AMBULATORY CARE PROCEDURES PERFORMED BY PEDIATRIC NURSE PRACTITIONERS

by

Chen-Hua Young

A thesis submitted to the faculty of
The University of Utah
in partial fulfillment of the requirements for the degree of

Master of Science

College of Nursing

The University of Utah

May 2001

THE UNIVERSITY OF UTAH GRADUATE SCHOOL

SUPERVISORY COMMITTEE APPROVAL

of a thesis submitted by

CHEN-HUA YOUNG

This thesis has been read by each member of the following supervisory committee and by majority vote has been found to be satisfactory.

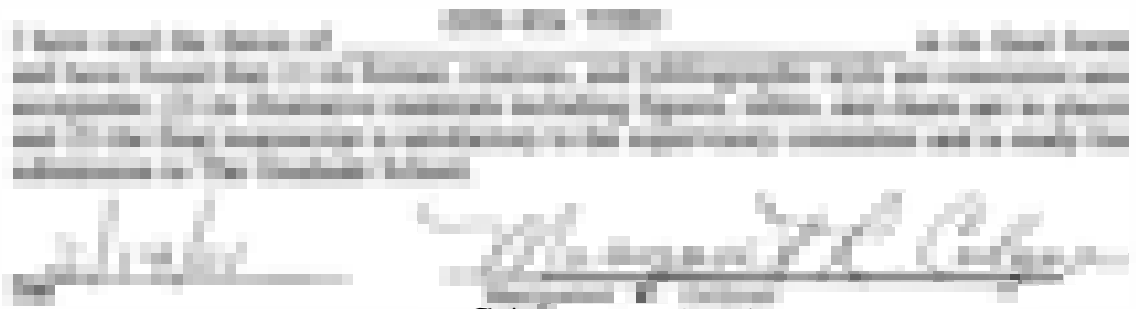
Geeta

Harriett M. G steland

THE UNIVERSITY OF UTAH GRADUATE SCHOOL

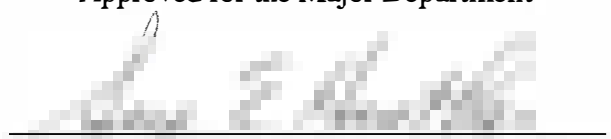
FINAL READING APPROVAL

To the Graduate Council of the University of Utah:



Chair, [redacted] Committee

Approved for the Major Department



Sue E. Huether, Interim
Chair/Dean

Approved for the Graduate Council

David S. Chapman
Dean of The Graduate School

ABSTRACT

Despite efforts to develop programs that prepared the nurse practitioner (NP) to perform their roles competently within a primary care setting, many NPs are still learning ambulatory care procedures from on-the-job-training and special classes after NP certification. In order to provide high quality primary health care and to maximize the NP role, ambulatory care procedures need to be taught in NP programs. In order to respond to this need, it is important to understand what ambulatory care procedures are performed by pediatric nurse practitioners (PNPs) and where they get their initial procedural training. The purpose of this research was to examine what ambulatory care procedures PNPs practice in ambulatory care settings. Another purpose of this research was to discover where PNPs obtained their initial procedural training. This nonexperimental, exploratory, descriptive, quantitative research design was accomplished through a one-time cross-sectional survey completed with the Utah Chapter of the National Association of Pediatric Nurse Associates and Practitioners at the 4th Annual Pediatric Pharmacology Conference in Salt Lake City, Utah. The PNPs at the conference were asked to participate. The results of this study indicated that the PNPs have performed many ambulatory care procedures in their work settings. The majority of PNPs obtained their initial procedural training on the job. Some of the PNPs indicated that they need to learn ambulatory care procedures for their work settings. Even fewer PNPs obtained the knowledge from special classes after NP

certification. A smaller portion of the PNPs received this training through formal education.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ACKNOWLEDGMENTS

I would like to thank my thesis committee: Dr. Margaret Colyar, DSN; Geeta Maharaj, pediatric nurse practitioner; and Harriett M. Gesteland, pediatric nurse practitioner, for their assistance and guidance throughout this research study. I would also like to thank Carol Bolinger, pediatric nurse practitioner, for her assistance during the data collection process of this study. I would also like to thank my husband, Kyminh Liang, for his assistance during the data analysis process of this study; and Mr. Oliver Falkenberg, and Ms. Karen Luther, editors, for their assistance in thesis editing.

CHAPTER I

INTRODUCTION

Nurse educators today are being challenged to develop programs that would prepare professional nurses to function in the expanded role of nurse practitioner (NP) within primary care settings. Nurse practitioner roles have been expanding and will continue to be in demand by the health-care market as these roles evolve into a mixed medical-nursing model for NP services in the future.

Initial planning for the NP role, as envisioned and created by Loretta Ford, RN, and Henry Silver, MD, was built on the knowledge and skills of the public health nurse in direct response to the need for cost-efficient, easily accessible, primary or first-contact health care in rural, underserved areas (Fitzgerald & Wood, 1997).

According to the American Association of Colleges of Nursing (1996), The Essentials of Master's Education for Advanced Practice Nursing stated that each graduate of a master's nursing education program must possess strong critical-thinking and decision-making skills. Graduates gain the ability to critically and accurately assess, plan, intervene, and evaluate the health and illness experiences of clients. This is a primary goal of master's nursing education. Expanding health technologies and increased demands for cost containment have emphasized the need for ethical decision making by all health care professionals. Areas in which a personal conflict of interest

may arise must be identified and resolutions or actions be proposed to resolve the conflict and assume accountability for the quality of one's own practice. The Curriculum Guidelines and Program Standards for Nurse Practitioner Education, as adapted for the National Organization of Nurse Practitioner Faculties (NONPF), (1995), concluded that management of client illness should employ appropriate diagnostic and therapeutic interventions and regimens with attention to safety, cost, invasiveness, simplicity, acceptability, and efficacy.

Baralden (1997) and Shugars, O'Neil, and Bader (1991) have outlined proposals from the Pew Health Professions Commission, along with others who have put forth necessary fundamental reform in curricula that reflects a common theme--to meet the demands of a new health-care system. To do so, innovative programs must be developed to ensure that graduates have the knowledge, skills, and values to practice effectively in evolving systems and cost structures of health-care delivery. Changes must be made in the way health professionals are educated upstream in order to significantly influence health-care access, cost, and quality downstream.

To assist with the need for change, NPs must learn ambulatory care procedures in addition to the traditional NP education and roles (Dearmun & Gordon, 1999). According to Dearmun and Gordon, some ambulatory care procedures and skills may be undertaken as part of developing NP roles. Colyar & Ehrhardt (1999) stated, "Because of a progressive, changing focus, the new nurse practitioner and the practicing nurse practitioner must be prepared to perform an increasing array of skills in an ambulatory care environment" (preface).

That NPs are able to perform ambulatory care procedures has been well documented, including bone marrow aspiration/biopsy, lumbar puncture, thoracentesis, paracentesis, central line removal, skin punch biopsy, fine needle aspiration, Ommaya reservoir tap, and arterial blood gas procurement. Nurse practitioners can safely perform such procedures with adequate instruction, demonstration, and the cooperation of physicians and facilities (Shay, Goldstein, Matthews, Trail, & Edmunds, 1996). Shay et al. noted NPs employed at the National Cancer Institute-Medicine Branch (NCI-MB) learned ambulatory care procedures via a model called the NCI-MB NP Practice Model in order to reduce their knowledge deficits and complement their skills in the area of ambulatory care procedures. In this setting, NPs acquired the ability to perform procedures through self-learning by reading a procedures manual and demonstrating the completion of the procedure supervised by a physician. Formal certification from the Maryland Board of Nursing was then obtained.

This evidence supported the need to teach ambulatory care procedures in NP curricula. It also suggested that employers require the NP to be able to perform procedures. Historically, NP programs have not incorporated technical procedures as part of the NP training (Rossetto & Fair, 1998). Nurse practitioner programs have added only a few ambulatory care procedures to the NP curriculum such as suturing, casting, and beginning X-ray interpretation (Colyar, 1999). In 1999, Bellack, Graber, O'Neil, Musham, and Lancaster noted that new structures and processes for NP education must be created to address the practice competency problem.

To date, however, no research has been conducted to survey NP education needs for skills in ambulatory care procedures. Ideally, the NP education programs that prepare providers for independent practice roles in primary care settings must ensure that graduates are ready to meet the demands they will face for increasing responsibility and accountability for health care management, as well as one-visit services without referral.

As one of the fastest growing groups of primary care providers, NPs need a broad repertoire of skills to work effectively with individual patients, even as they negotiate the larger health care system in which they practice. Health care cost could be reduced if the NP were able to competently perform ambulatory care procedure skills.

NPs' ability to perform more ambulatory care procedures would decrease referral of patients to other health care providers, thereby enhancing the original goals of accessibility, continuity, comprehensiveness, and accountability for providing primary care. Thus, more ambulatory care procedures have been vitally needed and demanded over time, although historically, ambulatory care procedures have not been included or taught as educational requirements in many school curricula.

Throughout the past decade, the role of NPs has dramatically changed and expanded. Imperative to the NP movement is intimate involvement in the education they receive even as they expand their practice. Historically, however, NPs have not been taught many typical ambulatory care procedures in their education programs (Colyar, 1999). NPs must protect their legislative rights to practice while expanding

their practice environment, and they must participate in an educational program where they gain the formal educational knowledge needed.

Pediatric nurse practitioner (PNP) programs are continuing to inspect and improve their educational programs. According to the PNP Program Review Manual (The National Certification Board of Pediatric Nurse Practitioners and Nurses, 1999), in a 1971 joint statement of the American Nurse Association (ANA) and the American Academy of Pediatrics (AAP), PNP education was to include basic education in well and preventive child care, and clinic experiences were to provide the PNP with opportunities to develop nursing skills in the areas of physical assessment plus assessment and management of common childhood problems. Guidelines were set up as "what to do" and remained as a unique collaborative base in PNP education.

In 1973 and 1975, it became apparent that nursing and medical faculties teaching within PNP programs needed to mutually agree upon specific objectives and curriculum content for PNP programs from "what to do" to "how to do it." The input received from both nurses and physicians demonstrated that these two professions could cooperate in developing common goals to prepare practitioners to improve primary health care. The PNP role was viewed as interdependent with the physician, and each professional is an expert in the aspects of child health care for which he/she is responsible.

