

THE DEVELOPMENT OF A BASIC KNOWLEDGE
ASSESSMENT TOOL FOR POSTANESTHESIA
PHASE I NURSES

By

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Submitted to the Faculty of the
Graduate College of the
Oklahoma State University
in partial fulfillment of
the requirements for
the Degree of
DOCTOR OF EDUCATION
July, 1998

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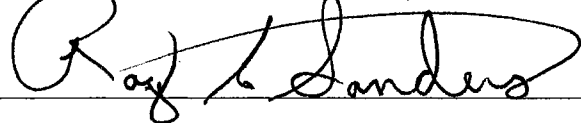
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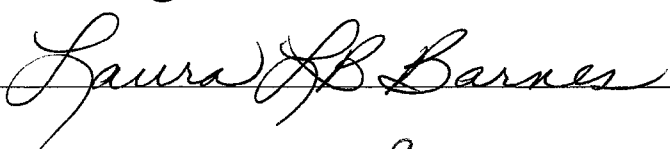
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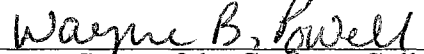


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ACKNOWLEDGEMENTS

I wish to express my sincere appreciation to my major advisor, Dr. Robert Nolan for his supervision, constructive guidance, encouragement and patience during this study. My sincere appreciation extends to my other committee members Dr. William Venable, Dr. Ray Sanders, and Dr. Laura Barnes whose input; guidance and encouragement during the time of this study were invaluable.

Moreover, I would like to express my sincere gratitude to Dr. Patti Muller Smith, an extremely supportive boss and friend, for her support, guidance, motivation, enthusiasm and approval of “unexpected days off”, during this time consuming effort.

I also wish to thank Dr. Dale Johnson for his help in completing the computer analysis of the study data. Without him, I would still not be finished.

Next, I thank my husband Chuck and my son Harry who have understood and supported my desire to complete this study. I thank them for all of the quiet time and help with the household chores they have provided during the past six years. I thank my mother and father and my eldest son Doug for their encouragement and faith in my ability “to finish”.

Finally, I wish to express my appreciation for the hours of time and expertise provided by the nurse panel and each of the Practice Committee Members of ASPAN, nurse managers and nurses who participated in this study.

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CHAPTER I

INTRODUCTION

The manager in postanesthesia care is faced with the reality that basic nursing education and general nursing practice does not provide the specific body of knowledge and experiences required to prepare nurses to deliver competent nursing care for patients in Postanesthesia Phase I. Although postanesthesia care areas share commonalities with other critical care practice areas, many of the skills required to deliver care to anesthetized patients are unique and require additional knowledge and expertise. Undergraduate education prepares nurse generalists who, upon entering the work force, find themselves in the role of novices in any chosen specialty (McGregor, 1991). Even experienced critical care nurses will require a period of intensive orientation to provide safe care in specialized practice areas like postanesthesia care.

Entry level competency issues are further compounded by the chaotic climate in health care fueled by a constantly changing reimbursement system, leaving less money for basic staff orientation and continuing education to meet constant changes in scientific knowledge and technology. Some experts in health care estimate that entry-level practice deficits will increase in proportion to the increase in information (McGregor, 1990; Naisbitt, 1982). At the predicted rate (13% annually) the five year education half-life for nurses in general practice could very well shrink to 6 months by the year 2000.

In a study reported by the American Association of Critical Care Nurses (AACN), it is estimated that the gap between the demand for experienced critical care nursing staff and the supply is increasing with the rapidly evolving complexity of health care needs associated with technology and an aging population. In 1988, with 223,000 critical care nurses practicing, there were 36,000 vacancies for critical care nurses across the nation. It is estimated that the need for critical care nurses in all health care settings will increase to 400,000 by the year 2000 (Armstrong, Lentz, Mitchell, Nield, & Simpson, 1991).

Dunn (1992) found that 87% of hospitals facing the severe shortage of critical care nurses and the explosion of critically ill patients are being forced to hire nurses without previous critical care experience to cover their critical care units. In addition, 58% of hospitals hired graduate nurses without any previous nursing experience to work in critical care areas. The practice of floating or assigning nurses to units in which they are unfamiliar is an accepted practice that still occurs. Nurses are expected to float among highly specialized critical care units such as cardiac care, postanesthesia care, telemetry and intensive care where patient populations are vastly different.

Many hospitals have not been leaders in planning and developing their human resources. This is changing due to the influence of external and internal environmental trends forcing hospital and nursing management to be proactive in this area. For example, professional nursing organizations like American Society of Perianesthesia Nurses (ASPAN, 1998) have established minimum standards of practice in specialty areas and have defined the acuity and classification of patients included in that specialty. For nurses in Postanesthesia Phase I settings the standards require advanced nursing knowledge and skills to provide care required for the transition from a totally

anesthetized state to one requiring less acute intervention. ASPAN classifies Postanesthesia Phase I as a critical care nursing practice area.

ASPAN has identified a specific body of core knowledge, defined clinical practice and established standards and competency statements to assure quality patient care. In 1996, the Standards and Guidelines Committee and Nursing Practice Council of ASPAN met to develop basic entry-level checklists to serve as a guideline for nurses entering this area of practice. These competency checklists provided the framework for the later development of the competency based orientation credentialing program recommended by ASPAN for all nurses delivering care to patients in any practice setting where anesthesia is used (ASPAN, 1998). A parallel criterion-referenced testing instrument needed to be developed to accompany the competency based orientation and credentialing program.

Statement of the Problem

The problem is that basic nursing education and nursing practice in non-perianesthesia areas do not prepare nurses to meet the competence requirements specific to the modern postanesthesia care unit. To assure quality patient care with the least amount of cost, in the shortest orientation time, managers need an instrument that will accurately assess individual competencies and provide a competency based, unit specific orientation program that is goal directed and learner focused. Review of the literature revealed that tools that measure essential knowledge and skill required for entry level and continuing nursing practice as defined by ASPAN in the Postanesthesia Phase I area do not exist.

Purpose and Objectives

The purpose of this study was to develop a valid and reliable measurement tool for use in the Postanesthesia Phase I practice setting. This criterion-referenced instrument was developed to determine mastery of the core knowledge base and the standards and guidelines established by ASPAN required for safe, high quality, patient care in the immediate postoperative setting. This tool was tested in the clinical setting to:

- (1) determine if the instrument is reliable and valid and can be used to evaluate the specific knowledge base required for Postanesthesia Phase I;
- (2) compare the knowledge base of nurses entering the Postanesthesia Phase I and experienced Phase I nurses with the knowledge base established as essential by ASPAN;
- (3) identify specific areas of essential core knowledge mastery and deficiencies; and
- (4) determine the extent that general nursing education and practice including previous critical care experience has prepared nurses to enter postanesthesia nursing practice.

Components were identified and included which measured clinical knowledge; critical thinking and problem solving skills as well as clinical expertise identified by the ASPAN clinical competency checklists (1998). Questions and case examples were developed to assess mastery of all core content knowledge and clinical practice rationale. Assessment data gained from this instrument when combined with ASPAN practice standards and unit specific patient care requirements will provide insight and guidance to orientees, experienced nurses, postanesthesia clinical managers and educators for development of effective, cost efficient orientation and continuing inservice education programs.

Scope of the Study

The scope of this study was limited to developing and establishing the validity and reliability of a criterion-referenced instrument for the Postanesthesia Phase I area. This instrument measures and compares the knowledge base of both entry level and experienced Phase I nurses with the core knowledge base established by ASPAN (1998) as essential for competent practice. This tool was developed utilizing a modified Delphi Method (Zemke & Kramlinger, 1989) and was used in acute care hospitals of all sizes. Both convenience and purposive cluster samples of nurses working in Postanesthesia Phase I units in acute care hospitals providing surgery, perianesthesia, critical care, general medical-surgical and maternal-child services ranging from 25 to 1,000 beds were included in this study.

The results of this study provided information about the validity and reliability of the instrument and comparisons were made to determine performance differences between entry level and experienced Phase I nurses. Scores on the test and basic nursing education preparation as a dependent variable were also assessed and compared for significance.

Assumptions

1. The underlying assumption of this study is that specific core knowledge exists that differentiates competencies in Postanesthesia Phase I from critical care and general nursing practice.
2. It is assumed that items on a pencil and paper test are a valid and reliable way to determine mastery of basic core content areas (theoretical knowledge base) specific to Postanesthesia Phase I practice.

3. It is assumed that individuals differ, that these differences are important, and that we need to measure these differences and use this information in decision making.

4. It is assumed that measurement and evaluation are essential to sound education and clinical decision making.

Limitations

A major concern in nursing is the practical application of knowledge to the clinical setting. The utilization of a criterion-referenced testing instrument to measure and predict the critical thinking and decision making skills as well as work performance of individual nurses without observing them as they experience the actual stress of the clinical setting is not the same as testing individuals experiencing the actual conditions.

Definition of Terms

For the purpose of this study and to assure common understanding, significant terms are defined.

Postanesthesia Phase I – An acute patient care setting in which anesthetized patients receive care during the first few hours immediately following surgery (ASPAN Standards, 1998).

Perianesthesia Care – Includes all settings where patients requiring anesthesia during surgery or invasive procedures receive care including Postanesthesia Phase I (ASPAN Standards, 1998).

Postanesthesia Care Core Curriculum – The core nursing knowledge base established by ASPAN, that guides the nurses care of anesthetized patients immediately following surgery (Litwack, 1995).

Competent – Demonstrating the ability to perform job requirements within the established criteria (Benner, Tanner, & Chelsa, 1992).

Competence – The state or quality of being capable or competent; skilled; having required ability (Benner et al., 1992).

Novice – A registered nurse entering the specialty of Postanesthesia Phase I without previous experience in the area (Benner et al., 1992).

Expert – A registered nurse demonstrating a high degree of skill and knowledge in the Postanesthesia Phase I area (Benner et al., 1992).

Orientation – An adjustment or adaptation to a new environment or set of ideas (Morris, 1976).

Basic knowledge – Basic knowledge in Postanesthesia Phase I nursing is a body of knowledge beyond that required as a registered nurse, which is used by the postanesthesia nurse to perform safe patient care (Mamaril, 1993).

Significance of the Study

The literature revealed numerous approaches to assist staff in Postanesthesia Phase I and other patient care settings to establish and maintain basic and advanced theoretical concepts and clinical skills sets required for competent practice. However, none of these approaches included the use of a valid and reliable measurement tool, based on the core knowledge identified by ASPAN, to determine the education and training requirements of novice and experienced nurses working in this setting. Many health care dollars are spent providing orientation, inservice and continuing education designed to assist nurses in Postanesthesia Phase I care settings to provide competent nursing care for

their patients. The development of a valid and reliable instrument that measures each nurse's level of knowledge of core content essential in this setting would focus clinical orientation, save time and financial resources and speed entry into independent practice.

Summary

Clinical competence of every nurse is an administrative and professional expectation. Orientation and annual skills renewal or credentialing are issues that constantly remain at the forefront of personnel management in all perianesthesia settings. Regulatory requirements mandated by the majority of accrediting agencies including the Joint Commission on Accreditation of Healthcare Organizations (JCAHO, 1998) and the Accreditation Association for Ambulatory Health Care (AAAHC, 1997), require that organizations provide some means to assess staff competence during initial job training and on a periodic basis (ASPAN, 1998). Development of a valid and reliable criterion-referenced instrument would allow managers and nurses to focus on specific content areas and develop the knowledge and skills needed instead of repeating content that is already known or is not needed. According to the literature, survey type instruments have been used to determine the basic and continuing education needs of nurses practicing in the Postanesthesia Phase I area. However, none have used an instrument focused specifically on core content identified by ASPAN as essential for competent practice. A valid and reliable criterion referenced instrument needed to be developed.

Chapter II will present a review of the literature relating to the study. This will include:

1. Concepts defining or describing competence and competency related to nursing practice.
2. The nurse manager's professional, legal and ethical responsibility to provide competent nurses in Postanesthesia Phase I care settings.
3. The basic core knowledge base identified as essential to Postanesthesia Phase I nursing practice.
4. Current methods and strategies used to develop orientation and inservice education programs for postanesthesia nurses.
5. Individual professional accountability for competent practice.
6. ASPAN standards required for Postanesthesia Phase I practice.
7. Licensing and regulatory accreditation requirements for competence.
8. Utilization of preceptors to implement skill validation programs.
9. Developing the criterion-referenced instrument.

Chapter III describes the methodology used in the study to develop a valid and reliable criterion referenced instrument. A step by step outline of the procedures utilized to establish the validity and reliability of the instrument will be presented in this chapter. Chapter IV will present the results of the methods utilized to determine validity and reliability of the instrument. Chapter V provides the summary, conclusions, and recommendations of this study.

