability in the role as expert nurse, as well as credibility in the broader arena of the community provides increased visibility for the school-nursing role. This increased visibility provides opportunities to enhance one's leadership abilities through involvement in health policy forums. Through expanding awareness of the importance of school health, the school nurse is instrumental in affecting changes in social and health policy that will ultimately affect his/her role.

APPENDIX A

SCHOOL NURSE DEMOGRAPHIC QUESTIONNAIRE

1. Age in years on last birthday_____.
2. Sex: _____(1) Male
 _____ (2) Female
3. Are you a: (Choose one) _____(1) School nurse
 _____ (2) School nurse coordinator/supervisor
 _____ (3) School nurse practitioner
 _____ (4) Other (please specify)
4. Educational preparation: (Check highest level of education)
 _____ (1) Diploma in nursing
 _____ (2) Associate degree in nursing
 _____ (3) BSN/BS in nursing
 _____ (4) BS/BA in another field
 _____ (5) MSN/MS in nursing
 Specify _____
 _____ (6) MS/MA in another field
 _____ (7) Doctorate
 _____ (8) Other: Specify _____
5. Number of years employed in nursing _____
6. Number of years employed in school nursing _____
7. Are you nationally certified as a school nurse?
 If yes, by which certifying body _____
 _____ (1) Yes
 _____ (2) No
8. Are you nationally certified as a school nurse practitioner?
 If yes, by which certifying body _____
 _____ (1) Yes
 _____ (2) No
9. Are you nationally certified as a pediatric nurse practitioner?
 If yes, by which certifying body _____
 _____ (1) Yes
 _____ (2) No

10. Do you work full time? _____ Part time? _____
If you work part time, number of hours per week _____
11. Number of schools you are responsible for _____
12. Total number of children you are responsible for _____
13. What is the percentage of children in your school with asthma?
 _____(1) 0-24
 _____(2) 25-49
 _____(3) 50-74
 _____(4) 75 or greater
14. Location of the school where you are employed
 _____(1) inner city - (older, poorer, and more densely populated)
 _____(2) suburban - (residential area on the outskirts of a city)
 _____(3) rural – (country, agricultural region, countryside)
15. Type of school you are employed in
 _____Public
 _____Private
 (Parochial/Catholic/other) _____
 _____Charter
 _____Residential
 (type of) _____
16. What is the percentage of the following students?
 _____(1) Black
 _____(2) Hispanic
 _____(3) Asian
 _____(4) Caucasian
17. Do you have a school- based health center on site? _____
18. Is there a school- based health center that you refer children to? _____

APPENDIX B

Asthma Questionnaire for School Nurses

Write in T for true or F for false to each question.

1. _____ Asthma is the leading cause of school absence for illness.
2. _____ Asthma can be triggered by viral infections, exercise or emotions.
3. _____ Management activities should focus on reducing airway inflammation to prevent asthma episodes and relieving airway narrowing.
4. _____ Peak flow meter measurement is based on an individual's height and weight.
5. _____ Common side effects of asthma medications include hyperactivity, tachycardia, and jitteriness.
6. _____ Early warning signs of an asthma attack are a chronic cough especially at night
7. _____ The two most common asthma medications are short acting bronchodilators and long acting anti-inflammatory agents.
8. _____ Measuring peak flow levels helps determine any narrowing in the airway before one has an actual asthma attack
9. _____ Common asthma triggers are irritants such as cold air, strong odors, weather changes and cigarette smoke
10. _____ Early-warning signs of asthma include shortness of breath, coughing, increased breathing rate, and wheezing
11. _____ The common medication used to treat exercise induced asthma is beta2 agonist such as albuterol
12. _____ Inhaled anti-inflammatory agents such as Vanceril or Beclovent begin work within 5 minutes
13. _____ Peak flow monitoring helps you decide whether the patient's condition is serious enough to seek emergency treatment
14. _____ Short acting medicines such as albuterol (Ventolin) are used to reverse asthma symptoms that have already started