In 1978, a national conference was held in Iowa City, Iowa, to reassess the education-based competencies expected for PNP graduates and evaluate the status of PNP education for the future. Beginning with a Task Force Conference, many subsequent workshops were held in Indianapolis, Indiana, in 1980 and 1981. With

each conference came a blending of old and new ideas for PNP education programs. Finally, the philosophy, conceptual model, and terminal competencies were developed and published by the Association of Faculties of Pediatric Nurse Practitioner and Associate Program (AFPNP/AP) in 1982 (The National Certification Board of PNP/N, 1999). This contemporized the original ANA/AAP Guidelines for the education of PNPs. It provided flexibility for the structure and organization of a PNP faculty within an individual program.

This guideline was revised by AFPNP/AP in 1987, 1989, 1994, and 1996. The revised guidelines represented the newest standards in curriculum and clinical practice for PNPs and indicated that nursing has the responsibility to respond to the changing needs of society by providing educational programs that increase the efficacy, availability, and accessibility of health care. It also emphasized that the educational process must provide sufficient opportunity for the PNP to develop clinical competency in primary health care to children and demonstrate knowledge, skills, and clinic judgment to manage health care problems (The National Certification Board of PNP/N, 1999).

Statement of the Problem

The scope of NP practice continued to expand. In the United States, an estimated 7,100 NPs graduated in 2000 and 7,250 will graduate in 2001. The number of NPs is projected to increase to 106,000 by 2005 and 151,000 by 2015. (Cooper, Laud, & Dietrich, 1998). There are approximately 78,251 NPs licensed in the U.S. and 800 NPs licensed in Utah (Pearson, 2000). There are approximately 166 NP

educational programs with 115 PNP programs in the U.S. (NP Educational Programs, 1999). To adapt to a workplace and workforce characterized by chaos and complexity, skills and personality traits that promoted NPs as proactive innovators were essential to satisfy the needs of the new health care marketplace (White & Begun, 1998).

The growing demand for primary care and the increasing importance of the NP becoming competent to meet that demand make it imperative that we understand the need for ambulatory care procedures by the NP, yet little was known about NP needs for ambulatory care procedures and where the NPs got their initial procedural training. This research was essential to describe the practice and knowledge-base of the NP in ambulatory care settings.

According to Colyar (1999), NPs have not been taught many primary care procedures in their educational programs. Historically, the NP programs have not incorporated technical procedures as part of their curricula. Today, however, many NPs perform ambulatory care procedures in a variety of specialty area settings. The changing face of primary care and market demand should signal NP programs to incorporate introductory classes on basic ambulatory care procedures.

If NPs seek to establish and maintain credibility as independent and complementary professionals within the primary care team, then a degree of unity must be achieved over role definitions and occupational boundaries. To do this, education programs must be restructured to meet market demand and maintain high quality of direct health patient care, while incorporating and reflecting the educational goals. A survey of ambulatory care procedures would be required through which

educational commissions could be fully and appropriately informed and potential participants specifically targeted for professional development.

Theoretical Framework

To better understand and explain the vital need to add ambulatory care procedures content into NP curriculum, it is important to understand the theoretical framework for the NP curriculum. The following theoretical frameworks were used to guide this study: (a) Nonlinear Systems Theory in Medical Care Management (Dershin, 1999), (b) Shuler Nurse Practice Model (Shuler & Davis, 1993), and (c) Test Construction Model (Fullerton & Pickwell, 1991).

Nonlinear Systems Theory

In Nonlinear Systems Theory, health care systems are biological not mechanical systems. Biological systems are highly complex and their behavior can be nonlinear. As they become more complex, they are very susceptible to differences in initial and environmental conditions (Dershin, 1999). By understanding this difference, it is possible to answer the question of how to deliver efficient and effective clinical care, while controlling spiraling cost.

The concept of nonlinearity is the phenomenon that small changes at one level of organization produce large effects at the same or different levels (Dershin, 1999). If NPs were able to perform ambulatory care procedures without referring patients to other providers, the health care cost for patients would be reduced and patients would

receive complete service per visit. The theory consists of three components: roadmap, decision aids, and continuous improvement (Dershin).

The concept of roadmap allows caregivers to apply priority rules to patient management, permitting them to act upon situations from beginning to end. The ability of NPs to provide accountability and marketability with high quality patient care, including completed services by performing ambulatory care procedures without referring, is one of the priority rules of patient management in the health care market.

The implication of decision aids is that the caregiver extracts information from the situation as it unfolds and tailors action to move the patient into recovery. A decision-making algorithm that supports swift, correct diagnosis and treatment will contribute to optimal patient outcome and is an essential NP role.

Continuous improvement stimulates the creative process, generating new guidelines from those already tested. This is what the NP and a high quality health care system should really do. The NP should gain the ability to perform ambulatory care procedures, thereby, improving quality care systems.

Shuler Nurse Practitioner Model

The Shuler Nurse Practitioner Model, based on a philosophy that recognizes people as holistic, perceptive, thinking, rational beings with intrinsic value and worth inspires the NP to view health as a dynamic, ongoing situation related to psychological, social, cultural, and spiritual aspects of individuals. Nursing itself is viewed as a process and a profession.

The process involves assessing, diagnosing, treating, and restoring human responses to actual or potential health problems and promoting wellness. The NP professional role requires mastery of nursing, as well as medical skills such as diagnosing and treating acute and chronic illness (Shuler & Davis, 1993). As a member of the health-care team, the NP serves as a clinician analyzing problems and choosing appropriate care and treatment for each individual. As an educator, the NP informs patients about current health information in order to promote health and wellness status. NPs who provide complete services and competent practice fit nicely into this model.

Test Construction Model

For the NP to be competent in practice, education plays a major role. A test construction model was adapted as a conceptual framework for curriculum design called "the curriculum blueprint" (Fullerton & Pickwell, 1991), which is composed of four steps. In Step 1, test planning: the nature and purpose of the educational program must be defined through a statement of program philosophy and delineation of program goals and objectives. The direction and purpose of the educational program must be identified before learning objectives and course content relating to these objectives can be derived (Fullerton & Pickwell). An ambulatory care procedure course might define its purpose as the development of primary care providers prepared with knowledge, skills, and abilities to serve the population.

Identifying outcomes is Step 2, a statement of the desired outcomes of the course detailed within the course to specify what is to be accomplished (Fullerton &

Pickwell, 1991). This step delineates the role and function of NPs at the completion of the ambulatory care procedure course, which is that NPs become competent in performing ambulatory care procedures while completing NP programs.

Step 3, preparing the test specifications, is not necessarily conducted. It is an excerpt of course objectives, specific topical content, and the placement of content within the course (Fullerton & Pickwell, 1991).

Step 4, administering and evaluating the instrument, includes assembly of the test, the administration of the test to examinees, the evaluation of the test instrument, and interpretation of test results (Fullerton & Pickwell, 1991). To develop a new course, all steps are required to conduct an educational course of study.

Purpose of This Research

The purpose of this study was to examine what procedures PNPs practice in ambulatory care settings. Another purpose of this study was to discover where PNPs obtained their initial procedural training. Information from this study would allow educators to determine deficits in their program of study that prepare PNPs for practice. In addition, this research would also identify current trends and needs of ambulatory care procedures for the student nurse practitioner and the PNP currently in practice.

Research Questions

What procedures were performed by PNPs in ambulatory care settings in Utah? Where or in what settings did PNPs get their initial procedural training?

Significance of the Study

The information from this study would benefit NP education, primary care service, and nursing research. This study would explore ambulatory care procedures performed by PNPs and where they obtained their education to perform the procedures. The master programs in nursing that offer PNP tracts could adjust curricula to meet the needs of their students.

Today health-care employers continue to rely heavily on the use of NPs. Thus, schools of nursing must be prepared to graduate NPs who practice safe procedures and are experts in ambulatory care procedures, the preferred combination for a graduate. This difficult task requires an evaluation of current NP practices and a survey of ambulatory care procedure needs for practice where students received training.

To meet the health-care market demand for cost-effective visits and appropriate treatment without referring and delaying patient care in primary care services, NPs must have the ability to provide complete services. This survey would benefit current NPs and NP students in the future. Obtaining proper education and training becomes imperative for students to present themselves as cost-effective valuable members of the health care team. In addition, such programs could reduce cost, save time due to referrals, and provide consistent and continuous patient care in a primary care setting. Knowledge gained from the study can be utilized in nursing research to improve the knowledge base of procedures practiced in an ambulatory care setting by the PNP specifically.

Operational Definitions

1. Ambulatory care procedures - a number of medical technical skills performed in variety of settings.

2. Pediatric nurse practitioner (PNP) - a nurse practitioner who provides pediatric comprehensive primary health care in individual response to a wide range of problems.

3. Primary care - the Institute of Medicine's Committee defined primary care as the provision of comprehensive, coordinated, and continuous services: accessible health care services by clinicians who are accountable for addressing a large majority of personal health care needs (Youngkin & Davis, 1998).

4. Ambulatory care setting - any outpatient setting where care is provided to a patient.

CHAPTER II

LITERATURE REVIEW

The review of literature explores several aspects including NP roles that are continuously changing and trends for NPs that demand cost-effectiveness and competency in ambulatory care procedures as part of NP practice. The literature also focuses on the importance of knowing ambulatory care procedures and the awareness of expanding NP roles in performing ambulatory care procedures.

Nurse Practitioner Curriculum and Procedural Instruction

No research was found that explored the knowledge NPs need in ambulatory care procedures or that suggested this information become part of the curriculum. The literature did indicate the need for development of new curriculum for ambulatory care procedures in family practice residencies and the problems associated with learning ambulatory care procedures (Kowlowitz, Slatt, Kollisch, & Strayhorn, 1996).

Ambulatory Care Procedures

Nurse practitioners are known to perform ambulatory care procedures. In 1995-96, Colyar conducted a preliminary survey of 10 family nurse practitioners (FNPs) in each of the five regions of the United States to formulate an overview of procedures

performed. Shay et al. (1996) described how NPs earn certification for ambulatory care procedures by utilizing an NCI-MB NP practice model. As Delametter (1999) stated, NPs perform many technical skills and work in the critical care environment, including arterial line placement, lumbar puncture, central line placement, and intubation. Nurse practitioners in a variety of settings have acquired the skills necessary to perform procedures such as suturing, splinting, Papanicolaou smears, intubation, and lumbar punctures (see Appendix A) (Rossetto & Fair, 1998).