CHAPTER II

REVIEW OF THE LITERATURE

Assurance that each patient will receive safe and optimal nursing care by a competent nursing staff is a professional, legal and ethical obligation. Since hospitals are legally liable for the actions of their employees in the work setting, one of the major accountability areas for the nurse manager is to provide nursing staff capable of delivering high quality care. Recent nursing literature emphasizes that constant change in health care practice and technology will require orientation for all nurses entering a new practice area (Gurvis & Grey, 1995). How much orientation and practice must be determined utilizing valid assessment methodology?

But first, what is competence? What characteristics distinguish a competent postanesthesia care nurse from nurses in other clinical practice areas? The need to define, study and validate the concept of competence within a theoretical framework is basic to this research project. An extensive review of nursing literature reveals that a variety of methods and strategies have been and are being tried in major health care settings to define and operationalize competency and to develop comprehensive, cost effective education programs. Although, some of the recognized nursing experts in this area have stated that competence should be measured by criterion-referenced instruments developed for specific knowledge content areas, only one has developed a valid and reliable instrument (Summers, 1992; Toth, 1992).

Competence and Competency

According to Toth (1984), competence is mastery of the basic knowledge in a specific practice setting. In the critical care setting, basic knowledge is that specific body of knowledge that is identified and used by the nurse to deliver safe nursing care to the acutely ill patient.

del Bueno (1980) reviewed and described the anatomy of competency-based education as a framework comprised of six characteristics which include:

1. emphasis on outcome or achievement of performance expectations;
2. use of self-directed learning activities;
3. flexibility and time allowed for achievement outcomes;
4. use of teacher as facilitator and resource;
5. assessment of previous knowledge and learning; and,
6. assessment of learning styles.

Alspach (1984) expanded these six characteristics so that competency based education:

1. has a curriculum based on the real world;
2. is directed at a specific role and setting;
3. is derived through expert practitioners;
4. is founded on clearly articulated competency statements;
5. includes publicized expectations of the learners;
6. has criterion referenced evaluation methods; and,
7. has provisions for remediation and recycling.

In their review of literature, including both Alspach and del Bueno's work, Gurvis and Grey (1995) found an abundance of theory relating to competence and competency. They found little information in nursing literature relating to the development and construction of a well-written competency validation tool or a meaningful competency exam.

Feeny and Benson-Landau (1987) describe competency as a validation process that requires the nurse to demonstrate the ability and skill needed to provide care for critically ill patients in a testing situation and then apply what they know appropriately in the clinical setting. In this case competence is more than just knowing what to do in a given clinical situation, it is knowing when and how to do it as well.

Benner and Wrubel (1982) were pioneers in the study of competence in nursing practice. In this early work, they explored the difference between "knowing that" (theoretical knowledge) and "knowing how" (practical knowledge). They claimed that the nurse's clinical knowledge was relevant to the extent it made a difference in patient care and clinical outcomes. The clinical knowledge required to develop competent nurses to care for patients in a specific patient care setting was gained from experience in actual clinical practice rooted in systematic study. They concluded that "knowing that" and "knowing how" were equally important in knowledge development and that knowledge embedded in clinical practice makes a critical difference in the development of competent nurse practitioners.

In another early work, Benner (1982) examined the issue of competency based testing. She concluded that competency based testing was possible and maybe even desirable for nursing students and novice practitioners when there was a clearly

appropriate action with clearly demonstrated behavioral skills associated with an uncomplicated patient care situation. Since the more experienced practitioners assess patient situations holistically and not as a series of technical skills to be performed, they may skip over the obvious and identify the more urgent aspects of the patient situation. Therefore utilization of competency based testing tools for advanced nurse practitioners would serve as reduction agents, reducing nursing care to the capability of the measurement tools.

In 1984, Benner published one of her most well known and widely cited and utilized theories to date relating to the development of expertise in clinical nursing practice. Based on the Dreyfus Model of Skill Acquisition, this work focuses on the development of competence as primarily a clinical practice process beginning with the novice and advancing in complexity through four additional phases until the nurse reaches the expert level. Benner utilizes exemplars or significant patient case studies or clinical events to identify or describe the behaviors that the nurse is required to demonstrate as each level of clinical competency is reached and mastered. The five phases or levels are novice, advanced beginner, competent, proficient, and expert. According to Benner, level three or the level of competence requires two to three years of clinical experience. It was suggested that preceptors should be assigned to each novice nurse to assist them in setting priorities based on the salient aspects identified in each patient care situation by the more experienced nurse, so that the novice could perform patient care without harm to the patient until they gained competency.

Benner et al. (1992) further refined her earlier theory of competence. In this later work, true competence is characterized by cognitive knowledge as demonstrated by

critical behaviors appropriate to the patient care setting that make a difference in patient care outcomes. Although at first glance this looks like a paradigm shift for Benner, it is actually a practical application of cognitive knowledge to the clinical practice setting. With this extension of the Dreyfus Model into nursing practice, nursing is provided with the strongest theory base for the development of clinical competence found today. In this work, Benner states that “in learning a practice, changes in four general aspects of performance are reflected: 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 in which it is viewed as a compilation of equally relevant bits to an increasingly complex whole in which certain parts are relevant; and 4) passage from an attached observer, standing outside the situation, to one of a position of involvement, fully engaged in the situation,” (pp. 13–14). However, all of Benner’s work relies on observation and interpretation of demonstrated nursing behaviors in clinical settings by many different nurse observers without validating that the nurses know or are applying core knowledge essential to the specific practice setting.

Dunn (1992) described competency as specific to role, setting and level of practice. “Competency is the ability to perform the task with desirable outcomes under the varied circumstances of the world. Competency is specific and nontransferable, ... That is, the nurse who demonstrates competency in a specific field, setting, role and level of practice may not demonstrate competency if any one of these components is altered,” (pp.72 & 74). In the competency development program suggested by Dunn, basic knowledge essential to the critical care setting cannot be and is not standardized but is

situation dependent. However, she believes that theory should be taught and tested in the classroom setting with immediate clinical application for reinforcement.

Oermann (1991) describes competency as: 1) a well developed knowledge base; 2) skill in the technical aspects of care; 3) ability to make judgements in a rapidly changing environment; and, 4) a value system that promotes ethical decision making in daily practice. Again, the mechanism(s) to assess competency is/are missing.

Legal Implications

Helm (1987) presented a legal perspective on what is described as competency based evaluation. Legal standards have established the theory of 'respondeat superior' which for the employer, the hospital and nurse manager, means that they can literally be held responsible for the acts of others; specifically those that they employ and supervise. According to Helm, this means the nurse manager must make staff assignments based on each subordinate's skills, training and established job performance requirements. This forces the nurse manager to continuously assess each employee's level of clinical knowledge and skill throughout their employment. Helm goes on to explain that the hospital must provide educational opportunities for each practitioner to update and maintain required clinical skills thorough a variety of methods. Suggestions included clinical skill demonstrations, pencil and paper tests, and actual observation of performance in the clinical setting.

Professional and Accreditation Requirements

As discussed previously, both professional practice organizations and

accreditation organizations specifically address and set minimal standards or specify the framework that assures the delivery of optimal patient care by competent nurses. Nurses involved in postanesthesia care like nurses in all critical care professional nursing practice areas, have the responsibility to identify and regulate practice to protect consumers by setting minimal practice standards and developing position statements regulating and directing specialty practice. The standards for nursing care established by ASPAN in 1984 and revised in 1992, 1995 and 1998 are reinforced by criteria developed to assure safe, competent practice.

In a professional position statement issued by ASPAN (1995), both external (legal) and internal (professional) boundaries for competency in nursing are described. External boundaries include legislation and regulation, societal demands for expedient, quality care, reimbursement or the economic climate, and health care delivery trends.

Internal boundaries include professional practice statements, e.g., American Nurses Association Guidelines for Practice and Code for Nurses. Other internal boundaries that guide practice and identify areas of nursing competence include risk management, quality assurance monitoring activities, job descriptions, and institutional and departmental policies and procedures. In addition, ASPAN Position Statements and Core Curriculum define practice boundaries unique to Postanesthesia Phase I nursing care (ASPAN, 1998).

ASPAN (1998) recommends that the written plan for orientation and ongoing continuing education developed by this professional organization be utilized to assure and improve competency. This program is designed specifically to develop and reinforce required clinical competencies included in the scope of the postanesthesia

practice area. Competent nursing practice in Postanesthesia Phase I involves the assessment, diagnosis, treatment, and evaluation of physical or psychological problems that may result from the intrusion of anesthetic agents and associated medical and surgical techniques.

To be effective this unique knowledge base must be combined with the basic principles of medical-surgical and maternal-child nursing as well as the specialized body of basic knowledge specific to critical care nursing practice. Education needs will be determined by patient populations unique to each institution. However, several additional courses are required such as pediatric and adult cardiopulmonary resuscitation and recognition and treatment of complications and side effects related to anesthesia and surgery. For most Phase I areas, content specific for dysrhythmia recognition and treatment, hemodynamic monitoring, critical care core curriculum and postanesthesia core curriculum will also be requirements for competent practice (Alspach, 1991; ASPAN, 1998; Brown, 1997; Drain, 1994; Litwack, 1995).

Competent nursing practice requires an extensive orientation period reinforced by continuing education programs designed to identify, develop, reinforce, and maintain that body of knowledge specific to the Postanesthesia Phase I area. Phase I nurses must be capable of providing comprehensive nursing care for patients making the transition from a totally anesthetized state to one requiring less acute intervention to be considered competent (ASPAN Standards, 1998).

Nurses and nursing are governed and regulated by State Boards for Nursing Practice. State Board Practice Acts are actually legal boundaries used to provide the basis for interpretation of safe nursing practice. State Boards of Nursing issue licenses as well

as develop the rules and regulations governing nursing practice that safeguard and insure public safety (Oklahoma State Board of Nursing Registration and Education, 1998).

Health care accreditation agencies like the Joint Commission on Accreditation of Hospitals (JCAHO, 1998) have developed standards that require each hospital surveyed to design an orientation and continuing education program that prepares the nursing staff to adequately care for the specific patient population served by that institution. To meet staff education (SE) standards 1.1, 2.1, 3.1, and 4.1, a well-devised hospital and unit based orientation program must be in place. Clinical managers are responsible for ascertaining that a competency based assessment program with specific skills checklists has been established and is being utilized on their units to orient and educate each employee appropriately. Competency requirements are based on job descriptions and specific patient care needs. Once established, JCAHO seeks evidence that competence is maintained through a combination of continuous assessments. This includes regular review and testing of the essential knowledge and skills required to deliver safe nursing care and planned education activities specific to meet each individual nurse's needs (Kallenbach & Lantz, 1993).

Methods and Strategies Utilized to Establish Competence

Review of the literature reveals that nurse managers, educators, researchers and professional nursing organizations have developed, implemented, compared and reported many methods and strategies to assure competent nursing practice in a variety of critical care settings. However, only a few randomized, controlled studies have been reported and

little if any deliberate attention has been given to the continued monitoring and assessment of nurses after their initial orientation period (Feeny, 1987).

Many of these studies have implications for the Postanesthesia Phase I area. Toth (1984) developed a Basic Knowledge Assessment Tool (BKAT) to test knowledge basic to critical care nursing. Content for this test was determined by a review of nursing literature, interviews with staff nurses and head nurses involved in critical care nursing practice and from input of critical care physicians. Validity of the BKAT was established through a nine-member panel of experts in critical care nursing practice and through research findings. The Cronbach Coefficient Alpha was used to measure reliability for BKAT with the alpha ranging from 0.856 to 0.864 for the total test. BKAT has been revised four times in the past 12 years to reflect changes in critical care practice and the alpha continues to remain at the first edition level.

Originally BKAT was designed to evaluate the knowledge of critical care nurses prior to and/or following their basic orientation to the critical care unit. Of the 100 nurses included in the original study, length of critical care experience was the best predictor of basic knowledge. Statistical differences at the $p = 0.001$ level were found between new graduates with one months experience in critical care when compared with those with six months experience and those with greater than five years experience (Toth, 1982).

In a second study reported by Toth (1982), a statistically significant difference was found between nurses who had passed the critical care nurse national certification exam (CCRN) and those who were not certified ($t(24) = 2.73, p < 0.01$). The BKAT has been utilized to assess critical care curriculum in undergraduate nursing education programs, and to evaluate the effectiveness of unit based orientation and continuing

education programs in critical care settings. Scores on the BKAT have even been used as predictors for performance on the CCRN exams.