15. _____ Asthma is a disease of airway hyper responsiveness.
16. _____ Poor air quality can be an asthma trigger in children
17. _____ Peak flow monitoring is an effective means to monitor whether your asthma symptoms have stabilized, improved, or deteriorated.
18. _____ Asthma regardless of the severity is a chronic inflammatory disorder of airways.
19. _____ Medications such as inhaled anti-inflammatory agents (vanceril, aerobid, and beclovent) are long acting and used to prevent and reduce airway inflammation
20. _____ Early signs of an asthma episode may be rapid breathing, chest tightness and dry mouth
21. _____ Prior to becoming symptomatic, the child's airways become inflamed with mucus production
22. _____ The most common preventable asthma trigger in children is passive cigarette smoke
23. _____ Very few children have symptoms of asthma all the time
24. _____ Peak flow meters are not helpful in assessment of a child's response to medication
25. _____ Airway inflammation is present in almost all children with asthma, even when asthma symptoms are well controlled

APPENDIX C

SCHOOL NURSING SERVICES FOR CHILDREN/YOUTH WITH CHRONIC HEALTH PROBLEMS

Case Management

Case management includes, but is not limited to, time spent on managing cases and may include charting, Individual Healthcare Plans (IHPs), health portion of IEPs (Individualized Education Program plan); communication, including telephone calls and conferences with family and teachers, allied health personnel (e.g. occupational therapy, physical therapy, speech therapy), health care providers, and other outside agencies.

For the purposes of this survey, a chronic health problem is defined as an illness, impairment, disability, or health condition that has lasted, or is virtually certain to last for at least one year (e.g., seizures, asthma, ADHD, cerebral palsy, spina bifida, diabetes).

1. Do you provide case management for children/youth with chronic health problems?
(Circle one) a. yes b. No

Please indicate the types of case management that you are involved in (circle a or b):

2. Communication with families (e.g., conferences, telephone calls)
a. Yes b. No
3. Communication with teachers (e.g., conferences, teaching on illness, activity restrictions, adaptation for classroom)
a. Yes b. No
4. Communicate with health care providers (e.g., telephone calls, conferences, clarifying orders)
a. Yes b. No
5. Communicating with other outside agencies (e.g., social services, Services for Children with Handicaps)
a. Yes b. No
5. Teaching to educational staff, in-services on health problems (e.g. asthma, seizures)
a. Yes b. no
6. Writing of IHPs (Individual Healthcare Plan) (If yes, how many students in your buildings have IHPs?)
a. Yes _____(write in number) b. No
7. Gathering information for the health portion of the IEPs (Individualized Education Program plan)
a. Yes b. No

8. Coordinating adaptations for field trips, such as arrangement for medications and treatments a. Yes b. No
9. Coordinating and managing plans of care for children/youth with ADHD (e.g. progress evaluations for Ritalin therapy, classroom adaptations) a. Yes b. No
10. Contacting interpreters for conferences and telephone calls to family to assist in coordinating health care a. Yes b. No
11. Writing of Emergency Plans a. Yes b. No
(if yes, how many students in your buildings have emergency plans?)_____
12. Involvement in home visits for health assessment and coordination of health assessment and coordination of health needs for transitioning to school environment a. Yes b. No
13. Involvement in hospital discharge conferences and planning to assist in the transition to school environment a. Yes b. No
14. Counseling and teaching to students on chronic health conditions and self-cares a. Yes b. No
15. On a routine day in your practice, how much time would you estimate that you spend on case management for children/youth with chronic health problems?
 a. none
 b. less than 1 hour
 c. (circle one)
 1 2 3 4 5 6 7 hours(s)
16. Are there any other case management activities that you routinely provide for students with chronic health problems?

Nursing Services

Instructions:

20. Select a routine day during the week to complete this survey. Circle the day you chose to complete the survey (circle one)

M T W Th Fri

Using that day, indicate the number of nursing services provided directly by you. then indicate the number of nursing services that you delegate and to whom the service is being delegated.

If you routinely administer medication or treatments to a student and this student is absent, you may include these services in your count.