Nurse Practitioner Job Market

Nurse practitioners must be aware of the importance of knowing ambulatory care procedures and expanding NP roles. A study conducted by Brower, Tappen, and Weber (1988) said that NPs use their clinical management skills including ambulatory care procedures more than the education they receive and yet they are interested in expanding their knowledge base in learning ambulatory care procedures in their practice areas.

Dearmun and Gordon (1999) described a groundbreaking role of the PNP in the children's ambulatory care unit at Oxford, England. They noted that ambulatory care facilities and hospitals that hire NPs are hiring not only expert care providers, but also those who can independently perform ambulatory care procedures with excellent technical skills.

According to Delametter (1999), some universities have developed programs that combine clinic nurse specialist (CNS) training to enhance the quality of bedside

care with technical skills and comprehensive patient involvement essential to the NP role.

Barriers to Procedure Instruction

A study on teaching outpatient procedures in family practice residencies at family practice centers found many barriers to procedures training, including lack of available or interested faculty, scheduling problems, and low volume. Several experts have identified evaluation and emphasis problems, providing suggestions and recommendations on needed changes in curriculum development (Sierpina & Volk, 1998).

One survey on students receiving clinical experiences and types of supervision in physicians' offices to ensure quality control during a clerkship. Kowlowitz, Slatt, Kollisch, and Strayhorn (1996) found that the amount of supervision by preceptors varied among practices with some students doing the procedure without any supervision overall.

Research was conducted to determine the feasibility of workshops that demonstrate certain procedures used in primary care (Powers & Draeger, 1992; Tissier & Rink, 1996). Limitations were mentioned from the use of simulated tissue, paid volunteers, cadavers, and models with certain procedures, but overall the method was found to be feasible.

Procedure Performed in Ambulatory Care Settings

The importance of learning minor surgery is known among general practitioners.

A course was organized by the Royal College of General Practitioners and supported by the Department of Health to help practitioners gain knowledge and competency in skill performance (Tissier & Rink, 1996). Babich and Crollick (1998) addressed the common basic office dermatological surgery that the primary care pediatrician performs including anesthesia, skin biopsy, cryosurgery, chemosurgery, and cold steel surgery.

Another physician-based report outlined the procedures done in the emergency department in pediatric emergencies. Since nurse practitioners practice in both of these areas, they found that procedures NPs can perform based on their scope of practice should be studied (Miller & Leno, 1991).

Procedures Nurse Practitioners Perform

No research has been published outlining the procedures that NPs perform. Two exploratory studies that provide beginning information have identified Current Procedural Terminology (CPT) coded procedures (Griffith & Robinson, 1993; Griffith, Thomas, & Griffith, 1991). In 1996, Shay et al., published guidelines for developing a nurse practitioner practice.

Procedures Pediatric Nurse Practitioners Perform

No studies have been published that look at ambulatory care procedures performed by the PNP in their practice settings and where they received their initial procedural training.

Summary

Current research implies a trend to demand and require that NPs gain a knowledge base of ambulatory care procedures for the health care delivery market. In addition, the NP role is continually changing. The trend for NPs is the demand for cost-effectiveness and competency while they are practicing. It also is important for educators to be aware and recognize that teaching ambulatory care procedures in the nurse practitioner program is the task of the greatest urgency at present.

CHAPTER III

METHODOLOGY

Research Design

This study was a nonexperimental, exploratory, descriptive, quantitative research design (Polit & Hungler, 1995). A questionnaire, developed using the self-report method by Colyar (1999), was adapted for use in the study. It was used for data collection and was the focus of what ambulatory care procedures PNPs performed and in what settings PNPs got their initial procedural training.

Data from the questionnaire were obtained from members of the Utah Chapter of the National Association of Pediatric Nurse Associates and Practitioners who attended the fourth Annual Pediatric Pharmacology Conference. Data from the questionnaires were grouped so that no individual PNP could be identified. To maintain respondent's confidentiality, the questionnaire did not include respondents' name, sex, age, address, or telephone number.

Setting

Data information was obtained from member of the Utah Chapter of the National Association of Pediatric Nurse Associates and Practitioners, who attended the fourth Annual Pediatric Pharmacology Conference held in Utah.

Population/Sample

The population for this study was all PNPs who provided health care in ambulatory care settings in Utah. A convenience sample of PNPs who were licensed by the Board of Nursing in ambulatory care settings in Utah was used. Twenty-four PNPs who were practicing in ambulatory care settings completed the questionnaire.

When the relationship between the research variables are strong, large samples are not needed to detect the effect at statistically significant levels (Polit & Hungler, 1995). A sample size of 30 or more is usually sufficient to ensure the probability of obtaining significant results.

Ethical Considerations

The University of Utah's Institutional Review Board (IRB) approval was obtained before proceeding with the study (see Appendix B). Data from the questionnaires were grouped so that no individual PNP could be identified. The questionnaire did not include respondent's name, sex, age, address, and telephone number in order to maintain respondent's confidentiality.

Instrumentation

The paper and pencil questionnaire (see Appendix C) produced by Colyar was used. The demographic area was adapted to include questions specific to PNPs. A pilot study was done with NPs in practice ($\underline{n}$ = 10). The original instrument had 93 items, which was expanded into 102 items grouped in eight categories based on body systems. Items were condensed and reviewed based on information gathered in the

pilot study. The original design for the study was retained and used. In addition to demographic data, types of procedures being performed and where PNPs received their initial education to perform these procedures was explored.

Instruments must be both valid and reliable. Validity refers to the degree to which an instrument measures what it is supposed to be measuring (Polit & Hungler, 1995). Content, criterion-related, and construct validity are the three main types of validity testing. The type of validity procedure used depends on the intent of the instrument; however, content validity procedures are appropriate for all instruments (Polit & Hungler).

Content validity is concerned with the sampling adequacy of the content area being measured (Polit & Hungler, 1995). Content validity is important for all instruments. The process of content validity was completed prior to administering the instrument for pilot testing and was used to determine the content representativeness or content relevance of the items proposed for use on the instrument (Polit & Hungler). Content validity was crucial to understanding and applicating research findings. Content validity for the original 93 items was obtained by Dr. M. Colyar and was reassessed using two content validators who are members of the PNP faculties in the College of Nursing, University of Utah. All items were retained and nine items were added. After content validation was accomplished and items added, a corrected version of questionnaires containing 102 items was developed for the pilot test.

Next, criterion-related validity is used when one wishes to establish the relationship between the instrument and some other criterion (Polit & Hungler, 1995).

Since this was not the focus of the instruments developed, this type of validity was not assessed.

Construct validity is more concerned with the underlying attribute than with the score that the instrument produces (Polit & Hungler, 1995). Since this was not the focus of the instruments developed, this type of validity was not assessed.

Reliability refers to the dependability of the instrument to measure what it is supposed to be measuring (Polit & Hungler, 1995). Reliability of an instrument can be tested in several different ways. The three major aspects of reliability are internal consistency (homogeneity), stability (test-retest), and equivalence (parallel-forms) (Polit & Hungler).

Reliability as internal consistency is used to determine if all subparts of the instrument are measuring the same characteristic. The preferred indicator of internal consistency is Cronbach's Alpha. The normal range of Cronbach's Alpha value is between 0.00 and +1.00, and higher values reflect a higher degree of internal consistency (Polit & Hungler, 1995). A Cronbach's Alpha was computed for each subset of items (.8001).

The test-retest procedure is used to measure stability over time. Parallel-forms are used when two forms of the same measure have been generated. For this study, the instrument was administered one time only with no intervention, and there was only one form for the tool; therefore, the test-retest procedure and parallel-forms procedure were not applicable.

Procedure for Data Collection

A questionnaire with the informed consent (see Appendix C) accompanying the cover letter were handed out to PNPs from the Utah Chapter of the National Association of Pediatric Nurse Associates and Practitioners who attended the fourth Annual Pediatric Pharmacology Conference. The questionnaires were collected at the end of the conference.

Data Analysis

A Microsoft Excell and SPSS Program was utilized to analyze the data. A numerical coding scheme was developed to facilitate statistical analysis. Descriptive statistics (percentages or frequency) will be reported on each item in the questionnaire.

Based on Polit and Hungler (1995), four major levels of measurement have been identified: nominal, ordinal, interval, and ratio. Nominal measurement involves the assignment of numbers simply to classify characteristics into categories. Ordinal measurement permits the sorting of objects on the basis of their standing relative to each other on a specified attribute. Interval measurement occurs when the researcher can specify both the rank-ordering of objects on an attribute and the distance between those objects. Ratio measurement is distinguished from interval measurement by virtue of having a rational, meaningful zero. In this study, nominal measurement was the level for data analysis to represent the results.

Assumptions

The assumptions of this study included: (a) pediatric nurse practitioners were

instructed to perform procedures in some settings (classroom, on the job, clinic practicum); (b) pediatric nurse practitioners perform procedures in ambulatory care settings; (c) pediatric nurse practitioners would answer items on questionnaire honestly; (d) the nurse practitioner performing ambulatory care procedures could be cost effective in reducing medical cost; and (e) health care markets demand that NPs perform procedures in ambulatory care settings.

Limitations

The limitations of this study include: (a) the sample group for this study was limited to PNPs that provided primary health care in Utah; (b) the sample size might not fully represent the whole population of PNPs; and (c) response rate was less than optimum due to the method of data collection and concern for confidentiality.

CHAPTER IV

ANALYSIS OF DATA AND DISCUSSION OF FINDINGS

This was a nonexperimental, exploratory, descriptive, quantitative research study. The sample size totaled 24 PNPs for this study. There was a total of 27 samples. Twenty-four PNPs were included. Three FNPs who submitted surveys were not included in the study because the focus was on PNP study. The research question was to examine what procedures are performed by PNPs in ambulatory care settings in Utah. Another research question was to examine where PNPs received their initial procedural training. The sample was selected from the Utah Chapter of the National Association of Pediatric Nurse Associates and Practitioners, who attended the fourth Annual Pediatric Pharmacology Conference in October, 2000. The PNPs in the sample represented a wide range of years of work experience and worked in many settings throughout the state of Utah.