In 1991, Oerman utilized BKAT in a replication study to determine if there were statistically significant differences between 3 groups of student nurses involved in a focused critical care study. Experimental group A had 14 weeks of critical care lectures only. Experimental group B had both critical care lectures and daily clinical rotation in the critical care setting. The control group was assigned to a non-critical care rotation and did not receive the critical care lectures or clinical rotations. Students with any previous contact with the critical care area were eliminated from all three of the groups. Although both of the treatment groups increased their scores from pretest to posttest, t test showed no significant differences between the two groups. ANOVA and the Newman-Keuls Test were significant at the $p = 0.05$ level for the experimental groups as compared to the control group. A second step in this study compared the scores of the control or generic group with scores on the BKAT of nurses in general nursing practice. No significant differences were found between these groups. Results of this replication study would seem to substantiate previous studies that BKAT is a valid and reliable instrument to measure basic knowledge required for critical care nursing practice.

McGregor (1990) developed a unit-specific education program for both Surgical and Intravenous Therapy Departments in a large teaching hospital. This program was based on the work of Benner (1984) and utilized the competency levels for nursing practice established in this early work. In the first phase of McGregor's program, specific criteria were developed to classify each member of the nursing staff into one of the competency levels described by Benner. Nurses with less than one year of experience

were categorized at the novice level. Nurses with one year of experience demonstrating a weakness in setting priorities were classified as advanced beginners. The third level or level of competence was assigned to nurses with several years of experience, who demonstrated the ability to distinguish normal from abnormal findings and suggested appropriate interventions. Nurses capable of appropriately relating pathophysiology to the patient's disease process and had at least three to five years of experience were classified as proficient. The category of expert was reserved for nurses with five or more years of experience who anticipated and prevented problems instead of recognizing and treating them after they occurred.

In step two, based on clinical observations, nurse managers assigned each staff member to the appropriate category and scheduled them for specific education classes designed to increase their level of competence. In the next phase, specific competencies were identified and developed from the knowledge base related to the practice area. Competencies were developed related to recognition and treatment of postoperative complications, anesthesia, wound care and preoperative education. The final step in this program was to develop continuing education modules and clinical skills challenges to meet knowledge deficit needs at each of the five levels. Although this program has important clinical implications, it has not been implemented.

In another work, McGregor (1990) formulated a framework for developing staff competency in a specialty area. This framework included: 1) development of unit specific clinical practice standards; 2) a skills list based on practice standards; 3) measurement tools to assess learner needs; 4) a format for planning unit-specific education programs; 5) formalized evaluation tools; 6) a specific remedial study and retesting program;

7) plans for the maintenance of clinical competency; and 8) a method for evaluating the competency framework. This program appears comprehensive in scope, but again has not been implemented.

del Bueno (1990) developed an algorithm depicting four phases in competency performance development. Phase one is the acquisition of knowledge and skill. Phase two is the development of the ability to use skills and knowledge. Phase three is transfer of ability to apply skills and knowledge to clinical practice. Phase four is continuous application of skills and knowledge in clinical practice. This model is heavily dependent on the clinical instructor for implementation, evaluation and successful outcomes. In this model like so many others cited in current literature, the education program is established and competence measured by the program objectives, not on an identified basic body of knowledge specific to the practice area.

Feeney and Benson-Landau (1987) developed a three phase competency evaluation for all nurses practicing in the critical care area following the initial orientation period. According to these authors developing a competency based method of evaluation requires: 1) identifying the competency areas to be evaluated; 2) developing standards or criteria for evaluation of each competency area; and 3) conducting competency tests. The authors have developed a practical approach to identify and correct clinical practice problems. Incident reports, random review of clinical practice and documentation, complaints from peers and physicians and the results of performance evaluations are all utilized to determine the need for further instruction and skills training. Clinical performance demonstrations are required with specific critical behaviors that must be performed in specific order before competency is established. Pencil and paper

tests are combined with clinical skill demonstrations when both cognitive and psychomotor components are critical. The clinical manager and clinical instructor determine passing scores for the theoretical components. Pass/fail grading is utilized for psychomotor testing.

In a rather unique approach to evaluating clinical competence, Beestra (1992) developed a competency checklist that serves a dual purpose. It is used for both performance appraisal and to direct staff education. The process is very subjective, the appraiser or clinical rater checks off the statements that best describe the nurse's level of performance of a specific competency. A competency profile and development section is included with each appraisal. The evaluator can select appropriate education interventions and establish learning goals with the nurse specific to the competency area identified as an education needs area. No mention of the methods utilized to develop the competency profile or development section were provided or if controls were in place to limit evaluator subjectivity.

Utilizing experienced nurses as mentors or preceptors to assist with professional development of novice nurses has gained wide acceptance. Checklists outlining the clinical skills and patient care experiences required to perfect technical skills and hone professional nursing intervention and delegation skills can be readily developed and implemented by preceptors utilizing core curriculum relevant to the specialty practice area (Fields, 1991; Carroll, 1992; Kallenbach & Lantz, 1993; Verbey et al., 1992).

Development of a Criterion-Referenced Instrument

An important aspect of any research study is the selection or development of an instrument for which a “fit” exists between what is being studied and the subjects. Instruments are defined as methods designed to examine a specific variable (Summers, 1993). The purpose of instrumentation is to systematically collect data according to specific rules to insure that the researcher is accurately measuring the variable of interest. Experts agree it is best to select a preexisting instrument that is valid and reliable to measure the variable of interest. However, if there are none available, then an instrument will need to be developed. In general, the manner in which instruments are constructed depends on whether the intended use is for criterion or norm-referenced measurement. (McGuiffre, 1995; Mehrens & Lehmann, 1991; Summers, 1992; & Summers, 1993;). According to Summers (1992) the weakest link in nursing research is the lack of valid and reliable instruments for measurement. Developing a new instrument consists of a series of steps progressing from a focused review of the literature, writing the questions, validation by experts, pilot testing and data analysis to establish validity and reliability (Summers, 1993).

Criterion-Referenced Instruments

Criterion-referenced measurement (CRM) is defined as a method to ascertain an individual’s status with respect to a well-defined behavioral domain (Mehrens, 1991). When CRM is used the emphasis is placed on comparing how well an individual’s performance meets given objectives or criterion. CRM’s are utilized to determine mastery of specified education content and to establish minimum competency. Mastery requires

the tester to set a cut-off score (Mehrens, 1991; Summers, 1992). In the nursing profession, cut scores are used to determine performance for nationally recognized CRM examinations. Two of the most familiar CRM tests known to postanesthesia nurses are the National Council Licensure Examination (NCLEX) for registered nurse licensure and the American Board of Perianesthesia Nursing Certification (ABPANC) for validating that Postanesthesia Phase I nurses have demonstrated specialized knowledge and competencies for specialty practice. Cut scores have been established for both of these tests to determine pass/fail as a measure of competence to practice professional and specialty nursing (Summers, 1992; ASPAN Standards, 1998). However, it would be premature to determine cut scores before establishing validity and reliability of the instrument.

Norm-Referenced Instruments

Norm-referenced measurement (NRM) is defined as a method to measure an individual's performance on an exam in relation to the performance of other examinees completing the test. The intent is clearly to compare an individual's score with the scores of other individuals. Norm-referenced tests are administered to large numbers of individuals to establish normative scores used for all later individual comparisons. In addition to the content tested, variables such as age, sex, race, educational preparation, geographic location, years of practice and many others, are utilized to establish norms (Mehrens, 1991; Summers, 1992). Although there are many disagreements among experts regarding the distinctions between norm and criterion-referenced tests, because there is some "soft norm-referencing" used to compare the scores of participants taking criterion-referenced tests, most now admit that "domain-referenced" is the most accurate

term to describe criterion-referenced testing. This de-emphasizes the focus on establishing standardized scores utilized in norm-referenced tests (Mehrens, 1991).

Developing the Test Blueprint

Once the concept has been defined, a test blueprint is developed to establish the content domain(s) to be tested. Item content should include all areas included or described as essential core knowledge required to demonstrate proficiency or mastery in that field or specialty. To develop an instrument for Postanesthesia Phase I practice, the blue print would include all of the content areas established by ASPAN (1998) for orientation and credentialing previously discussed in this section. The test blueprint allows the researcher to determine the number of questions needed under the various categories and assures that all aspects of the concept will be included in item development (Mehrens, 1991; Summers, 1992).

Instrument Item Writing

Instrument items should be written in objective format for clarity and ease of evaluation. Although there are several acceptable item format styles, true-false, matching, multiple choice and context dependent questions are frequently used in the development of criterion-referenced tests for nursing (Summers, 1993). All items should be written as simple, declarative sentences using clear unambiguous words. Items should be constructed as briefly as possible while still conveying the meaning. Distracters should be plausible; however, the key must be clearly the only right answer or the best choice (Summers, 1993; Mehrens, 1991).

Establishing Instrument Validity

There are three types of validity that have importance in instrument development. These are content, criterion and construct validity. A test serves as a sample of the domain if the items are drawn from a clearly defined universe. Content validity is related to how adequately the content of and the responses to the test sample the domain about which the inferences are made. Content validity is particularly important for achievement tests. To establish the domain, a reasonable expectation is that the test constructor specify with considerable detail the subject-matter topics and behaviors the test is designed to sample. (Mehrens, 1991). A common technique is to ask experts, who are knowledgeable about the concepts within their chosen field, to review the instrument to establish content validity. Content validity is sometimes calculated by percent agreement of the items among the experts with a minimum of 80% agreement considered to be acceptable. The instrument items are scaled from 1 to 5 in order of importance for testing the content areas chosen for the study (Summers, 1993).

Criterion validity includes both predictive and concurrent validity. Predictive validity is used to predict future performance and concurrent validity is used to test present or current performance. For example, if nurses score high on a competency exam, it could be predicted that they would also perform well in the clinical setting. The Pearson correlation coefficient can be used to compare scores between tests and predictions can be made regarding success on future tests.

Validating an instrument in terms of construct validity is one of the most difficult and challenging tasks that a researcher faces. What is the instrument really measuring? Construct validity, is used to determine the extent to which the items on an instrument

measure the concept of interest. Unlike criterion-related validity, construct validity is more concerned with the underlying attribute than with the scores that the instrument produces. The scores are of interest only insofar as they constitute a valid basis for inferring the degree to which a subject possesses the desired characteristic(s). The significance of construct validity is its linkage with theory and practice. ANOVA, factor analysis and correlation analyses comparing the subscores between content areas are some of the methods used to establish construct validity (Kerlinger, 1993; Mehrens, 1991; Polit & Hungler, 1978; & Summers, 1993).

The Delphi Technique

The Delphi technique was initially developed by the Rand Corporation in the mid 50's for national defense planning, but has been used extensively in the health-care arena since the 1970's for a multiplicity of reasons including curriculum planning (Synowicz & Synowicz, 1990). This technique allows individuals to focus their opinions on an unknown situation for the purpose of reaching consensus. This technique was named after the Oracle of Delphi who was considered to be the most powerful Greek prophet-forecaster. The method involves making contact with the respondents through a set of mailed questionnaires or measurement instruments to gain feedback from a round of questions. A Delphi panel can number from a few to many. Feedback from each round is used to refine the instrument for additional rounds as needed. Feedback is reported to all panelists without identifying the panelists to each other (Synowicz & Synowicz, 1990, & Zemke & Kramlinger, 1989). In selecting "the experts," it is important that the panel be heterogeneous and composed of seasoned veterans. Heterogeneity is important because

without a multitude of viewpoints represented there is danger of arriving at a false consensus. Seasoned experts are essential because making sense out of the future of health care requires considerable scope and experience (Synowiez & Synowiez, 1990).

Establishing Instrument Reliability

Scores on measurement instruments reflect not only the characteristic the instrument is intended to measure, but also a variety of other variables some constant and some transitory. Reliability is a theoretical concept that explains how much of the variation in the observed score is due to transitory influences or random error (Brink & Wood, 1978). Reliability encompasses accuracy and consistency. Observed scores reported in research studies always contain two components: the true score and an error component. The goal of the researcher is to minimize the error component by controlling unwanted variables (Spatz, 1993).

Concepts associated with reliability include stability, internal consistency, and equivalency. Stability is the degree to which the same results are obtained from a subject on repeated testing when the underlying phenomenon does not change. The test and retest method is commonly used to establish instrument reliability and a correlation coefficient is calculated for the 2 sets of data. A correlation coefficient assesses the degree of relationship between two sets of data. If the sets are perfectly correlated the correlation coefficient will be 1. Most correlation's obtained from pair wise comparisons obtained to establish instrument reliability range from 0 – 1. Although commonly used for other correlation studies, negative correlations are not utilized to establish reliability for measurement instruments. Moderate to high correlation between items is desired to

demonstrate instrument reliability. Many experts agree that .80 or above is considered a very high correlation for most instruments (Bartz, 1988; Mehrens, 1991; & Spatz, 1993).