- LPN = licensed practical nurse
- HA = health aide
- EA = educational aide
- T/P = teacher, or principal
- Sec – secretary

21. Nebulizations (circle the number of daily nursing services you provide)

0 1 2 3 4 5 6 7 _____other

22. Write in the number of daily nursing services you delegate and to whom the service is being delegated

_____LPN _____HA _____EA _____T/P _____Sec
_____Other

23. Inhalers (circle the number of inhalers administered daily by you)

0 1 2 3 4 5 6 7 _____other

24. Write in the number of inhalers you delegate daily and to whom you are delegating

_____LPN _____HA _____EA _____T/P _____Sec
_____Other

25. Peak Flow Meters (circle the number of daily nursing services you provide)

0 1 2 3 4 5 6 7 _____other

26. Write in the number of daily nursing services you delegate and to whom the service is being delegated

_____LPN _____HA _____EA _____T/P _____Sec
_____Other

27. Tracheostomy Cares (circle the number of daily nursing services you provide)
 0 1 2 3 4 5 6 7 ____other
28. Write in the number of daily nursing services you delegate and to whom the service is being delegated
 ____LPN ____HA ____EA ____T/P ____Sec
 _____Other
29. Tracheal Suctioning (circle the number of daily nursing services you provide)
 (include tracheal surface suctioning and cannula suctioning)
 0 1 2 3 4 5 6 7 ____other
30. Write in the number of daily nursing services you delegate and to whom the service is being delegated
 ____LPN ____HA ____EA ____T/P ____Sec
 _____Other
31. Bronchial Drainage (circle the number of daily nursing services you provide)
 0 1 2 3 4 5 6 7 ____other
32. Write in the number of daily nursing services you delegate and to whom the service is being delegated
 ____LPN ____HA ____EA ____T/P ____Sec
 _____Other
33. Oral Suctioning (circle the number of daily nursing services you provide)
 0 1 2 3 4 5 6 7 ____other
34. Write in the number of daily nursing services you delegate and to whom the service is being delegated
 ____LPN ____HA ____EA ____T/P ____Sec
 _____Other
35. Oxygen Administration (circle the number of daily nursing services you provide)
 0 1 2 3 4 5 6 7 ____other
36. Write in the number of daily nursing services you delegate and to whom the service is being delegated
 ____LPN ____HA ____EA ____T/P ____Sec
 _____Other

37. Mechanical Ventilation (circle the number of daily nursing services you provide)
 0 1 2 3 4 5 6 7 _____other
38. Write in the number of daily nursing services you delegate and to whom the service is being delegated
 _____LPN _____HA _____EA _____T/P _____Sec
 _____Other
39. Gastrostomy Feedings(circle the number of daily nursing services you provide)
 0 1 2 3 4 5 6 7 _____other
40. Write in the number of daily nursing services you delegate and to whom the service is being delegated
 _____LPN _____HA _____EA _____T/P _____Sec
 _____Other
41. Specialized Oral Feedings (circle the number of daily nursing services you provide)
 0 1 2 3 4 5 6 7 _____other
42. Write in the number of daily nursing services you delegate and to whom the service is being delegated
 _____LPN _____HA _____EA _____T/P _____Sec
 _____Other
43. Oral Medications (circle the number of daily nursing services you provide)
 0 1 2 3 4 5 6 7 _____other
44. Write in the number of daily nursing services you delegate and to whom the service is being delegated
 _____LPN _____HA _____EA _____T/P _____Sec
 _____Other
45. Rectal Medications (circle the number of daily nursing services you provide)
 0 1 2 3 4 5 6 7 _____other
46. Write in the number of daily nursing services you delegate and to whom the service is being delegated
 _____LPN _____HA _____EA _____T/P _____Sec
 _____Other

47. Tube Feedings Medications (circle the number of daily nursing services you provide)
0 1 2 3 4 5 6 7 _____other

48. Write in the number of daily nursing services you delegate and to whom the service is being delegated
____LPN ____HA ____EA ____T/P ____Sec
_____Other

49. Injection (IM or SC) (circle the number of daily nursing services you provide)
0 1 2 3 4 5 6 7 _____other

50. Write in the number of daily nursing services you delegate and to whom the service is being delegated
____LPN ____HA ____EA ____T/P ____Sec
_____Other

51. Catheterizations (circle the number of daily nursing services you provide)
0 1 2 3 4 5 6 7 _____other

52. Write in the number of daily nursing services you delegate and to whom the service is being delegated
____LPN ____HA ____EA ____T/P ____Sec
_____Other