Characteristics of the Sample

Years of PNP Working Experience

In Figure 1, the sample was comprised of 24 PNPs, 11 (46%) of whom had 1-5 years working experience. Another 5 (21%) of the PNPs declared 6-10 years working experience. Two (8%) of the PNPs had worked less than 1 year. Only 1 (4%) of the

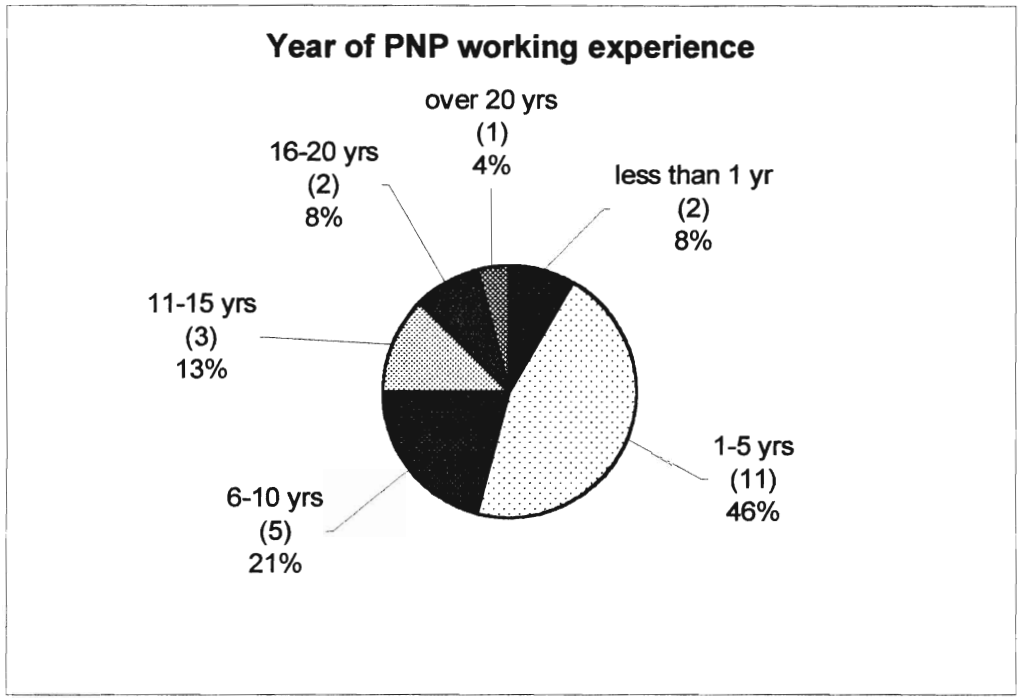


Figure 1. Frequency and Percentage Distribution Response to Years of the PNP Working Experience

PNPs had over 20 years working experience.

The PNP Practice Settings

The majority (n=14, 59%) of PNPs worked in clinical settings. The next largest group of 8 PNPs (33%) were employed in doctors' offices. Only 1 PNP (4%) worked at an urgent care/ER facility. One PNP did not mark where he/she worked. None of the PNPs in the sample indicated working in Indian health, health department, and migrant health settings (see Figure 2).

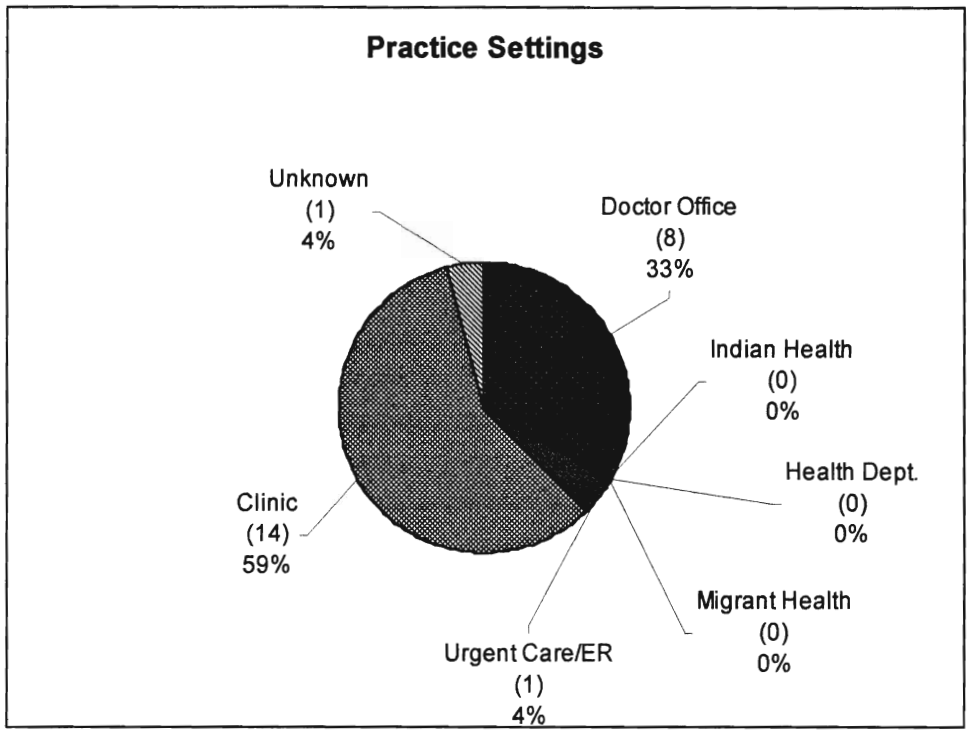


Figure 2. Frequency and Percentage Distribution Response to the PNP Practice Settings

The Type of Clinic Practice Settings

Fourteen (59%) of 24 PNPs worked in a variety of clinic settings including two inner city clinics and two rural clinics (14%), six urban clinics (43%), and four hospitals (29%). None of the PNPs in the sample worked in the frontier setting (see Figure 3).

Results of Ambulatory Care Procedures Performed by Pediatric Nurse Practitioners Based on the PNP Practice Settings

The PNP practice settings were composed of three groups: 14 PNPs (59%) worked in clinical settings, 8 PNPs (33%) were employed in doctors' offices, and

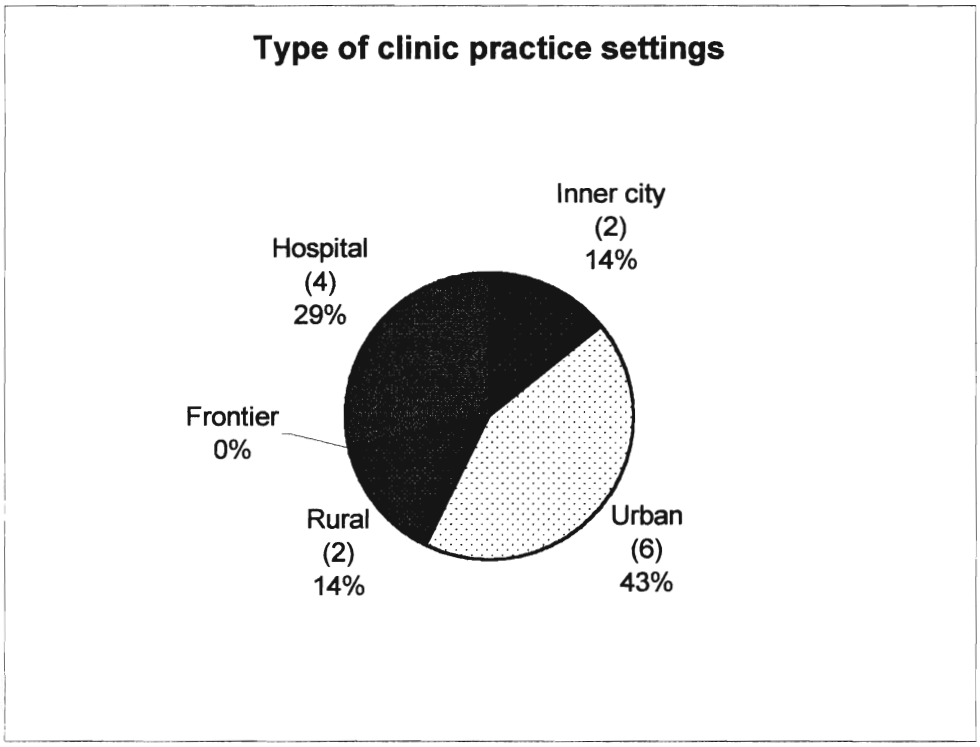


Figure 3. Frequency and Percentage Distribution Response to the Type of Clinic Practice Settings

only 1 PNP (4%) worked at an urgent care/ER facility. The results show that x-ray interpretation-chest, aerosol administration, x-ray interpretation-bones, epistaxis control, venipuncture, crutch walking, pap smear, steri strip application, suturing, peak flow meter, sling application, eye irrigation, ear and nose-foreign body removal, x-ray interpretation-abdomen, and Wood's light examination are the most frequent ambulatory care procedures performed by the fourteen PNPs (59%) in clinical practice settings.

The most frequent ambulatory care procedures performed by 8 PNPs (33%) in doctors' offices include: aerosol administration, peak flow meter, tympanometry, steri strip application, x-ray interpretation-chest, sling application, audiometry, corneal

abrasion examination, eye-foreign body removal, eye irrigation, ECG interpretation, venipuncture, splinting and taping, eyelid eversion, and pap smear.

Only 1 PNP (4%) worked at an urgent care/ER facility. This does not provide sufficient data to draw meaningful conclusions.

Results of Ambulatory Care Procedures Performed by Pediatric Nurse Practitioners and Initial Procedural Training

Genitourinary and Breast Procedures

The PNPs were asked what ambulatory care procedures they were required to perform in their respective settings, as well as where they received their initial procedural training. In the area of genitourinary and breast procedures, few of the PNPs learned procedures through formal NP education. For example, 11 PNPs (45.83%) learned pap smear; 6 (25%) learned STD screening; 5 (20.83%) learned gram stain/wet mount; and 1 (4.17%) learned condyloma removal, diaphragm fitting and insertion/removal, pessary insertion, and circumcision through formal NP education.

The majority of procedures performed by the PNPs were obtained through on-the-job training. For example, 6 PNPs (25%) learned gram stain/wet mount and STD screening; 5 (20.83%) learned pap smear; 4 (16.67%) learned diaphragm fitting, insertion and removal; 3 (12.5%) learned incision and drainage of bartholin cyst abscess, colposcopy, and condyloma removal; 2 (8.33%) learned IUD insertion and removal; and 1 (4.17%) learned cervical biopsy and circumcision on the job.

A small number of PNPs learned ambulatory care procedures through special

classes after NP certification. For example, 1 PNP (4.17%) learned gram stain/wet mount and norplant insertion through special classes after NP certification.

Many PNPs indicated their need to learn ambulatory care procedures. For example, 2 PNPs (8.33%) wanted to learn IUD insertion and removal, paracervical nerve block, and norplant insertion/removal, and 1 PNP (4.17%) wanted to learn endometrial biopsy, incision and drainage of bartholin cyst abscess, colposcopy, vasectomy, pessary insertion, and circumcision.