Equivalence is very similar to stability. What is being tested is not the same instrument at different times but often is different instruments at the same time or different observers using the same instrument at the same time. Interrater reliability is necessary when more than one observer is assessing a phenomena (Guiffre, 1995).

The last and probably most important type of reliability for this study is internal consistency. Methods involving internal consistency are based on a single administration of the test. In the split-half method, the test is divided into two parts and a correlation coefficient is calculated between the two portions of the test. This correlation coefficient describes internal consistency or the degree to which the different parts of the test are in agreement. The odd-even method is commonly used and the Pearson correlation coefficient calculated for the two halves of the test. Because reliability is directly related to the length of the test, it is necessary to correct for the effect of the length of the test by using the Spearman-Brown prophecy formula. Other methods are available to analyze internal consistency, many which require electronic scoring by computer. The Kuder-Richardson formula 20, Kuder-Richardson formula 21 and Cronbach's coefficient alpha are all commonly used techniques. As with all of the others, the higher the correlation coefficient, or coefficient alpha, the higher the reliability (Bartz, 1988; Guiffre, 1995; Mehrens, 1991). The Kuder-Richardson formula 20 assumes all items to be of equal difficulty and calculates an average correlation from all possible split-half reliability estimates (Mehrens, 1991).

Summary

Chapter II reviewed the literature related to the concept of competence in Postanesthesia Phase I and the methods and strategies currently in use to establish competence and competency. In addition, a brief but focused review of the literature related to the development of criterion-referenced measurement instruments and establishing validity and reliability of these instruments was also presented. The panel of experts or Delphi approach was noted as an accepted method to validate content validity and define the content domain to be included in the study. The absence of a validated instrument in the current studies and the need for such an instrument was noted.

CHAPTER III

METHODOLOGY

Introduction

The general purpose of this chapter is to describe the methodology used to develop and test a criterion-referenced, Basic Knowledge Assessment Tool, for the Postanesthesia Phase I nursing care area. This tool is designed to evaluate each nurse entering the postanesthesia practice setting to determine individual knowledge deficits and placement in a competency-based orientation and credentialing program. Utilized, as part of an individual learning needs assessment, this tool will direct each individual's orientation and continuing education plan to eliminate areas of knowledge deficiency and provide a method to evaluate the effectiveness of the competency-based orientation program developed by ASPAN. This tool is based on essential core knowledge specific to the Postanesthesia Phase I setting. Therefore it will be helpful in assisting nurse managers to plan and evaluate orientation and continuing education programs.

Design

Instrument Development

To accomplish the purpose of this study, an instrument was developed based on:
1) a review of current postanesthesia nursing literature; 2) core curriculum identified by

ASPAN as the knowledge base required for competent practice in Postanesthesia Phase I; and 3) the competency based orientation and credentialing program with accompanying clinical skills checklists developed by the Practice Council of ASPAN (1998) (See Appendix A.)

The instrument contains the number of items required to assure testing of all content areas. Items were developed to measure content included in the following areas of postanesthesia care nursing as outlined in ASPAN's Competency Based Orientation and Credentialing Program (1998): 1) airway management (25 questions); 2) circulation (42 questions); 3) neurological (16 questions); 4) anesthetic agents and adjuncts (35 questions); 5) conscious sedation (11 questions); 6) renal (5 questions); 7) patient comfort (9 questions); 8) thermoregulation (4 questions); 9) age specific competencies (11 questions); 10) education / standards (6 questions); 11) documentation / legal (4 questions); and 12) others (12 questions).

The instrument contains case examples, multiple choice and true-false questions that measure both the recall of basic information and the application of basic knowledge to common and more complex problems arising in postanesthesia practice. The original draft contained 180 questions based on a blueprint of the 12 content areas identified by ASPAN (1998) (See Appendix B - Field Version).

Selecting a Panel of Experts

A panel of experts in postanesthesia nursing was identified to evaluate the instrument and to determine the content validity of each item compared to the knowledge base as essential for clinical competence by ASPAN (1998). This panel of nurse experts

was identified by consultation with and recommendations from members of the Practice Council of ASPAN and by networking with nurse managers and nurses currently working in Postanesthesia Phase I care settings. The panel included one member from each of the following areas: 1) American Board of Peri-Anesthesia Nursing Certification (ABPANC); 2) Postanesthesia Phase I management; 3) Postanesthesia Phase I education; 4) Author and Editor of the Postanesthesia Core Curriculum; and 5) Psychometric Instrument Development.

Initial contact with each potential expert panel member was made by telephone describing the study, the requirements for participation and the time line required for written input. Once the panel members were confirmed, the instrument was mailed along with specific written instructions (Appendix C). Using the Delphi format, the panel ranked each item's importance based on a scale of 1 to 5. A rating of one indicated that the item content was inappropriate to measure basic core knowledge. A rating of two indicated that the item was appropriate, but not absolutely essential. A rating of three ranked the item content as appropriate and useful. A rank of four indicated item content was appropriate and essential and items ranked five were considered absolutely essential to measure basic core knowledge concepts. At the end of each question, an area was provided for any additional written comments that the panel member wished to include. The 180 item instrument represented a comprehensive evaluation of the entire basic knowledge domain required for Postanesthesia Phase I specialty practice based on the content areas defined in the Postanesthesia Core Curriculum (1995) and ASPAN's Competency Based Orientation and Credentialing Program (1998). In addition to

validating item content, the panel was asked to participate in pilot testing of the instrument. Two of the five expert panel member's hospitals participated in the pilot.

Review by Panel of Experts

All 180 items were reviewed, rated and returned with written comments by the required date. Items that received a collective mean rank score of three or higher indicating that the panel considered these items to be appropriate and useful in measuring core content for postanesthesia nursing practice were included in the instrument revised for pilot testing. Most of the items that were ranked with a mean score below 3 were excluded from the study. Mean scores for each item were calculated based on returns from four expert panel members. Written comments were reviewed and incorporated into the revised instrument as appropriate. Several items were deleted or rewritten based on panel input (Appendix D). The revised instrument contained 171 items. This included original items, revised items and new items developed to cover additional content suggested by the panel of experts.

Instrument Revision

In response to panel concerns regarding the length of the test becoming a deterrent to individual nurses participating in the study, the test was reduced in length utilizing the recommendations made by the panel member selected to provide input for psychometric instrument development (Appendix E). The original instrument was revised by selecting the questions and case studies with the highest rank scores from the original test and by developing new items considered essential by the expert panel and

rewriting items required to include all basic content areas. By revising items, adding new items and using the validated items from the original instrument as a test question pool, the final instrument (PACU Test B) contained 123 questions (See Appendix B – Version B and Appendix F).

In addition, the instrument was further organized by broad content areas to assist nurse managers and educators to better utilize this tool to determine education needs. Content areas included: 1) general knowledge that applies across all areas of postanesthesia nursing; 2) medications and anesthetic agents; 3) pediatrics; and 4) IV conscious sedation.

Piloting the Revised Instrument

Once reviewed, revised and modified, the instrument was piloted utilizing both convenience samples and purposive cluster samples. Since sample size was a concern, study sites were carefully selected to provide representation from each of the four regions of the United States recognized by ASPAN. The use of purposive cluster sampling was utilized as a control for small sample size and to control for extraneous variance. Since medical and nursing practice often varies from region to region within the United States (U.S.), purposive cluster samples were selected from all four ASPAN membership regions to control for this extraneous variance and make the study more generalizable. Convenience samples were selected by approaching members of the Oklahoma Society of Perianesthesia Nurses and asking for participation. These groups and a group from Texas represented ASPAN Region 2. The purposive cluster samples from states representing each of the other three regions, 1, 3 and 4 as recognized by ASPAN were

selected from the listing of State Perianesthesia Professional Nursing Organizations found in the Membership Directory of ASPAN. The nurse managers from the hospitals that were selected were contacted by telephone to request participation in the study. Hospitals from Arizona, Colorado and California represented Region 1. Hospitals from Alabama, Florida, Michigan, and Ohio represented Region 3. Massachusetts was selected to represent Region 4 (See Appendix G). Participation in the study by individual nurses working at each hospital included in the study was voluntary. The number of instruments sent to each site varied according to the potential number of participants the nurse manager specified during the initial contact.

A cover letter explaining how to complete the instrument was attached to each instrument and a time line was established for return (Appendixes H and I). Scan Tron sheets were included to record the answers. Additional instructions were added to the Scan Tron sheets to reinforce and clarify information provided in the participant letters (Appendix I). Scan Tron answer sheets were used to facilitate scoring and grading of the instrument during final analysis of the data. The Scan Tron program summarized the data and provided the percentage of participants selecting each distracter or the key for each item on the instrument to be utilized for item analysis.

A demographic sheet was developed and included for each participant to provide descriptive data for the study. Data included on the demographic sheet included: 1) size of hospital/facility; 2) classification of hospital/facility; 3) patient classifications receiving care; 4) daily Postanesthesia Phase I census; 5) number of operating rooms and recovery spaces and other general questions related to the health care facility; 6) years of nursing experience; 7) length of experience in Postanesthesia Phase I areas; 8) previous

areas of nursing experience; and 9) type of basic and advanced nursing education preparation (See Appendix J).

Analysis of Data

Both the Kuder-Richardson formula 20 and split-halves correlation with Spearman-Brown prophesy formula corrections were performed to determine reliability and internal consistency of the instrument. In addition, confirmation of construct validity was accomplished utilizing One Way ANOVA comparisons between groups. One Way ANOVA's were performed on the test scores to compare differences in test performance between nurses with less than one year's experience in Postanesthesia Phase I nursing (N = 23) and nurses with one to five years experience (N = 28), five to ten years experience (N = 25) and greater than 10 years experience (N = 38). It was expected that the scores of experienced nurses would be higher than the scores of novice nurses based on clinical experience in the Postanesthesia Phase I area. An additional One Way ANOVA was performed to determine if there were measurable differences in test performance comparing basic and advanced nursing education preparation. It was expected that there would be no significant differences between these groups since basic nursing education and clinical experience in other patient care settings do not include the core knowledge base required for practice in the Postanesthesia Phase I area. In addition, construct validity was analyzed by computing content area subscales and developing a correlation matrix to demonstrate the correlation between items and content areas.

CHAPTER IV

PRESENTATION OF FINDINGS

Introduction

The purpose of this study was to develop a valid and reliable criterion-referenced instrument that would determine individual mastery of the basic core content and competency requirements established by ASPAN as essential to provide safe, high quality patient care in Postanesthesia Phase I settings. The procedure described in Chapter III was followed to accomplish this goal. The results of the study as referenced to instrument returns, content validation, construct validity and instrument reliability are presented in this chapter. In addition, a summary of demographic data describing the sample population participating in the study (Appendix K), and two comparisons between groups to determine if there are differences related to length of clinical practice in the Postanesthesia Phase I area or to basic and advanced nursing education preparation are also included.

Pilot Test, Response and Instrument Revisions

Following the revisions made as suggested by the panel of experts, a total of 218 copies of the pilot version of the instrument "PACU Test B" were sent to 17 hospitals in 10 states representing the Regions designated by ASPAN. The number sent to each

institution ranged from two to 45 depending on the number of nurses working in each one. Of the 218 instruments mailed, 139 were returned. Of that number, 114 were complete and were included in the study. The remaining 25 instruments were excluded from data analysis because entire sections on the test were not completed or they were not returned before data analysis was performed. The 79 remaining instruments were not completed or returned.

Each of the 114 responses was scored and written comments noted for possible inclusion in instrument revision. Each test was divided in half using odd and even numbers and scores calculated for each half to prepare the pairs of scores required for a preliminary analysis of internal consistency utilizing the Pearson correlation coefficient formula with a hand calculated Spearman-Brown correction. The original Scan Tron answer sheets were prepared for a Scan Tron Computer program that analyzes individual items and reports the percentage of participants selecting both correct and incorrect responses for each item.

In addition, the data were transferred to General-Purpose NCS Trans-Optic answer sheets in preparation for computer analysis utilizing the SPSS computer package to calculate an Alpha Correlation Coefficient or Kuder-Richardson formula 20 to establish internal consistency or reliability. Construct validity was analyzed by comparing subscores from the 12 content areas and developing a correlation matrix. ANOVA and other post hoc tests were also scheduled to determine differences between groups. Final word changes and written revisions to the items were made and each item was examined for the percentage of correct and incorrect scores to determine item difficulty.

Demographic Summary

A demographic section was included to collect descriptive information about the facility in which the participant worked. In addition, data describing the participants such as length of time in nursing and postanesthesia practice as well as type of basic or advanced nursing education preparation was also requested. The summary of this data is included in Appendix K, but not included in this study.

Item Analysis

All 123 items were analyzed to determine item difficulty. Item difficulty or $p =$ the number of participants answering correctly divided by the total number of students tested. The higher the p value the easier the item. Since this instrument measures basic core knowledge, items with a low p value will be rewritten, revised or eliminated.