53. Ostomy Care (circle the number of daily nursing services you provide)
0 1 2 3 4 5 6 7 _____other

54. Write in the number of daily nursing services you delegate and to whom the service is being delegated
____LPN ____HA ____EA ____T/P ____Sec
_____Other

55. Glucometer Testing (circle the number of daily nursing services you provide)
0 1 2 3 4 5 6 7 _____other

56. Write in the number of daily nursing services you delegate and to whom the service is being delegated
____LPN ____HA ____EA ____T/P ____Sec
_____Other

57. Range of Motion (circle the number of daily nursing services you provide)
0 1 2 3 4 5 6 7 _____other

58. Write in the number of daily nursing services you delegate and to whom the service is being delegated
 _____LPN _____HA _____EA _____T/P _____Sec
 _____Other
59. Bowel/bladder Training Motion (circle the number of daily nursing services you provide)
 0 1 2 3 4 5 6 7 _____other
60. Write in the number of daily nursing services you delegate and to whom the service is being delegated
 _____LPN _____HA _____EA _____T/P _____Sec
 _____Other
61. Orthotic (brace) Application (circle the number of daily nursing services you provide)
 0 1 2 3 4 5 6 7 _____other
62. Write in the number of daily nursing services you delegate and to whom the service is being delegated
 _____LPN _____HA _____EA _____T/P _____Sec
 _____Other
63. Write in any other nursing service that you routinely provide _____
 (circle the number of daily nursing services you provide)
 0 1 2 3 4 5 6 7 _____other
64. Write in the number of daily nursing services you delegate and to whom the service is being delegated
 _____LPN _____HA _____EA _____T/P _____Sec
 _____Other
65. How many PRN orders do you have for the following:
 (write in a number)
- a. rectal valium _____
 - b. inhalers _____
 - c. nebulizations _____
 - d. medications for fever and pain control _____
 - e. suctioning _____
 - f. oxygen _____
 - g. catheterizations _____
 - h. anaphylaxis epinephrine injections _____
 - i. other _____

APPENDIX D

BENNER'S NOVICE TO EXPERT MODEL

Please choose one of the following paragraphs that best describe your level of practice.

- A. The main characteristic of this level is that of conscious and deliberate planning. Through planning the nurse determines what is important and what can be ignored in a given situation. The nurse is in control of the expected situation, and often frazzled by the unexpected.

Exemplar: As the school nurse you have four patients in your office, one thee for a nebulizer treatment, and the others with a variety of needs. You assess the concerns of the other three patients, determine priorities and then provide care based on what you feel is important.

- B. The main characteristic of this level is that the nurse's behavior is determined by specific rules and guidelines. The nurse at this level follows set rules and principles that help guide his/her clinical practice.

Exemplar: As the school nurse you assess the respiratory rate and peak flow reading of a student with asthma. Peak flow readings are determined by a student's height and age based on previous recordings. A reading that is considerably lower than previous readings could indicate impending respiratory difficulties.

- C. The main characteristic of this level is that the nurse has an intuitive grasp of the situation and is able to zero in on the specifics of the problem and determine priorities quickly and efficiently.

Exemplar: As the school nurse, you assess a student with nasal flaring, intercostal retractions, and decreased breath sounds. After two nebulizer treatments he improves slightly. Peak flow readings are below his normal after two nebulizer treatments. You call his primary care physician with a detailed explanation of this clinical situation.

- D. The main characteristic of this level is that the nurse closely follows formal procedures, written policies, and protocols. The nurse relies heavily on textbook knowledge to guide his/her clinical practice.

Exemplar: As the school nurse you record a peak flow reading on a student with asthma. You do not have previous recordings on this student, although he tells you this is low for him. Before further assessment, you check your textbook and written protocols regarding further treatment.

- E. The main characteristic of this level is that the nurse is able to look at the situation and recognize the most important aspects comfortably trusting his/her judgment. The nurse has an intuitive grasp of the situation based on experience.

Exemplar: As the school nurse you assess the vital signs of a student that has received a nebulizer treatment to determine if there are any significant changes. In assessment you determine that the patient has an increased pulse. From previous experience you know whether to observe the patient for a period of time or whether to act immediately.

In addition would you answer the following three questions.

How many years have you been in nursing?_____

How many years have you been in school nursing?_____

What is your highest level of education?_____

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