The survey also indicated that the PNPs in this study (Table 1) did not perform breast biopsy, endometrial biopsy, cervical lesions-cryotherapy, endocervical curretage, norplant removal, paracervical nerve block, and vasectomy procedures.

Dermatologic Procedures

In the dermatologic procedures, some of the PNPs indicated learning procedures from formal NP education. For example, 6 PNPs (25%) learned wart removal; 5 (20.83%) learned suturing and bites-insects management; 4 (16.67%) learned Wood's light examination; 3 (12.5%) learned punch biopsy; 2 (8.33%) learned skin biopsy, incision/draining abscesses, puncture wound care, staple insertion/removal, and steri strip application; and 1 (4.17%) learned ring removal, mole removal, skin tag and tick removal, and burn debridement through formal NP education.

The majority of procedures performed by the PNPs were obtained through on-the-job training. For example, 16 PNPs (66.67%) learned steri strip application; 8 (33.33%) learned wart removal and staple insertion/removal; 7 (29.17%) learned Wood's light examination, nail removal, ring removal, incision/draining abscesses,

Table 1

Frequency and Percentage Distribution Response to

Genitourinary and Breast Procedures

Items	Formal NP Education		On-the-job Training		Special Classes after NP Certification		I need to learn this procedure for my practice	
	N	%	N	%	N	%	N	%
Breast Biopsy	0	0.00	0	0.00	0	0.00	0	0.00
Endometrial Biopsy	0	0.00	0	0.00	0	0.00	1	4.17
Pap Smear	11	45.83	5	20.83	0	0.00	0	0.00
Gram Stain/Wet Mount	5	20.83	6	25.00	1	4.17	0	0.00
Bartholin Cyst Abscess	0	0.00	3	12.50	0	0.00	1	4.17
Cervical Lesions - Cryotherapy	0	0.00	0	0.00	0	0.00	0	0.00
Colposcopy	0	0.00	3	12.50	0	0.00	1	4.17
Endocervical Curretage	0	0.00	0	0.00	0	0.00	0	0.00
Cervical Biopsy	0	0.00	1	4.17	0	0.00	0	0.00
Condyloma Removal	1	4.17	3	12.50	0	0.00	0	0.00
Diaphragm Fitting, Insertion & Removal	1	4.17	4	16.67	0	0.00	0	0.00
IUD Insertion & Removal	0	0.00	2	8.33	0	0.00	2	8.33
Norplant Insertion	0	0.00	0	0.00	1	4.17	2	8.33
Norplant Removal	0	0.00	0	0.00	0	0.00	2	8.33
Paracervical Nerve Block	0	0.00	0	0.00	0	0.00	2	8.33
Pessary Insertion	1	4.17	0	0.00	0	0.00	1	4.17
Vasectomy	0	0.00	0	0.00	0	0.00	1	4.17
Circumcision	1	4.17	1	4.17	0	0.00	1	4.17
STD Screening	6	25.00	6	25.00	0	0.00	0	0.00

and bites-insects management; 6 (25%) learned puncture wound care, burn debridement, and tick removal; 5 (20.83%) learned fishhook removal, soft tissue aspiration, and subungual hematoma excision; 4 (16.67) learned digital nerve block, suturing, and topical hemostatic agent application; 3 (12.5%) learned sebaceous cyst removal, cryosurgery, and skin tag removal; 2 (8.33%) learned skin lesion removal-cautery; and 1 (4.17%) learned punch biopsy on the job.

A small portion of PNPs learned procedures through special classes after NP certification. For example, 5 PNPs (20.83%) learned suturing; 2 (8.33%) learned skin biopsy and fishhook removal; 1 (4.17%) learned Wood's light examination, incision/draining abscesses, digital nerve block, nail removal, puncture wound care, skin lesion removal for keloids, moles, corns and calluses, staple insertion/removal, tick removal, and bites-insects management through special classes after NP certification.

Many of the PNPs indicated their need to learn ambulatory care procedures. For example, 6 PNPs (25%) wanted to learned tick removal; 4 (16.67%) wanted to learn suturing; 2 (8.33%) wanted to learn nail removal, cryosurgery, and puncture wound care; and 1 (4.17%) wanted to learn punch biopsy, skin biopsy, Wood's light examination, incision/draining abscesses, digital nerve block, fishhook removal, ring removal, sebaceous cyst removal, skin lesion removal-cautery, skin lesion removal for keloids, moles, corns and calluses, skin tag removal, soft tissue aspiration, staple insertion/removal, subungual hematoma excision, and topical hemostatic agent application (Table 2).

Table 2

Frequency and Percentage Distribution Response to Dermatologic Procedures

Items	Formal NP Education		On-the-job Training		Special Classes after NP Certification		I need to learn this procedure for my practice	
	N	%	N	%	N	%	N	%
Punch Biopsy	3	12.50	1	4.17	0	0.00	1	4.17
Skin Biopsy	2	8.33	0	0.00	2	8.33	1	4.17
Wood's Light Examination	4	16.67	7	29.17	1	4.17	1	4.17
Incision & Draining Abscesses	2	8.33	7	29.17	1	4.17	1	4.17
Digital Nerve Block	0	0.00	4	16.67	1	4.17	1	4.17
Fishhook Removal	0	0.00	5	20.83	2	8.33	1	4.17
Nail Removal	0	0.00	7	29.17	1	4.17	2	8.33
Puncture Wound Care	3	12.50	6	25.00	1	4.17	2	8.33
Ring Removal	1	4.17	7	29.17	0	0.00	1	4.17
Sebaceous Cyst Removal	0	0.00	3	12.50	0	0.00	1	4.17
Skin Lesion Removal-Cautery	0	0.00	2	8.33	0	0.00	1	4.17
Cryosurgery	0	0.00	3	12.50	0	0.00	2	8.33
Skin Lesion Removal Keloids	0	0.00	0	0.00	1	4.17	1	4.17
Moles	1	4.17	0	0.00	1	4.17	1	4.17
Coms	0	0.00	0	0.00	1	4.17	1	4.17
Calluses	0	0.00	0	0.00	1	4.17	1	4.17
Skin Tag Removal	1	4.17	3	12.50	0	0.00	1	4.17
Soft Tissue Aspiration	0	0.00	5	20.83	0	0.00	1	4.17
Staple Insertion/ Removal	2	8.33	8	33.33	1	4.17	1	4.17
Steri Strip Application	2	8.33	16	66.67	0	0.00	0	0.00
Subungual Hematoma	0	0.00	5	20.83	0	0.00	1	4.17
Suturing	5	20.83	4	16.67	5	20.83	1	4.17
Tick Removal	1	4.17	6	25.00	1	4.17	1	4.17
Topical Hemostatic Agent Application	0	0.00	4	16.67	0	0.00	1	4.17
Bites -Insects	5	20.83	7	29.17	1	4.17	0	0.00
Burns -Debridement	1	4.17	6	25.00	0	0.00	0	0.00
Wart Removal	6	25.00	8	33.33	0	0.00	0	0.00

Respiratory Procedures

Many of the PNPs in the area of respiratory procedures obtained training through formal NP education. For example, 10 PNPs (41.67%) learned x-ray interpretation-chest; 7 (29.17%) learned aerosol administration; 6 (25%) learned peak flow meter; 2 (8.33%) learned chest tube placement; and 1 (4.17%) learned flail chest stabilization and stab wound stabilization through formal NP education.

The majority of procedures performed by the PNPs were obtained through on-the-job training. For example, 14 PNPs (58.33%) learned aerosol administration; 12 (50%) learned peak flow meter; 8 (33.33%) learned x-ray interpretation-chest; 4 (16.67%) learned flail chest stabilization; 3 (12.5%) learned chest tube placement and stab wound stabilization on the job.

Some of the PNPs learned procedures through special classes after NP certification. For example, 3 PNPs (12.5%) learned x-ray interpretation-chest; 2 (8.33%) learned chest tube placement and stab wound stabilization; and 1 (4.17%) learned flail chest stabilization through special classes after NP certification.

A small number of PNPs indicated their need to learn ambulatory care procedures. For example, 1 PNP (4.17%) wanted to learn aerosol administration, peak flow meter, and x-ray interpretation-chest (Table 3).

Musculoskeletal Procedures

Many of the PNPs obtained procedural training on musculoskeletal procedures through formal NP education. For example, 6 PNPs (25%) learned x-ray interpretation bones; 3 (12.5%) learned crutch walking; 2 (8.33%) learned clavicle immobilization,

Table 3

Frequency and Percentage Distribution Response to Respiratory Procedures

Items	Formal NP Education		On-the-job Training		Special Classes after NP Certification		I need to learn this procedure for my practice	
	N	%	N	%	N	%	N	%
Aerosol Administration	7	29.17	14	58.33	0	0.00	1	4.17
Peak Flow Meter	6	25.00	12	50.00	0	0.00	1	4.17
X-ray Interpretation-Chest	10	41.67	8	33.33	3	12.50	1	4.17
Chest Tube Placement	2	8.33	3	12.50	2	8.33	0	0.00
Flail Chest Stabilization	1	4.17	4	16.67	1	4.17	0	0.00
Stab Wound Stabilization	1	4.17	3	12.50	2	8.33	0	0.00

dislocation reduction, sling application, and splinting/taping; 1 (4.17%) learned bone marrow biopsy through formal NP education.

The majority of procedures performed by the PNPs were obtained through on-the-job training. For example, 14 PNPs (58.33%) learned sling application; 11(45.83%) learned splinting/taping and crutch walking; 10 (41.67%) learned clavicle immobilization; 7 (29.17%) learned dislocation reduction; 6 (25%) learned x-ray interpretation-bones and trigger point injection; 5 (20.83%) learned bone marrow biopsy; 2 (8.33%) learned arthrocentesis and intra-articular/bursa corticosteroid injection; and 1 (4.17%) learned ganglion cyst removal on-the-job.

Some of the PNPs obtained the training through special classes after NP

certification. For example, 3 PNPs (12.5%) learned x-ray interpretation-bones; 2 (8.33%) learned splinting/taping; and 1 (4.17%) learned crutch walking and sling application through special classes after NP certification.

A small number of PNPs indicated their need to learn ambulatory care procedures. For example, 2 PNPs (8.33%) wanted to learn x-ray interpretation-bones, trigger point injection, and crutch walking; and 1 (4.17%) wanted to learn arthrocentesis, clavicle immobilization, dislocation reduction, ganglion cyst removal, sling application, and splinting/taping (Table 4).