A summary of that data is found in Table I and Appendix L.

TABLE I
FREQUENCY DISTRIBUTION OF CORRECT AND INCORRECT RESPONSES

Item Difficulty (% Correct)	Frequency
90 - 100	38
80 - 89	30
70 - 79	23
60 - 69	10
50 - 59	8
40 - 49	5
30 - 39	2
20 - 29	6
10 - 19	1

Results of Internal Reliability Analysis

Analysis of the data using the Pearson correlation coefficient was performed utilizing the split-halves method described in Chapter III. Using the odd-even method to divide the test, there were 62 questions in Group X (odd numbers) and 61 questions in Group Y (even numbers). With 114 responses the Pearson correlation coefficient was $r = 0.710$. The correction coefficient was $r = 0.830$ using the Spearman-Brown prophesy correction formula to predict correlation coefficient r for a test size double the 61 and 62 questions in the split-half test. The mean score for group X was 79.184 and the standard deviation was 7.783. The mean score for Group Y was 76.904 and the standard deviation was 8.494. The total group mean for this instrument was 95.7982 with a standard deviation of 9.6589 and a range of 89.8261 to 98.5526. Difference between the range = 8.725.

The SSPS computer program was used to analyze the data to determine internal consistency or instrument reliability using 114 instruments and 123 items. For the Kuder-Richardson formula 20, $r = 0.8149$. A correlation r above .8 is considered significant to demonstrate internal reliability.

A correlation matrix table was developed utilizing a computation of scores on the subscales of each of the basic core knowledge sections to determine correlation between the content areas (Table II).

TABLE II
COMPUTATION OF CORRELATION SUBSCALES AND CORRELATION MATRIX

	Airway	Circulation	Neurological	Anesthesia/ Medication	Conscious Sedation	Renal	Comfort	Thermoregulation	Age Specific	Education /Standards	Legal	Other
Airway	1.0000	.3393	.2645	.2304	.1082	.2360	.2956	.1119	.1461	.2261	-.0535	.0858
Circulation	.3393	1.0000	.2548	.4584	.0558	.2133	.4810	.2172	.2350	.4364	.2355	.3074
Neurological	.2645	.2548	1.0000	.3165	.0622	.2189	.1831	.1956	.1251	.4158	.1605	.0928
Anesthesia/ Medication	.2304	.4584	.3165	1.0000	.2201	.1595	.3730	.3256	.3110	.3300	.1753	.2119
Conscious Sedation	.1082	.0558	.0622	.2201	1.0000	-.0217	.0390	.1405	.0608	.1374	-.0228	.0274
Renal	.2360	.2133	.2189	.1595	-.0217	1.0000	.1631	.2095	.2149	.1358	.1505	.1965
Patient Comfort	.2956	.4819	.1831	.3730	.0390	.1631	1.0000	.2781	.2980	.3462	.3047	.2325
Thermoregulation	.1119	.2172	.1956	.3256	.1405	.2095	.2781	1.0000	.2152	.2772	.2170	.0785
Age Specific Criteria	.1461	.2350	.1251	.3110	.0608	.2149	.2980	.2152	1.0000	.2808	.0193	.2290
Education/ Standards	.2261	.4364	.4158	.3300	.1374	.1358	.3462	.2772	.2808	1.0000	.2573	.2209
Legal/ Documentation	-.0535	.2355	.1605	.1753	-.0228	.1508	.3047	.2170	.0193	.2573	1.0000	.1581
Other	.0858	.3074	.0928	.2119	.0274	.1965	.2325	.0785	.2290	.2209	.1581	1.0000

One Way ANOVA was used to determine if there were any significant differences ($p = 0.05$) between groups of nurses practicing in the postanesthesia care area less than one year, one to five years, six to ten years and above ten years (Table III). Significant differences were found between the groups ($p = .0037$).

TABLE III
ANOVA OF DIFFERENCES BETWEEN GROUPS BASED ON LENGTH
OF PRACTICE IN POSTANESTHESIA PHASE I

Source	df	ss	ms	F	p
Between Groups	3	1213.1420	404.3807	4.7680	.0037*
Within Groups	110	9329.2177	84.8111		
Total	113	10542.3596			

To determine where the differences were between the groups, post hoc analysis was performed utilizing Tukey's Honestly Significant Difference (HSD) test. For this analysis, the difference between two means is significant at the .05 level if the difference between each of the group means compared are >6.5120 . As illustrated in Table IV, there was a significant difference in scores between Group 1 (less than one year postanesthesia care experience) as compared to Group 3 (six to ten years experience) and Group 4 (above ten years experience). There were no significant differences found between Group 1 and Group 2.

TABLE IV
 TUKEY'S HSD TO DETERMINE BETWEEN GROUPS
 DIFFERENCES—TABLE OF ORDERED MEANS

Group	Mean	<u>Group 1</u> 89.8261	<u>Group 2</u> 95.0800	<u>Group 3</u> 97.6071	<u>Group 4</u> 98.5526
1	89.8261		5.2539	7.781*	8.7256*
2	95.0800			2.5271	3.4726
3	97.6071				0.9455
4	98.5526				

A second One Way ANOVA was performed to determine if there were any significant differences at the $p = .05$ level for the variable of type of nursing education preparation of the participants. As reported in Table V there were no significant differences between any of the groups at the $p = .05$ level. Therefore, clinical experience not the type of nursing education preparation made the difference in overall performance on this instrument.

TABLE V
ONE WAY ANOVA TO DETERMINE DIFFERENCES BETWEEN GROUPS
BASED ON TYPE NURSING EDUCATION PREPARATION

Source	df	ss	ms	F	p
Between Groups	3	281.8756	93.9585	1.0341	.3805
Within Groups	109	9903.9828	90.8622		
Total	112	10185.8584			

Summary

This chapter presented the results of this study to develop and establish the validity and reliability of the Postanesthesia Phase I Basic Knowledge Assessment Tool. The process relating to finalizing the instrument, initiating the pilot, participant response, instrument revisions, item analysis, and statistical tests performed to establish internal consistency or reliability of the instrument were all addressed. In addition, differences were demonstrated between groups with varying lengths of clinical experience in the postanesthesia care area and the sets of content subscores were summed and a correlation matrix developed for strength of correlation between content sections.

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

The purpose of this study was to develop a valid and reliable measurement instrument to be used in the Postanesthesia Phase I setting. While there are many ways being utilized to assess and develop competence in nursing and the postanesthesia care setting, the most widely used methods identified in nursing literature, have been observation of clinical practice and the presentation of theoretical content without a focused education needs assessment. The lack of a valid and reliable instrument has affected education needs assessment, basic and continuing education planning and probably even patient care in Postanesthesia Phase I care. The availability of a valid and reliable instrument specific to the core knowledge base recommended by ASPAN (1998), and required by regulatory and accreditation agencies (JCAHO, 1998), is essential for safe nursing practice in the Postanesthesia Phase I setting. This instrument will help nurse managers, educators and individual nurses to meet the requirements for competence quickly and effectively by identifying and focusing on content areas that are needed rather than on material that is already known or not needed. The instrument developed in this study will address these issues and begin filling the gap.

Summary of Findings

The specific objectives of this study included the following: 1) to develop an instrument to evaluate knowledge required for competent practice in the postanesthesia care setting; 2) to evaluate and establish content validity for each of the items; and 3) to evaluate and establish internal consistency or reliability for the instrument. In addition, between groups differences were examined to determine if length of practice in Postanesthesia Phase I nursing and type of nursing education affected the level of performance on the instrument.

This study involved nurses in The Postanesthesia Phase I patient care setting. A panel of five nurse experts in the field of Postanesthesia Phase I nursing and 139 staff nurses representing 17 hospitals in 10 states participated in this study.

This study began with a thorough review and analysis of the literature for the purpose of identifying the information contained in the cognitive domain related to Postanesthesia Phase I nursing required for instrument development and to determine if a valid and reliable instrument had already been developed for this area. Three things became apparent from the review: 1) ASPAN (1995, 1998), the professional nursing specialty organization for the Postanesthesia Phase I area, has both established and published a required core curriculum and a competency-based orientation and credentialing program; 2) a valid and reliable instrument to assess mastery of the basic knowledge base established for postanesthesia nursing practice did not exist; and 3) most of the methods and strategies described in nursing literature to assess and validate education and clinical practice needs were mainly subjective in nature.

Utilizing the core knowledge base identified by ASPAN (1995, 1998), an instrument was developed following an item blueprint to assure that all areas of the cognitive educational domain were included. The original instrument contained 180 items. An expert panel of nurses established content validity. Each item was analyzed using a Likert scale and ranked from one to five based on content validity and relevance to the Postanesthesia Phase I care setting. The instrument was revised utilizing the rank scores for each item, and written comments. The revised instrument utilized for pilot (PACU Test – B) contained 123 items.

To field test the Postanesthesia Phase I Basic Knowledge Assessment instrument (PACU Test – B), it was mailed to the nurse managers of 218 nurses that had agreed to participate. Each participant received a copy of the instrument, answer sheets, demographic sheet, instructions and the date required for all materials to be returned. Follow-up phone calls were made to the nurse managers to remind them of the timelines. Although all the responses returned were scored by hand and feedback to individual nurses provided as promised by the researcher, only fully completed instruments, with all 123 questions completed, were included in the data analysis for the study.

The field test of the instrument produced 114 fully completed responses that met the requirement for inclusion in the study. Sample size was addressed earlier. The overall mean for the entire instrument was 95.792 with a standard deviation of 9.6589. Each item was analyzed for the percentage of correct and incorrect responses. Item difficulty (p) was very low for items 20, 26, 32, 33, 41, 45, 50, 53, 66, 106, 107, and 113. These items will be reassessed for revision or elimination.

Pearson correlation coefficient was performed with $r = 0.710$. With Spearman Brown prophecy formula correction $r = 0.830$ for a test double in size to the split-half method used to compute the Pearson r . In addition, the Kuder-Richardson formula 20 was calculated ($r = 0.8149$) utilizing computer analysis and the SSPS program. This reaches the level of significance of 0.8 identified in literature to establish internal reliability for measurement instruments (Summers, 1992).

In addition, two One Way ANOVA's were performed to determine if length of time in clinical practice or type of nursing education preparation made significant differences in performance on the instrument. As was expected there was a significant difference ($p = .05$) related to length of time in Phase I practice. Post hoc analysis utilizing Tukey's HSD demonstrated the differences in overall scores between groups with less than one year's experience in Postanesthesia Phase I nursing and the groups with six to ten years and over ten years experience. There were no differences between nurses with less than one year and one to five years of experience. Again as was expected, type of nursing education made no significant difference since basic nursing education does not prepare nurses to practice in specialty areas like Postanesthesia Phase I.

Analysis of the Correlation Matrix Table (Table II) demonstrated small to moderate correlation between the content areas at most of the convergence points. Correlations ranged from $-.0217$ to $.4810$. The higher correlations were seen when comparing categories in which a higher relationship would be expected like airway, circulation, anesthetic agents and patient comfort. These areas also contained greater numbers of items per category. As was expected small or negative correlations were most

often demonstrated between content areas with smaller numbers of items or that are theoretically not specifically related to the total test. For example the legal/documentation subsection is applicable to all areas of nursing and not specifically to Postanesthesia Phase I.

Conclusions

The following conclusions have been drawn from this study: 1) although pencil and paper tests are only one way of assessing competence, it is possible to develop an instrument that is both valid and reliable to be used as a single assessment tool to determine the basic orientation and continuing education needs of nurses in the postanesthesia setting; 2) the Postanesthesia Phase I Basic Knowledge Assessment Tool, after pilot and before final revisions, has an acceptable level of content validity and internal consistency to be utilized with confidence; 3) this instrument is the first to be developed from the core knowledge base established by ASPAN that has established validity and reliability; 4) within the practice requirements of each Postanesthesia Phase I area, this instrument can be utilized to accurately focus basic orientation and continuing education needs for competent practice; 5) this instrument has the capacity to discriminate significant differences between groups; 6) this instrument demonstrates correlation between content areas; and 7) this tool can be used in future nursing research with confidence.

Limitations associated with this study include: 1) the need to further refine and repeat this study adding the suggestions of study participants, revising or deleting weak questions and either deleting or increasing the number of items in the smaller more

weakly correlated subcategories; 2) the need to establish a passing or cut score; 3) the inability to utilize this instrument as a pre and posttest to assess mastery of the Competency Based Orientation and Credentialing Program developed by ASPAN (1998); 4) difficulty measuring or predicting clinical performance utilizing pencil and paper tests; 5) small sample size for the initial field testing of this instrument; 6) heavy reliance on the expert panel to establish item validity and clarity; 6) the need to constantly revise and revalidate the instrument to meet rapidly changing education and practice requirements in today's health care industry; and 7) the lack of control and standardizing of testing conditions. During the pilot, "PACU Test B" was administered by many different nurse managers under completely different environmental settings. The test was not timed. In addition, further analysis need to be done to determine which distracters were selected for incorrect responses and were these distracters selected by individuals that performed well or not as well on the instrument as an additional item analysis method.