Table 4

Frequency and Percentage Distribution Response to Musculoskeletal Procedures

Items	Formal NP Education		On-the-job Training		Special Classes after NP Certification		I need to learn this procedure for my practice	
	N	%	N	%	N	%	N	%
Bone Marrow Biopsy	1	4.17	5	20.83	0	0.00	0	0.00
X-ray Interpretation/ Bones	6	25.00	6	25.00	3	12.50	2	8.33
Arthrocentesis	0	0.00	2	8.33	0	0.00	1	4.17
Clavicle Immobilization	2	8.33	10	41.67	0	0.00	1	4.17
Crutch Walking	3	12.50	11	45.83	1	4.17	2	8.33
Dislocation Reduction	2	8.33	7	29.17	0	0.00	1	4.17
Ganglion Cyst	0	0.00	1	4.17	0	0.00	1	4.17
Intra-Articular/Bursa Corticosteroid Injection	0	0.00	2	8.33	0	0.00	0	0.00
Sling Application	2	8.33	14	58.33	1	4.17	1	4.17
Splinting & Taping	2	8.33	11	45.83	2	8.33	1	4.17
Trigger Point Injection	0	0.00	6	25.00	0	0.00	2	8.33

Head Eyes Ears Nose & Throat (HEENT) Procedures

Many of the PNPs obtained procedural training on HEENT procedures through formal NP education. For example, 7 PNPs (29.17%) learned corneal abrasion; 6 (25%) learned eye irrigation; 5 (20.83%) learned epistaxis control; 4 (16.67%) learned tympanometry, eyelid eversion, eye trauma stabilization, and eye-foreign body removal; 3 (12.5%) learned tooth avulsion/fixation and ear irrigation; and 2 (8.33%) learned ear/nose-foreign body removal, audiometry, and eyebrow laceration repair through formal NP education.

The majority of procedures performed by the PNPs were obtained through on-the-job training. For example, 12 PNPs (50%) learned tympanometry; 11 (45.83%) learned epistaxis control and eye irrigation; 10 (41.67%) learned ear/nose-foreign body removal, eyelid eversion, and eye-foreign body removal; 9 (37.5%) learned audiometry and corneal abrasion examination; 8 (33.33%) learned eye trauma stabilization; 5 (20.83%) learned lip laceration repair; 4 (16.67%) learned ear irrigation, ear piercing, tooth avulsion/fixation, and eyebrow laceration repair; and 3 (12.5%) learned auricular hematoma evacuation, frenotomy, and tongue laceration repair on the job.

A small number of PNPs learned procedures through special classes after NP certification. For example, 1 PNP (4.17%) learned tongue, eyebrow, and lip laceration repair through special classes after NP certification.

Some of the PNPs indicated their need to learn ambulatory care procedures. For example, 2 PNPs (8.33%) wanted to learn tooth avulsion/fixation, auricular hematoma evacuation, ear/nose-foreign body removal, eye-foreign body removal, and

eye trauma stabilization; and 1 (4.17%) wanted to learn audiometry, tympanometry, lip and tongue laceration repair, eyelid eversion, corneal abrasion examination, eye irrigation, eyebrow laceration repair, epistaxis control (Table 5).

Cardiovascular Procedures

In the area of cardiovascular procedures, training for many of the procedures performed by PNPs was obtained through formal NP education. For example, 5 PNPs (20.83%) learned ECG interpretation; 3 (12.5%) learned ECG lead placement; and 2 (8.33%) learned Holter monitor and venipuncture through formal NP education.

The majority of procedures performed by PNPs was learned through on-the-job training. For example, 18 PNPs (75%) learned venipuncture; 10 (41.67%) learned ECG interpretation; 9 (37.5%) learned ECG lead placement; 5 (20.83%) learned doppler technique; 4 (16.67%) learned arterial puncture and Holter monitor; 3 (12.5%) learned unna's boot application on-the-job.

Some of the PNPs obtained procedural training through special classes after NP certification. For example, 5 PNPs (20.83%) learned ECG interpretation; and 1 (4.17%) learned Holter monitor through special classes after NP certification.

None of the PNPs in the sample indicated their need to learn cardiovascular procedures in work settings (Table 6).

Gastrointestinal Procedures

In the area of gastrointestinal procedures, a small number of PNPs obtained training through formal NP education. For example, 4 PNPs (16.67%) learned x-ray

Table 5

Frequency and Percentage Distribution Response to HEENT Procedures

Items	Formal NP Education		On-the-job Training		Special Classes after NP Certification		I need to learn this procedure for my practice	
	N	%	N	%	N	%	N	%
Audiometry	2	8.33	9	37.50	0	0.00	1	4.17
Tympanometry	4	16.67	12	50.00	0	0.00	1	4.17
Eyelid Eversion	4	16.67	10	41.67	0	0.00	1	4.17
Corneal Abrasion Examination	7	29.17	9	37.50	0	0.00	1	4.17
Eye-Foreign Body Removal	4	16.67	10	41.67	0	0.00	2	8.33
Eye Irrigation	6	25.00	11	45.83	0	0.00	1	4.17
Eye Trauma Stabilization	4	16.67	8	33.33	0	0.00	2	8.33
Eyebrow Laceration Repair	2	8.33	4	16.67	1	4.17	1	4.17
Auricular Hematoma Excision	0	0.00	3	12.50	0	0.00	2	8.33
Ear Irrigation	3	12.50	5	20.83	0	0.00	0	0.00
Ear Piercing	0	0.00	4	16.67	0	0.00	0	0.00
Ear & Nose-Foreign Body Removal	2	8.33	10	41.67	0	0.00	2	8.33
Epistaxis Control	5	20.83	11	45.83	0	0.00	1	4.17
Frenotomy	0	0.00	3	12.50	0	0.00	0	0.00
Lip Laceration Repair	0	0.00	5	20.83	1	4.17	1	4.17
Tongue Laceration Repair	0	0.00	3	12.50	1	4.17	1	4.17
Tooth Avulsion/ Fixation	3	12.50	4	16.67	0	0.00	2	8.33

interpretation-abdomen; 2 (8.33%) learned inguinal hernia reduction; and 1 (4.17%) learned anoscopy and abdominal paracentesis through formal NP education.

The majority of procedures performed by the PNPs were learned through on-the-job training. For example, 9 PNPs (37.5%) learned gastric lavage; 8 (33.33%) learned x-ray interpretation-abdomen; 7 (29.17%) learned inguinal hernia reduction; 3 (12.5%) learned PEG tube reinsertion and anoscopy; and 1 (4.17%) learned flexible

Table 6

Frequency and Percentage Distribution Response to Cardiovascular Procedures

Items	Formal NP Education		On-the-job Training		Special Classes after NP Certification		I need to learn this procedure for my practice	
	N	%	N	%	N	%	N	%
Doppler Technique	0	0.00	5	20.83	0	0.00	0	0.00
ECG Interpretation	5	20.83	10	41.67	2	8.33	0	0.00
ECG Lead Placement	3	12.50	9	37.50	0	0.00	0	0.00
Holter Monitor	2	8.33	3	12.50	1	4.17	0	0.00
Arterial Puncture	0	0.00	4	16.67	0	0.00	0	0.00
Venipuncture	2	8.33	18	75.00	0	0.00	0	0.00
Unna's Boot Application	0	0.00	3	12.50	0	0.00	0	0.00

sigmoidoscopy and abdominal paracentesis on the job.

None of the PNPs in the sample indicated obtaining training for gastrointestinal procedures through the special classes after NP certification.

Some of the PNPs indicated their need to learn ambulatory care procedures in work settings. For example, 2 PNPs (8.33%) wanted to learn inguinal hernia reduction, and 1 (4.17%) wanted to learn x-ray interpretation-abdomen (Table 7).

Other Procedures

In the area of other procedures, PNPs listed procedures they performed that were not on the questionnaire. The results indicated they obtained training needed for a few procedures through formal NP education. For example, 1 PNP (4.17%) learned spinal tap and splinting/casting through formal NP education.

The majority of other procedures performed by PNPs were learned through on-

Table 7

Frequency and Percentage Distribution Response to Gastrointestinal Procedures

Items	Formal NP Education		On-the-job Training		Special Classes after NP Certification		I need to learn this procedure for my practice	
	N	%	N	%	N	%	N	%
Anoscopy	1	4.17	1	4.17	0	0.00	0	0.00
Flexible Sigmoidoscopy	0	0.00	1	4.17	0	0.00	0	0.00
X-ray Interpretation-Abdomen	4	16.67	8	33.33	0	0.00	1	4.17
Gastric Lavage	0	0.00	9	37.50	0	0.00	0	0.00
Inguinal Hernia Reduction	2	8.33	7	29.17	0	0.00	2	8.33
Abdominal Paracentesis	1	4.17	1	4.17	0	0.00	0	0.00
PEG Tube Reinsertion	0	0.00	3	12.50	0	0.00	0	0.00
Thrombosed Hemorrhoid Removal	0	0.00	0	0.00	0	0.00	0	0.00

the-job training. For example, 7 PNPs (29.17%) learned spinal tap, and 1 (4.17%) learned umbilical artery catheter (UAC), peripheral insertion central catheter (PICC) line, endotrachial tube (ET) intubation, drain removal, and subdural tap on-the-job.

One PNP (4.17%) learned splinting/casting procedures through special classes after NP certification (Table 8).

Results on Where PNPs Got Their Initial Procedural Training Regarding Ambulatory Care Procedures

There were 102 ambulatory care procedures in the questionnaire and 24 responses to the questionnaire. There were a total of 2,448 (102 x 24) ambulatory care procedure samples. The PNPs marked 792 procedures out of the 2,448 samples. For these 792, 62.12% (492 out of 792) were procedures performed by the PNPs who got their initial procedural training through on-the-job training and 22.47% (178 out of

Table 8

Frequency and Percentage Distribution Response to Other Ambulatory Care Procedures Which Were not Listed in the Questionnaire

Items	Formal NP Education		On-the-job Training		Special classes after NP Certification		I need to learn this procedure for my practice	
	N	%	N	%	N	%	N	%
Spinal Tap	1	4.17	7	29.17	0	0.00	0	0.00
UAC	0	0.00	1	4.17	0	0.00	0	0.00
PICC Line	0	0.00	1	4.17	0	0.00	0	0.00
ET Intubation	0	0.00	1	4.17	0	0.00	0	0.00
Drain Removal	0	0.00	1	4.17	0	0.00	0	0.00
Splinting/Casting	1	4.17	0	0.00	1	4.17	0	0.00
Subdural Tap	0	0.00	1	4.17	0	0.00	0	0.00

792) were procedures performed by the PNPs who learned the procedures through formal NP education. Those indicating they needed to learn these procedures for their practice accounted for 9.72% (77 out of 792). Only 5.68% (45 out of 792) samples were procedures performed by the PNPs who had their procedural training through special classes after NP certification (Figure 4).