In terms of the purpose of this study, these are significant outcomes and limitations. It is obvious that there is a need for this instrument based on a total response rate of 64% and numerous written comments made by the participants. With further refinement, the Postanesthesia Phase I Basic Knowledge Assessment Tool will provide valuable assistance for assessing individual learning needs and developing focused education experiences to eliminate knowledge deficits.

Recommendations for Further Research

However, additional research, beyond the focus of this study, needs to be done. “PACU Test B” needs to be revised based on the results of this study and retested utilizing a larger and different sample of Postanesthesia Phase I nurses under timed and controlled testing conditions to determine if this makes a significant difference. Toth (1984) did not find any significant differences ($p = .05$) between groups taking the BKAT during monitored or timed conditions.

The remaining items from the original item pool not used in this study need to be field tested to create a larger pool of validated questions for use in future instrument development. Additional items need to be written for the subcategories with small numbers to determine if category size was a significant factor in strength of correlation to the overall instrument.

A cut or passing score needs to be established for the nurse manager to utilize if desired. The overall mean score is often utilized as a cut score for many instruments. However, the nurse manager may wish to require the nurse to demonstrate additional evidence of competency in certain patient care situations, such as the recognition of ventricular fibrillation and appropriate immediate intervention, as a requirement for passing the test.

The plan for “PACU Test B”, after revision and naming the instrument, is to implement it as a pretest-posttest to determine orientation and continuing education needs and mastery of required content areas, for all nurses entering practice or currently practicing, as identified by the Competency Based Orientation and Credentialing Program developed by ASPAN (1998).

Implications for Nursing Practice

In today's highly competitive and rapidly changing health care environment, we cannot afford to learn by trial and error. Much needs to be accomplished in a very short time if we plan to meet the growing demand for competent critical care nurses to function with the degree of skill required in our practice environment. Time and financial resources for orientation and continuing education are dwindling right along with the reimbursement for health care services. Competency in Postanesthesia Phase I nursing practice must be based on a specific body of knowledge and proven clinical skill. Education programs based on test results gained from valid and reliable instruments designed to measure a specific body of knowledge will identify content and skill areas needed for competency. The mastery and appropriate application of knowledge specific to the care of critically ill patients has been assumed to be the hallmark of nurses practicing in critical care areas. Everyone involved in the health care industry has the responsibility to assure that quality patient care is provided for every patient. In an environment where immediate intervention and treatment can influence "life or death", nursing decisions and actions must be based on mastery of the established body of knowledge specific to Postanesthesia Phase I specialty practice.

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APPENDICES

APPENDIX A

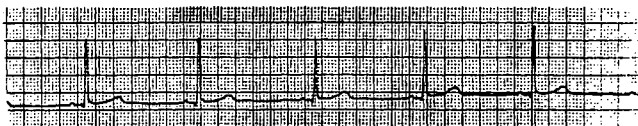
THE BASIC KNOWLEDGE ASSESSMENT TOOL FOR
POSTANESTHESIA PHASE I—FIELD VERSION

Please select the correct answer to the following multiple choice questions:

Content (IA)	Content (ANEA)	Content (A/U)	Content (A/E)	Content (A/AE)
1	2	3	4	5

Case # 1:

Mr. Jones has just been admitted to your slot after a TURP performed under spinal anesthesia. His BP is 70/50 and his cardiac rhythm is as follows:



- | | | | | | |
|-----------------------------------|---|---|---|---|---|
| 1. Identify this rhythm. | 0 | 0 | 0 | 0 | 0 |
| a. junctional escape | | | | | |
| b. 1st degree AV Block | | | | | |
| c. sinus bradycardia* | | | | | |
| d. controlled atrial fibrillation | | | | | |

Comments:

0	0	0	0	0
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- | | | | | | |
|---|--|--|--|--|--|
| 2. Treatment for this rhythm would include: | | | | | |
| a. Atropine IVP | | | | | |
| b. increase IV fluids and notify anesthesia | | | | | |
| c. position the patient flat and elevate his feet | | | | | |
| d. all of the above* | | | | | |

Comments:

0	0	0	0	0
---	---	---	---	---

- | | | | | | |
|---|--|--|--|--|--|
| 3. How much Atropine is recommended as the <u>initial</u> dose for Bradycardia? | | | | | |
| a. 0.2 mg - 0.3 mg IV | | | | | |
| b. 0.5 mg - 1.0 mg IV* | | | | | |
| c. 2.0 mg - 3.0 mg IV | | | | | |
| d. 3.0 mg - 4.0 mg IV | | | | | |

Comments:

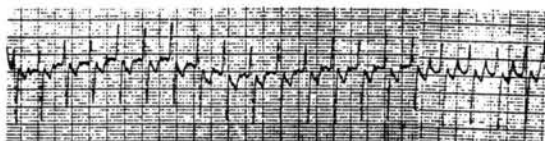
	Content (IA)	Content (ANAE)	Content (A/U)	Content (A/E)	Content (A/AE)
--	-----------------	-------------------	------------------	------------------	-------------------

	1	2	3	4	5
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Case # 2:

The patient with the rhythm below is c/o shortness of breath, a tight feeling in her chest and has a BP of 90/50.

4. Identify the rhythm.	0	0	0	0	0
-------------------------	---	---	---	---	---



- a. PSVT*
- b. atrial fibrillation
- c. sinus tachycardia
- d. accelerated junctional

Comments:

5. To slow this patient's heart rate anesthesia will most likely order:	0	0	0	0	0
---	---	---	---	---	---

- a. Lidocaine
- b. Procainamide
- c. Adenosine*
- d. Atropine

Comments:

Case # 3:

Your patient Miss Jones was admitted to PACU with a normal sinus rhythm, suddenly you notice her rhythm has changed to the following:

6. What is this rhythm?	0	0	0	0	0
-------------------------	---	---	---	---	---



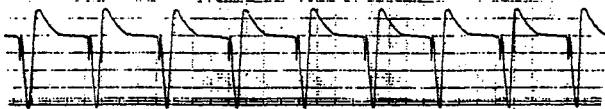
- a. Third degree AV block
- b. Junctional rhythm*
- c. Sinus bradycardia
- d. Second degree - Type 2 block

Comments:

- | | Content
(IA)
1 | Content
(ANAE)
2 | Content
(A/U)
3 | Content
A/E)
4 | Content
(A/AE)
5 |
|---|----------------------|------------------------|-----------------------|----------------------|------------------------|
| 7. Miss Jones c/o not feeling well. She is cool and diaphoretic and seems to be less alert. Her BP has dropped from 110/60 to 70/40. What are the <u>immediate</u> appropriate interventions? | 0 | 0 | 0 | 0 | 0 |
| a. transcutaneous pacemaker if available | | | | | |
| b. Atropine IVP | | | | | |
| c. observe patient closely | | | | | |
| d. all of the above* | | | | | |

Comments:

Miss Jones did not respond to Atropine. Her heart rate drops to 30. Systolic BP is 58 per doppler. Transcutaneous pacing is initiated. Her rhythm is as follows:



- | | | | | | |
|------------------------------------|---|---|---|---|---|
| 8. You interpret this rhythm as: | 0 | 0 | 0 | 0 | 0 |
| a. failure to capture | | | | | |
| b. appropriate ventricular pacing* | | | | | |
| c. failure to sense | | | | | |
| d. appropriate atrial pacing | | | | | |

Comments:

- | | | | | | |
|--|---|---|---|---|---|
| 9. Your assessment of Miss Jones would include monitoring her for: | 0 | 0 | 0 | 0 | 0 |
| a. chest pain | | | | | |
| b. palpable pulse with the rhythm | | | | | |
| c. improvement in BP | | | | | |
| d. all of the above* | | | | | |

Comments:

- | | | | | | |
|---|---|---|---|---|---|
| 10. If you start an Epinephrine drip on Miss Jones, what is the recommended dosage range? | 0 | 0 | 0 | 0 | 0 |
| a. 1 - 2 mcg/min* | | | | | |
| b. 2 - 10 mcg/kg/min | | | | | |
| c. 2 - 10 mcg/min | | | | | |
| d. 10 - 20 mcg/kg/min | | | | | |

Comments:

	Content (IA) 1	Content (ANAE) 2	Content (A/U) 3	Content (A/E) 4	Content (A/AE) 5
11. Identify the following rhythm:	0	0	0	0	0



- a. junctional tachycardia
- b. accelerated idioventricular rhythm
- c. appropriate AV pacing*
- d. normal sinus rhythm with artifact

Comments:

12. Identify the following rhythm:	0	0	0	0	0
------------------------------------	---	---	---	---	---



- a. failure to capture
- b. failure to pace*
- c. appropriate pacing
- d. appropriate sensing

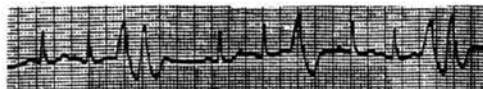
Comments:

13. What interventions you would employ to correct the previous rhythm ?	0	0	0	0	0
--	---	---	---	---	---

- a. reposition the patient
- b. increase the MA
- c. check all connections between the pacemaker & pulse generator.
- d. all of the above*

Comments:

14. Identify the following rhythm:	0	0	0	0	0
------------------------------------	---	---	---	---	---



- a. premature atrial contractions
- b. unifocal PVC's*
- c. multifocal PVC's
- d. bundle branch block

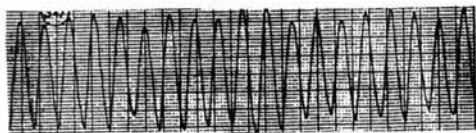
Comments:

	Content (IA)	Content (ANAE)	Content (A/U)	Content (A/E)	Content (A/AE)
	1	2	3	4	5
15. What is the <u>initial</u> dose of Lidocaine for the treatment of this rhythm?	0	0	0	0	0
a. 0.5 mg/kg IVP					
b. 1.0 - 1.5 mg/kg IVP*					
c. 2 - 3 mg/kg IVP					
d. 3.5 - 4.0 mg/kg IVP					

Comments:

Case # 4:

You are admitting a 56 y/o male following a lumbar laminectomy. The patient is extubated with spontaneous respirations of 10/min. You apply O₂ per nasal catheter and apply the pulseoximeter. You are unable to get an SAO₂ reading on the monitor. As you apply the BP cuff and connect the cardiac monitor you notice the following rhythm on the monitor:



16. Identify the rhythm:	0	0	0	0	0
a. pulseless electrical activity					
b. ventricular tachycardia*					
c. PSVT					
d. ventricular fibrillation					

Comments:

17. You are able to palpate a carotid pulse and BP is 80/50. The patient responds verbally but inappropriately to your questions. The CRNA tells you he was in NSR during the procedure with BP's in the 110/80 range. What is the appropriate intervention?	0	0	0	0	0
a. synchronized cardioversion at 100 joules*					
b. Procainamide 20 mg/min IV					
c. Verapamil 5 mg IVP					
d. Lidocaine 5 mg/kg slow IVP					

Comments:

- | | Content
(IA)
1 | Content
(ANAE)
2 | Content
(A/U)
3 | Content
(A/E)
4 | Content
(A/AE)
5 |
|--|----------------------|------------------------|-----------------------|-----------------------|------------------------|
| 18. The monitor shows the same rhythm and the patient deteriorates. He is now unresponsive and pulseless. Anesthesia is at the bedside and will most likely: | 0 | 0 | 0 | 0 | 0 |
| a. order an H & H | | | | | |
| b. defibrillate at 200 joules* | | | | | |
| c. administer Verapamil 10 mg/kg | | | | | |
| d. cardiovert at 50 joules | | | | | |

Comments:

0 0 0 0 0

19. Interpret the following rhythm:



- a. sinus bradycardia
 b. ventricular standstill
 c. complete heart block*
 d. junctional bradycardia

Comments:

0 0 0 0 0

20. If the patient has a pulse, the most appropriate immediate treatment for this rhythm is:
- a. Verapamil 5 mg IVP
 b. transcutaneous pacing*
 c. Bretyllium 20 mg/kg IVP
 d. Atropine 10 mg IV drip

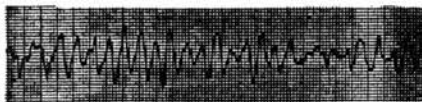
Comments:

Content (IA)	Content (ANAE)	Content (A/U)	Content (A/E)	Content (A/AE)
1	2	3	4	5

Case # 5:

Mrs Wilson, age 65, is admitted to your slot following a Thyroidectomy. She has a history of multiple MI's in the past and a CABG one year ago. She is intubated and being ambu'd by Anesthesia. You connect her to the bedside ventilator at at rate of 10, 100% O₂, and TV of 800. Pulseoximeter is not indicating a pulse. The following cardiac rhythm appears on the monitor. Mrs. Wilson has no palpable pulse.

21. Identify this rhythm:



- a. AV dissociation
- b. asystole
- c. ventricular fibrillation*
- d. ventricular tachycardia

Comments:

22. The cardiac output with this rhythm is?

- a. 25%
- b. 50%
- c. 0%*
- d. 5%

Comments:

23. Your initial action will be to:

- a. initiate synchronized external pacing immediately.
- b. administer synchronized cardioversion at 50 joules.
- c. prepare for transvenous pacemaker insertion.
- d. all a code and prepare to defibrillate at 200 joules*

Comments:

	Content (IA) 1	Content (ANAE) 2	Content (A/U) 3	Content (A/E) 4	Content (A/AE) 5
24. To defibrillate a child, the correct electrical energy level is:	0	0	0	0	0
a. 1 joule/kg					
b. 2 joules/kg*					
c. 3 joules/kg					
d. 4 joules/kg					
Comments:					
25. One <u>very important</u> safety consideration the nurse must remember during patient defibrillation is to:	0	0	0	0	0
a. increase the MA to 50					
b. set the monitor/defibrillator in the SYNC mode.					
c. Initiate transcutaneous pacing.					
d. Be certain that each person present stands clear of the patient, bed and equipment attached to the patient.*					
Comments:					
26. Choose the Phase I staffing requirement even when only one patient is being recovered from general anesthesia:	0	0	0	0	0
a. two licensed nurses*					
b. two competent individuals, one of which is a registered nurse					
c. two competent individuals, one of which is licensed					
d. none of the above					
Comments:					
27. Anger differs from depression in that:	0	0	0	0	0
a. anger is characterized by apathy					
b. anger is often demonstrated by antagonism toward the care plan and care giver*					
c. anger results in immediate compliance with the care plan					
d. anger is manifest by dependent behavior					
Comments:					

	Content (IA) 1	Content (ANAE) 2	Content (A/U) 3	Content (A/E) 4	Content (A/AE) 5
28. All of the following are priorities when planning the immediate postoperative care for the elderly patient <u>except</u> :	0	0	0	0	0
a. correcting preoperative dehydration					
b. promoting optimal gas exchange					
c. administering large doses of narcotics *					
d. promoting skin integrity					
Comments:					
29. The nursing history and assessment obtained during the preoperative phase is used for all <u>except</u> to:	0	0	0	0	0
a. obtain precise baseline data					
b. identify preexisting disease conditions					
c. plan the anesthesia safest for the patient *					
d. identify special needs					
Comments:					
30. Which of the following characteristics is a true anatomical difference in pediatric patients as compared with adults and has important implications for airway management in the immediate postoperative period ?	0	0	0	0	0
a. location of the larynx is at the C ₅ to C ₆ level in infants					
b. epiglottis is short, narrow, stiff, and U shaped in infants *					
c. chest is larger in proportion to the head in infants					
d. neck is longer in infants to compensate for head to chest proportions					
Comments:					

	Content (IA) 1	Content (ANAE) 2	Content (A/U) 3	Content (A/E) 4	Content (A/AE) 5
31. Which of the following statements are true regarding pediatric patients:	0	0	0	0	0
a. pediatric patients are miniature adults					
b. the postoperative goal for nursing care is to return pediatric patients to their preanesthesia state					
c. pediatric patients in general can tolerate much greater fluctuations in their homeostatic state					
d. parental anxiety affects the nursing care of the pediatric patient					
1. a,b,d					
2. b,d *					
3. a,c,d					
4. all of the above					

Comments:

32. Which statement regarding IV conscious sedation is most correct?	0	0	0	0	0
a. a controlled state of unconsciousness*					
b. fully awake and oriented to time, place and person					
c. partial loss or complete loss of protective reflexes					
d. responsive to physical and verbal stimuli					

Comments:

33. During conscious sedation, the patient experiences signs and symptoms of shock with a systolic blood pressure of < 70 mmHg. Appropriate nursing intervention would include:	0	0	0	0	0
a. discontinuing IV conscious sedation medication and preparing to administer the appropriate reversal agents					
b. positioning the patient and administering oxygen					
c. no action is required					
d. a and b are correct *					

Comments:

	Content (IA) 1	Content (ANAE) 2	Content (A/U) 3	Content (A/E) 4	Content (A/AE) 5
34. Flumazenil has been ordered for a patient experiencing deep sedation. Which of the following statements is <u>true</u> regarding this drug?	0	0	0	0	0
a. Flumazenil is a narcotic reversal agent					
b. the duration effect of Flumazenil may be shorter than that of benzodiazepines					
c. a and b are correct *					
d. a is correct					

Comments:

35. Assessment factors of restlessness, agitation, and an initial increase in pulse and blood pressure, after conscious sedation medication administration may be the result of:	0	0	0	0	0
a. allergic reaction to the medication *					
b. low oxygen saturation					
c. deep sedation					
d. none of the above					

Comments:

Answer T for true and F for false to each of the following questions related to patients receiving IV conscious sedation:

36. _____ prior to conscious sedation an informed consent should be obtained (t)	0	0	0	0	0
--	---	---	---	---	---

Comments:

37. _____ a patient in deep sedation should have vital signs taken and documented every 15 minutes (f)	0	0	0	0	0
--	---	---	---	---	---

Comments:

38. _____ all conscious sedation patients need to have continuous pulse oximetry monitoring (t)	0	0	0	0	0
---	---	---	---	---	---

Comments:

	Content (IA) 1	Content (ANAE) 2	Content (A/U) 3	Content (A/E) 4	Content (A/AE) 5
39. _____ cardiac monitoring is recommended for patients over 65 years of age or known to have preexisting cardiac disease (t)	0	0	0	0	0
Comments:					
40. _____ cardiac monitoring is required for all patients in deep sedation (t)	0	0	0	0	0
Comments:					
41. _____ all conscious sedation patients must have concurrent oxygen administration (t)	0	0	0	0	0
Comments:					
42. _____ Diazepam has a longer duration of action than Midazolam (t)	0	0	0	0	0
Comments:					
43. _____ re sedation may occur following administration of a reversal agent (t)	0	0	0	0	0
Comments:					
Choose the correct answer to each of the following multiple choice questions.					
44. Choose the recommended continuous IV drip rate for the administration of Lidocaine following resuscitation from ventricular fibrillation immediately post myocardial infarction:	0	0	0	0	0
a. 2 - 4 mg per minute *					
b. 200 micrograms per second					
c. 1 Gram every 12 minutes					
d. none of the above					
Comments:					

	Content (AI)	Content (ANAE)	Content (A/U)	Content (A/E)	Content (A/AE)
	1	2	3	4	5
45. Bryan, age 4, has a history of allergy to apples, bananas, and avocados, the PACU nurse should be aware he may also be sensitive to which of the following ?	0	0	0	0	0
a. cotton					
b. latex *					
c. vinyl					
d. polyester					
Comments:					
46. Adverse effects related to administration of remifentanyl include:	0	0	0	0	0
a. hypotension, bradycardia, apnea and muscle rigidity *					
b. pruritis, tachypnea, tachycardia, and muscle faciculation					
c. respiratory depression, hypertension, agitation and seizures					
d. hypertension, ventricular dysrhythmias, muscle faciculation and neuralgia					
Comments:					
47. Appropriate nursing interventions for the PACU patient exhibiting signs of hemodynamic compromise during or following administration of remifentanyl may include immediately stopping the infusion and administering :	0	0	0	0	0
a. sublingual nitroglycerine					
b. sufenta					
c. naloxone *					
d. romazicon					
Comments:					
48. Identify common complications following abdominal procedures utilizing laser techniques may be the result of:	0	0	0	0	0
a. fluid overload					
b. hyperabsorption of narcotics					
c. transperitoneal absorption of CO ₂ *					
d. increase O ₂ uptake					
Comments:					

	Content (IA)	Content (ANAE)	Content (A/U)	Content (A/E)	Content (A/AE)
	1	2	3	4	5
	0	0	0	0	0
49. During assessment of a 5 year old boy following bilateral myringotomy, the PACU nurse notices a pulse rate of 200, accompanied by an SAO ₂ of 70 and muscle rigidity. The nurse might suspect the onset of :					
a. renal failure					
b. malignant hyperthermia *					
c. Addisonian crisis					
d. hypoglycemia					
Comments:					
Note: Questions 50 & 51 are based on the following case scenario:					
Upon arrival to PACU following inguinal hernia repair, Mr. Horn, age 48 reacts immediately from anesthesia and after a short period of coughing and straining against the endotracheal tube, he is extubated. After suctioning a moderate amount of pink frothy secretions from the oropharynx, the nurse notifies anesthesia.					
		0	0	0	0
50. The nurse suspects the patient may have developed:					
a. cardiogenic shock					
b. renal failure					
c. hypermagnesemia					
d. non-cardiogenic pulmonary edema *					
Comments:					
		0	0	0	0
51. Depending on the severity of symptoms immediate intervention for this patient may include:					
a. reintubation, administration of diuretics, narcotics, and benzodiazepines *					
b. O ₂ administration by nasal cannula, 12 lead ECG, renal flow studies, and pulmonary function tests					
c. maintaining O ₂ saturation on room air, blood chemistry profile, and rapid fluid boluses					
d. all of the above					
Comments:					

	Content (IA)	Content (ANAE)	Content (A/U)	Content (A/E)	Content (A/AE)
	1	2	3	4	5
	0	0	0	0	0
52. Mrs. M. arrives in PACU following an abdominal hysterectomy. Mrs M. is moaning and tossing on stretcher. Her vital signs re: BP 150/80, pulse 110, respirations 10 - 12 per minute. She is extubated and dressings are dry and intact. The patient has no known sensitivity to medications. To relieve her pain the PACU nurse would administer:					
a. Naloxone 1 mg IV push					
b. Morphine Sulfate 10 mg slow IV push *					
c. Meperidine 200 mg IM					
d. Codeine 10 mg IV					

Comments:

	0	0	0	0	0
53. Mr. Lee, age 62, began c/o chest discomfort and shortness of breath during the immediate postoperative period. BP 120/60 and pulse 98. The cardiac monitor shows about 6 - 8 multiformed PVC's per minute. On 12 lead ECG, ST segment elevation is noted in leads 2,3, and AVF. SAO ₂ 92% on 4 L/O ₂ per nasal cannula. After notifying the physician immediate actions might include:					
a. sublingual Nitroglycerine and starting a continuous Nitroglycerine infusion					
b. Morphine Sulfate slow IV titrating to effect					
c. Lidocaine bolus followed by a continuous Lidocaine infusion					
d. all of the above *					

Comments:

Content (IA)	Content (ANAE)	Content (A/U)	Content (A/E)	Content (A/AE)
1	2	3	4	5
0	0	0	0	0

54. Mr. J. is scheduled for elective inguinal hernia repair at your Ambulatory Surgery Center. During the assessment, he relates he gets short of breath and has a little chest discomfort climbing a couple of flights of stairs. The nurse notes moderate jugular venous distension and a systolic heart murmur. These signs and symptoms are commonly associated with:

- a. pulmonary insufficiency
- b. aortic stenosis *
- c. mitral insufficiency
- d. tricuspid stenosis

Comments:

0 0 0 0 0

55. Thirty minutes following emergency Cesarean section, the nurse palpates Mrs. M.'s uterus and expects:

- a. soft fundus, above the umbilicus
- b. high right fundal displacement
- c. firm fundus, below the umbilicus*
- d. soft fundus, 2 centimeters above the pubic bone

Comments:

0 0 0 0 0

56. Stephanie, age 4, is intubated and coughing on arrival to PACU post appendectomy. The CRNA relates difficulty achieving intubation preoperatively. The nurse anticipates which of the following complications:

- a. atelectasis and pneumonia
- b. postextubation laryngeal edema and inspiratory stridor*
- c. abdominal dehiscence and exsiccation
- d. acute onset postoperative asthma

Comments:

	Content (IA) 1	Content (ANAE) 2	Content (A/U) 3	Content (A/E) 4	Content (A/AE) 5
57. In providing care for a healthy 5 month pregnant female following relocation of a displaced right shoulder, the nurse is least concerned when postoperative assessment of fetal heart tones indicate:	0	0	0	0	0
a. patient and fetal heart rates are equal					
b. sustained fetal heart rate of 150 beats per minute *					
c. sustained fetal heart rate above 200 beats per minute					
d. patients heart rate faster than fetal heart rate					
Comments:					
58. A 78 year old female patient is admitted to PACU following hip replacement. After 45 minutes, the patient responds appropriately to verbal stimuli, BP and pulse are within normal limits, but the patient remains too weak to extubate. The PACU nurse suspects:	0	0	0	0	0
a. early onset pneumonia					
b. advanced renal disease					
c. acquired pseudocholinesterase deficiency *					
d. delayed onset depression					
Comments:					
59. A 4 year old is prepared preoperatively for repair of inguinal hernia. Halothane will be utilized for mask induction. The nurse is least concerned about:	0	0	0	0	0
a. laryospasm *					
b. prolonged recovery time					
c. cardiovascular effects					
d. decreased cerebral circulation					
Comments:					

	Content (IA) 1	Content (ANAE) 2	Content (A/U) 3	Content (A/E) 4	Content (A/AE) 5
60.	0	0	0	0	0
<p>In addition to the pharmacologic effects of each anesthetic agent administered and the preoperative medication used, the PACU nurse knows that emergence from inhalation agents is also influenced by:</p> <ul style="list-style-type: none"> a. renal clearance, heart rate and cerebral perfusion b. solubility, alveolar ventilation and duration of agent* c. heart rate, blood pressure and urinary output d. ratio of adipose tissue to cerebrospinal volume 					

Comments:

Note: Consider the following scenario and questions 61 and 62 together.