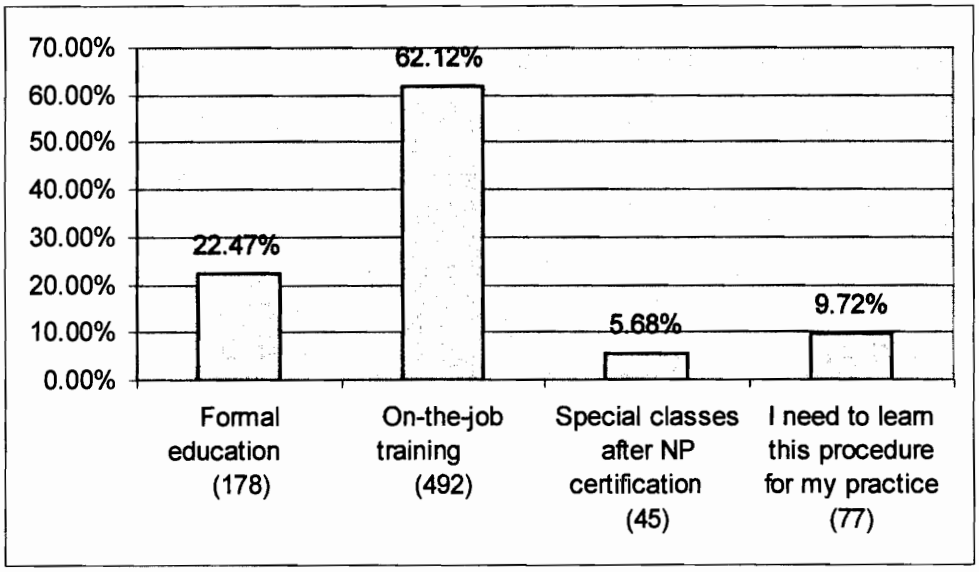


Figure 4. Frequency and Percentage Distribution Response to the PNP Initial Procedural Training in Ambulatory Care Procedures

CHAPTER V

CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

Conclusions

The dual purpose of this study was to examine what procedures PNPs perform in ambulatory care settings, as well as to discover where PNPs obtained their initial procedural training. An anonymous self-report questionnaire was filled out by a convenience sample of 24 PNPs from the Utah Chapter of the National Association of Pediatric Nurse Associates and Practitioners who attended the fourth Annual Pediatric Pharmacology Conference in October, 2000.

The results of this study indicated that all 24 PNPs performed many ambulatory care procedures in their work settings. The majority of ambulatory care procedures (492 out of 792) were obtained by PNPs from on-the-job training. A smaller portion of ambulatory care procedures (178 out of 792) were through formal education. Even fewer of ambulatory care procedures (45 out of 792) were obtained by PNPs from special classes after NP certification. Some 77 out of 792 ambulatory care procedures need to be learned in the PNPs work settings.

The results of this study indicated the vital need for reevaluating the current curriculum in order to prepare students to gain competency during their education for

future practice and for the fulfillment of the educational purpose. Based on the theoretical framework, the concept of nonlinear system theory fits the health care system due to its highly complex and changeable nature. Therefore, a small change on one level of organization produces large effects at the same or different levels (Dershin, 1999). By understanding this difference, the NP can deliver efficient and effective direct health care to patients, while controlling spiraling costs. High quality care is strongly linked to a good knowledge base as well as competency in practicing ambulatory care procedures.

The findings are consistent with the Shuler Nurse Practitioner Model which also supported the concept that the NP professional role required mastery of nursing, as well as medical skills such as diagnosing and treating acute and chronic illness (Shuler & Davis, 1993). As part of the primary health care provider team, the role of the NP has many features. In order to provide high quality and direct health care to patients, the NP needs a broad knowledge base including performing ambulatory care procedures.

Lastly, when adding a new course on ambulatory care procedures, the Construction Model can be used and adapted for curriculum design (Fullerton & Pickwell, 1991). The construction Model would provide a guideline and concepts in formulating a new course.

The challenges of educational programs now and in the future are to establish and maintain high quality in advanced practice educational programs and practice competency (Allen, 1998). To participate in shaping the changes occurring in the current health-care delivery system, the nursing profession and advanced practice

nursing educators must present a strong, visionary, and collaborative voice concerning quality educational programs. Learning ambulatory care procedures serves this purpose in the development of the role of primary care providers by empowering them with knowledge, skills, and abilities to serve the population.

Implications for Nursing

This study contributed additional insight into the role of the NP. As part of the primary health care provider team, the role of the nurse practitioner has many features. As a clinician, the nurse practitioner is responsible for providing direct health care to patients. Traditional nursing skills are insufficient for providing direct health care, based on current NP roles as related to demands on market trends.

The role of the NP can expand greatly with many ambulatory care procedures being performed by the NP. Currently many of them must obtain the initial procedural training through on-the-job training, while others indicated they still see a need to learn more ambulatory care procedures. This evidence is a basis for indicating areas where the nursing practice must grow as nursing develops as a profession and expands its practice opportunities.

As NPs are able to perform more ambulatory care procedures, they will be able to provide accountability for high quality direct health care to patients and become more marketable. The ability to perform more procedures as part of the expanding NP role will make the NP a cost-effective member of the health care team.

Recommendations for Future Research

The following research is recommended: (a) include a larger population and include other states within the United States; (b) look at other types of NPs and what procedures that they are performing; (c) explore creating a legal status for the teaching of ambulatory care procedures on Nurse Practice Act; (d) determine the attitude of faculties toward adding an ambulatory care procedures course in NP programs; (e) replicate this study to see if these types of procedures are performed within different states.

Ambulatory Care Procedures Need to be Included in the PNP Program as Suggested by the Results

Ambulatory care procedures greater or equal to 25% are suggested to be included in the PNP program. In the genitourinary and breast procedures area pap smear, STD Screening and gram stain/wet mount procedures are suggested to be taught in the PNP program.

In the dermatologic procedures area Wood's light examination, incision/draining abscesses, nail removal, puncture wound care, ring removal, staple insertion/removal, steri strip application, suturing, tick removal, bites-insects management, burns-debridement, and wart removal should be included.

In the respiratory procedures area aerosol administration, peak flow meter, and x-ray interpretation-chest should be included.

In the musculoskeletal procedures area x-ray interpretation-bones, clavicle immobilization, crutch walking, dislocation reduction, sling application,

splinting/taping, and trigger point injection should be included.

In the HEENT procedures area audiometry, tympanometry, eyelid eversion, corneal abrasion examination, eye-foreign body removal, eye irrigation, eye trauma stabilization, ear/nose-foreign body removal, and epistaxis control should be included.

In the cardiovascular procedures area ECG interpretation, ECG lead placement, and venipuncture should be included.

In the gastrointestinal procedures area include: x-ray interpretation-abdomen, gastric lavage, and inguinal hernia reduction etc.

In other ambulatory care procedures area, only spinal tap is suggested.

APPENDIX A

AMBULATORY CARE PROCEDURES PERFORMED BY THE NURSE PRACTITIONER

Ambulatory Care Procedures Performed by the Nurse Practitioner. This list is not all inclusive and it continues to grow (Rossetto & Fair, 1998).

Intubation

Bone marrow aspirate and biopsy

Lumbar puncture

Breast aspiration

Vaginal examination

Papanicolaou smear

Cervical colposcopy

Suturing

Splinting

Removing corneal foreign bodies

Packing nose-epistaxis

Casting/suturing/stapling

Splinting soft tissue joints

Incision, drainage, and packing simple abscess

Giving nerve block

Using a silt lamp

Relocating simple joint dislocation (patellar, shoulder,finger)

Aspiration and injecting joints

Inserting chest tube

Vasectomy

Sclerotherapy

APPENDIX B

QUESTIONNAIRE WITH CONSENT FORM

By completing this questionnaire, you gave consent for answer to be used in the study.

For each question, please mark all that apply.

I have been a PNP for:

____Less than 1 year
____1-5 years
____6-10 years
____11-15 years
____16-20 years
____over 20years

I practice or have practiced in the following practice setting(s):

____Dr. Office
____Indian Health
____Health Dept.
____Migrant Health
____Urgent Care/ER
____Clinic, type of clinic:
____Inner city
____Urban
____Rural
____Frontier
____Other (please specify):
_____

States I have practiced as a NP include: (list all that apply) _____

Please indicate which procedures you have performed, where you received your initial education to perform the procedure, and if your practice would benefit from the ability to perform the procedure.

I can perform (Check all that apply)	**I learned to perform the procedure in:** Formal NP Educ.	On-the-job Training	Special Classes after NP Certification	**I need to learn this procedure for my practice**
Genitourinary & Breast Procedures				
[]Breast Biopsy	[]	[]	[]	[]
[]Endometrial Biopsy	[]	[]	[]	[]
[]Pap Smear	[]	[]	[]	[]
[]Gram Stain/Wet Mount	[]	[]	[]	[]
[]Bartholin Cyst Abscess	[]	[]	[]	[]
[]Cervical Lesions - Cryotherapy	[]	[]	[]	[]
[]Colposcopy	[]	[]	[]	[]
[]Endocervical Curretage	[]	[]	[]	[]
[]Cervical Biopsy	[]	[]	[]	[]
[]Condyloma Removal	[]	[]	[]	[]
[]Diaphragm Fitting, Insert & Remove	[]	[]	[]	[]
[]IUD Insert & Remove	[]	[]	[]	[]
[]Norplant Insertion	[]	[]	[]	[]
[]Norplant Removal	[]	[]	[]	[]
[]Paracerv. Nerve Block	[]	[]	[]	[]
[]Pessary Insertion	[]	[]	[]	[]
[]Vasectomy	[]	[]	[]	[]
[]Circumcision	[]	[]	[]	[]
[]STD Screening	[]	[]	[]	[]
Dermatologic Procedures				
[]Punch Biopsy	[]	[]	[]	[]
[]Skin Biopsy	[]	[]	[]	[]
[]Wood's Light Exam	[]	[]	[]	[]
[]Incision & Draining Abscesses	[]	[]	[]	[]

[]Digital Nerve Block	[]	[]	[]	[]
[]Fishhook Removal	[]	[]	[]	[]
[]Nail Removal	[]	[]	[]	[]
[]Puncture Wound Care	[]	[]	[]	[]
[]Ring Removal	[]	[]	[]	[]
[]Sebaceous Cyst Removal	[]	[]	[]	[]
Skin Lesion Removal				
[] Cautery	[]	[]	[]	[]
[] Cryosurgery	[]	[]	[]	[]
Skin Lesion Removal				
[] Keloids	[]	[]	[]	[]
[] Moles	[]	[]	[]	[]
[] Corns	[]	[]	[]	[]
[] Calluses	[]	[]	[]	[]
[]Skin Tag Removal	[]	[]	[]	[]
[]Soft Tissue Aspiration	[]	[]	[]	[]
[]Staple Insert/Removal	[]	[]	[]	[]
[]Steri Strip Application	[]	[]	[]	[]
[]Subungual Hematoma	[]	[]	[]	[]
[]Suturing	[]	[]	[]	[]
[]Tick Removal	[]	[]	[]	[]
[]Topical Hemostatic Agent Application	[]	[]	[]	[]
[]Bites - Insects	[]	[]	[]	[]
[]Burns-Debridement	[]	[]	[]	[]
[]Wart Removal	[]	[]	[]	[]

Respiratory Procedures

[]Aerosol Administration	[]	[]	[]	[]
[]Peak Flow Meter	[]	[]	[]	[]
[]X-ray Interp. - Chest	[]	[]	[]	[]
[]Chest Tube Placement	[]	[]	[]	[]
[]Flail Chest Stabilization	[]	[]	[]	[]
[]Stab Wd. Stabilization	[]	[]	[]	[]

Musculoskeletal Procedures

[]Bone Marrow Biopsy	[]	[]	[]	[]
[]X-ray Interp. - Bones	[]	[]	[]	[]
[]Arthrocentesis	[]	[]	[]	[]
[]Clavicle Immobilization	[]	[]	[]	[]
[]Crutch Walking	[]	[]	[]	[]
[]Dislocation Reduction	[]	[]	[]	[]
[]Ganglion Cyst	[]	[]	[]	[]
[]Intra-Articular &Bursa Corticosteroid Injection	[]	[]	[]	[]
[]Sling Application	[]	[]	[]	[]
[]Splinting & Taping	[]	[]	[]	[]
[]Trigger Point Injection	[]	[]	[]	[]

HEENT Procedures

[]Audiometry	[]	[]	[]	[]
[]Tympanometry	[]	[]	[]	[]
[]Eyelid Eversion	[]	[]	[]	[]
[]Corneal Abrasion	[]	[]	[]	[]
[]Eye- For. Body Remov.	[]	[]	[]	[]

[]Eye Irrigation	[]	[]	[]	[]
[]EyeTrauma Stabilization	[]	[]	[]	[]
[]Eyebrow Lacer. Repair	[]	[]	[]	[]
[]Auricular Hematoma	[]	[]	[]	[]
[]Ear Irrigation	[]	[]	[]	[]
[]Ear Piercing	[]	[]	[]	[]
[]Ear & Nose - Foreign Body Removal	[]	[]	[]	[]
[]Epistaxis Control	[]	[]	[]	[]
[]Frenotomy	[]	[]	[]	[]
[]Lip Laceration Repair	[]	[]	[]	[]
[]Tongue Lacer. Repair	[]	[]	[]	[]
[]Tooth Avulsion/Fx	[]	[]	[]	[]

Cardiovascular Procedures

[]Doppler Technique	[]	[]	[]	[]
[]ECG Interpretation	[]	[]	[]	[]
[]ECG Lead Placement	[]	[]	[]	[]
[]Holter Monitor	[]	[]	[]	[]
[]Arterial Puncture	[]	[]	[]	[]
[]Venipuncture	[]	[]	[]	[]
[]Unna's Boot Application	[]	[]	[]	[]

Gastrointestinal Procedures

[]Anoscopy	[]	[]	[]	[]
[]Flexible Sigmoidoscopy	[]	[]	[]	[]
[]X-ray Interp.-Abdom.	[]	[]	[]	[]
[]Gastric Lavage	[]	[]	[]	[]
[]Inguinal Hernia Reduct.	[]	[]	[]	[]
[]Abdominal Paracentesis	[]	[]	[]	[]
[]PEG Tube Reinsertion	[]	[]	[]	[]
[]Thrombosed Hemorrhoid Removal	[]	[]	[]	[]

Other Procedures I can perform

[]Spinal Tap	[]	[]	[]	[]
[]UAC	[]	[]	[]	[]
[]PICC Line	[]	[]	[]	[]
[]ET Intubation	[]	[]	[]	[]
[]Drain Removal	[]	[]	[]	[]
[]Splinting/Casting	[]	[]	[]	[]
[]Sub Dural Tap	[]	[]	[]	[]

Please return to:

Margaret R. Colyar, DSN, APRN, C-FNP
Univ. of Utah, College of Nursing
10S 2000E Front
Salt Lake City, UT 84112
Fax: 1-801-581-4642

REFERENCES

Allen, J. D. (1998). Striving for quality in advanced practice nursing education. Advance Practice Nursing Quality, 4 (3), 6-13.

American Association of Colleges of Nursing. (1996). The essentials of master's education for advanced practice nursing. Washington, DC: Author.

Babich, D., & Crollick, J. S. (1998). Pediatric dermatologic surgery for the primary care pediatrician. Pediatric Clinic of North America, 45(6), 1437-1453.

Baralden, P. (1997). Continuous improvement in health professions education. Quality Connection, 6(2), 1-3.

Bellack, J. P., Graber, D. R., O'Neil, E. H., Musham, C., & Lancaster, C. (1999). Curriculum trends in nurse practitioner programs: Current and ideal. Journal of Professional Nursing, 15(1), 15-27.

Brower, H. T., Tappen, R. M., & Weber, M. T. (1988). Missing links in nurse practitioner education. Nursing & Health Care, 9(1), 33-36.

Colyar, M.R. (1999). [Research on Ambulatory Care Procedure]. Unpublished raw data.

Colyar, M.R., & Ehrhardt, C.R. (1999). Ambulatory care procedures for the nurse practitioner. Philadephia: F. A. Davis Company.

Cooper, R.A., Laud, P., & Dietrich, C.L. (1998). Current and projected workforce of nonphysician clinicians. Journal of American Medical Association, 280(9), 788-794.

Dearmun, A. K., & Gordon, K. (1999). The nurse practitioner in children's ambulatory care. Pediatric Nursing, 11(1), 18-21.

Delametter, G. L. (1999). Advanced practice nursing and the role of the pediatric critical care nurse practitioner. Critical Care Nursing Quarterly, 21(4), 16-21.

Dershin, H. (1999). Nonlinear systems theory in medical care management. Physician Executive, 25(3), 8-13.

Fitzgerald, S. M., & Wood, S. H. (1997). Advanced practice nursing back to the future. JOGNN, 101-107.

Fullerton, J. T., & Pickwell, S. M. (1991). The curriculum blueprint: An application to nurse practitioner education. Journal of the American Academy of Nurse Practitioners, 3(2), 64-68.

Griffith, H. M., & Robinson, K. R. (1993). Current procedural terminology coded services provided by nurse specialists. Image, 25(3), 178-186.

Griffith, H., Thomas, N., & Griffith, L. (1991). MDs bill for these routine nursing tasks. American Journal of Nursing, 91, 22-27.

Kowlowitz, V., Slatt, L. M., Kollisch, D. O., & Strayhorn, G. (1996). Monitoring students' clinical experiences during a third-year family medicine clerkship. Academic Medicine, 71(4), 387-389.

Miller, R., & Leno, T. (1991). Advances in pediatric emergency department procedures. Emergency Medicine Clinics of North America, 9(3), 639-654.

The National Certification Board of Pediatric Nurse Practitioners and Nurses. PNP Program Review Manual, 1999.

The National Orgnization of Nurse Practitioner Faculties. (1995). Advance Nursing Practice: Curriculum Guildelines and Program Standards for Nurse Practitioner Education. Washington, DC: Author.

Nurse Practitioner Educational Programs. (1999). Clinician Reviews, 9(12), 93-108.

Pearson, L. J. (2000). Annual legislative update: How each state stands on legislative issues affecting advanced nursing practice. The Nurse Practitioner, 25(1),16-28.

Polit, D. F., & Hungler, B. P. (1995). Nursing research: principles and methods. (4th ed.). Philadelphia, PA: Lippincott.

Powers, L. R., & Draeger, S. K. (1992). Using workshops to teach residents primary care procedures. Academic Medicine, 67(11), 743-745.

Rossetto, C. L., & Fair, J. (1998). Assessing competencies for medical procedures as advanced practice Nurse. Journal of Pediatric Health Care, 12(2),102-104.

Shay, L. E., Goldstein, J. I., Matthews, D., Trail, L. L., & Edmunds, M. W. (1996). Guidelines for developing a nurse practitioner practice. Nurse Practitioner, 21(1), 72-81.

Shugars, D.A., O'Neil, E. H., & Bader, J. D. (Eds.), (1991). Healthy America: Practitioners for 2005, an agenda for action for U.S. health professional schools. Durham, NC: The Pew Health Professions Commission, Pew Charitable Trust Foundation.

Shuler, P. A., & Davis, J. E. (1993). The Shuler nurse practitioner practice model: A theoretical framework for nurse practitioner clinicians, educators, and researchers, part I. Journal of the American Academy of Nurse Practitioners, 5(1), 11-18.

Sierpina, V. S., & Volk, R. J. (1998). Teaching outpatient procedures: Most common settings, evaluation methods, and training barriers in family practice residencies. Family Medicine, 30(6), 421-423.

Tissier, T., & Rink, E. (1996). Evaluation of minor surgery courses for general practitioners. Medical Educational, 30, 333-338.

White, K. R., & Begun, J. W. (1998). Nursing entrepreneurship in an era of chaos and complexity. Nursing Administration Quarterly, 22(2),40-47.

Youngkin, E. Q., & Davis, M. S. (1998). Women health-a primary care clinical guide (2nd ed.). Stamford, CT: Appleton & Lange.