Immediately following exploratory laparoscopy, Mr. M. becomes agitated, develops inspiratory stridor and has diminished breath sounds. He has an SAO₂ of 80% and develops acute respiratory distress. The anesthesiologist requests Succinylcholine and prepares for reintubation.

61.	0	0	0	0	0
<p>Immediately following administration of Succinylcholine the PACU nurse expects:</p> <ul style="list-style-type: none"> a. muscular fasciculations, complete muscle relaxation and apnea * b. muscular rigidity, tachycardia and tachypnea c. Cheyne-Stokes respirations, bradycardia and tetany d. hypertension, muscle relaxation and tachypnea 					

Comments:

	Content (IA) 1	Content (ANAE) 2	Content (A/U) 3	Content (A/E) 4	Content (A/AE) 5
62. Following successful reintubation, the nurse would expect:	0	0	0	0	0
a. return of spontaneous respiratory effort within 4 - 6 minutes *					
b. paralysis for at least 30 minutes					
c. reversal of muscle relaxation with Neostigmine					
d. mechanical respiratory support for at least an hour postintubation					

Comments:

63. Following administration of Pancuronium Bromide, the nurse expects:	0	0	0	0	0
a. muscle fasciculations, apnea and tetany					
b. return of normal respirations within 5 - 10 minutes					
c. slight reduction in heart rate, muscular relaxation and mild increase in blood pressure*					
d. forced expiration against the ventilator within minutes of administration of Pancuronium Bromide					

Comments:

64. The anesthesiologist administers Neostigmine and Atropine IV to Mr. F. upon arrival in PACU. In addition to signs of reversal, the nurse will carefully assess the patient for:	0	0	0	0	0
a. changes in blood pressure, pulse and appearance of cardiac dysrhythmias *					
b. apnea, hypertension and tachycardia					
c. spontaneous respiration, pupillary constriction and SVT					
d. wheezing, stridor and bradypnea					

Comments:

	Content (IA)	Content (ANAE)	Content (A/U)	Content (A/E)	Content (A/AE)
	1	2	3	4	5
65. Following reversal of a nondepolarizing muscle relaxant with Neostigmine and atropine, the patient has persistent bradycardia. After ruling out other causes for the slow cardiac rhythm, the nurse would anticipate the administration of:	0	0	0	0	0
a. Adenosine					
b. Lidocaine					
c. Glycopyrrolate *					
d. Epinephrine					

Comments:

66. Mr. F., age 70, develops hypotension following a cystoscopy with biopsy utilizing spinal anesthesia. He is awake and alert on arrival to PACU. His blood pressure drops from 140/90 to 90/60. He c/o feeling weak and tired. There are no signs of bleeding. Which of the following interventions would the nurse expect to implement first ?	0	0	0	0	0
a. place the patient in trandelenberg position and check his temperature					
b. administer isotonic IV fluid and elevate the patient's legs *					
c. order a 12 lead ECG and prepare for CVP insertion					
d. infuse Nipride at 5 mCg/minute IV					

Comments:

67. Patient assessment following a brachial plexus nerve block for repair of an elbow fracture would include:	0	0	0	0	0
a. assessing for bilateral breath sounds and symmetrical chest wall movement *					
b. assessing motor strength, sensation and temperature of lower extremities					
c. carefully monitoring hourly urine output					
d. checking for Horner's syndrome on the side opposite the block					

Comments:

	Content (IA) 1	Content (ANAE) 2	Content (A/U) 3	Content (A/E) 4	Content (A/AE) 5
68. Mrs. T. c/o pain in her left hand following tendon repair of the third and fourth fingers. A Bier block was used to perform the procedure. Her vital signs are stable and the fingers distal to the operative site are warm and dry with intact sensation and rapid capillary refill. After consulting the postoperative orders, the nurse could:	0	0	0	0	0
a. administer Demerol 25 - 50 mg slow IV push *					
b. order an xray of the left hand to check alignment					
c. call the physical therapist for a consult					
d. infuse IV antibiotics					
Comments:					
69. The primary purpose of the Phase I Postanesthesia Care Unit is to:	0	0	0	0	0
a. perform the preoperative assessment					
b. compile the medical record					
c. evaluate and stabilize postoperative complications*					
d. prepare families for the patient's postoperative hospitalization					
Comments:					
70. Rapid assessment of the patient's postoperative cardiopulmonary status would provide:	0	0	0	0	0
a. airway and respiratory function, pulse, blood pressure and condition of the operative site *					
b. pupillary reaction, urinary output and gross motor function					
c. review of preoperative documentation, interviews with significant others					
d. none of the above					
Comments:					

	Content (IA) 1	Content (ANAE) 2	Content (A/U) 3	Content (A/E) 4	Content (A/AE) 5
71. Oxyhemoglobin levels are indirectly measured in PACU utilizing:	0	0	0	0	0
a. color and temperature of skin and nail beds					
b. pulse oximetry *					
c. mixed venous samples					
d. capnography					
Comments:					
72. Capnography can be utilized by the PACU nurse to:	0	0	0	0	0
a. detect malignant hyperthermia					
b. assess alveolar ventilation					
c. identify esophageal intubation and ventilation equipment problems					
d. all of the above *					
Comments:					
73. The PACU nurse encourages Mr. T. to turn frequently and to cough and take deep breaths every 5 - 10 minutes in the early postoperative period. Other interventions to prevent atelectasis and venous stasis postoperatively include:	0	0	0	0	0
a. pain management and early mobilization *					
b. sustained supine position with leg elevation					
c. moderate to heavy sedation to reduce cough reflex					
d. continuous cardiac monitoring and pulmonary function tests					
Comments:					
74. Which of the following drugs would rarely be used in cardiopulmonary emergencies ?	0	0	0	0	0
a. epinephrine					
b. atropine					
c. odansteron *					
d. lidocaine					
Comments:					

	Content (IA)	Content (ANAE)	Content (A/U)	Content (A/E)	Content (A/AE)
	1	2	3	4	5
75. What is the minimum nursing coverage for a single patient recovering in the Phase I postanesthesia setting ?	0	0	0	0	0
a. 1:1					
b. 1:2*					
c. 1:4					
d. 1:3					

Comments:

76. Appropriate discharge criteria for Phase I PACU patients includes:	0	0	0	0	0
a. stable vital signs and pain control *					
b. documentation by primary nurse					
c. minimal recovery time has lapsed					
d. urinary output 15 ml/hr and moderate sedation					

Comments:

77. To safely perform tracheal suctioning for an intubated patient the nurse should:	0	0	0	0	0
a. begin suctioning as the catheter is introduced into the endotracheal tube					
b. suction for at least 30 - 60 seconds to completely clear secretions					
c. place the patient on room air immediately following suctioning					
d. preoxygenate with 100 % O ₂ *					

Comments:

78. The single most important precaution in PACU to prevent the spread of postoperative infection is:	0	0	0	0	0
a. administration of IV antibiotics					
b. wearing hospital provided surgical scrubs					
c. thorough handwashing following patient contact *					
d. wiping overbed tables and other equipment with antiseptic solutions					

Comments:

	Content (IA) 1	Content (ANAE) 2	Content (A/U) 3	Content (A/E) 4	Content (A/AE) 5
79. Immediately following tracheal extubation, the PACU nurse would be most concerned if respiratory assessment revealed :	0	0	0	0	0
a. hoarseness and complaints of sore throat					
b. diminished or absent breath sounds *					
c. bilateral breath sounds					
d. sonorous rales over major bronchi					
Comments:					
80. Following stapedectomy of the left ear, Mrs. B. begins coughing and is unable to stop. The PACU nurse:	0	0	0	0	0
a. administers Codeine 30 mg IV *					
b. encourages continued coughing					
c. recognizes cough as a normal reaction to intubation					
d. monitors vital signs closely					
Comments:					
81. Following emergency facial nerve decompression and exploration, Ms. W. is asked to frown, grin and purse her lips to assess function of :	0	0	0	0	0
a. temporal lobe					
b. cranial nerve VIII					
b. facial nerve *					
d. masseter muscles					
Comments:					
82. To manage serious complications associated with maxillofacial surgery, the nurse will:	0	0	0	0	0
a. extubate the patient immediately					
b. avoid oral suctioning					
c. make wire cutters readily available *					
d. suction the endotracheal tube every 5 minutes					
Comments:					

	Content (IA)	Content (ANAE)	Content (A/U)	Content (A/E)	Content (A/AE)
	1	2	3	4	5
83. Which of the following complaints requires immediate intervention following intraocular surgery ?	0	0	0	0	0
a. intraocular pain accompanied by nausea and vomiting *					
b. scratchy, itchy, grating sensation in the operated eye					
c. dry mouth and sore throat					
d. hoarseness and aphonia					

Comments:

84. Nursing intervention for patients immediately following bronchoscopy is directed toward :	0	0	0	0	0
a. adequate hydration and monitoring urinary output					
b. maintaining an open airway *					
c. forcing oral fluids and frequent tracheal suctioning					
d. encouraging coughing and deep breathing					

Comments:

85. In providing care for a post-thoracentesis patient, the nurse would be most concerned with which of the following assessment findings:	0	0	0	0	0
a. presence of equal bilateral breath sounds					
b. complaints of pain and burning at the operative site					
c. decreased blood pressure, tachycardia and subcutaneous emphysema *					
d. aphonia and occasional coughing					

Comments:

86. For the patient with chest tubes, which of the following assessment findings requires immediate intervention ?	0	0	0	0	0
a. intermittent bubbling in the water seal bottle with expiration					
b. fluctuation of fluid in water seal tubing with respiration					
c. moderate amount of serosanguinous drainage in lower chest tube					
d. continuous bubbling in the water seal bottle *					

Comments:

	Content (IA)	Content (ANAE)	Content (A/U)	Content (A/E)	Content (A/AE)
	1	2	3	4	5
87. When transporting the patient with chest tubes, the nurse should remember to:	0	0	0	0	0
a. double clamp the chest tube during transport					
b. place the drainage bottles on the bed with the patient					
c. maintain a closed system with drainage bottles below the level of the bed *					
d. place the patient in Trandelenberg position					

Comments:

88. Following a left pneumonectomy, the nurse properly positions the patient:	0	0	0	0	0
a. on the operative side *					
b. in the Trandelenberg position					
c. prone with the arms extended					
d. on the nonoperated side					

Comments:

Note: Utilize the following case scenario for questions 89 and 90.

Mrs. S. is recovering in PACU following open reduction and internal fixation of her left ankle. She was involved in a motor vehicle accident 3 hours previously. Mrs. S. was not wearing a seat belt. Her blood pressure has decreased from 108/68 to 80/60 accompanied by an increase in pulse rate from 86 to 130. The nurse notices her respirations are shallow at a rate of 28/minute accompanied by left tracheal deviation.

89. The nurse must immediately :	0	0	0	0	0
a. notify the physician, elevate the head of the bed and administer O ₂ *					
b. place the stretcher in Trandelenberg position and decrease IV fluids					
c. turn the patient to the left side and begin chest percussion					
d. position the patient in prone position and administer and IV narcotic					

Comments:

	Content (IA) 1	Content (ANAE) 2	Content (A/U) 3	Content (A/E) 4	Content (A/AE) 5
90. The nurse knows this patient has most likely experienced :	0	0	0	0	0
a. acute myocardial infarction					
b. pulmonary emboli					
c. right side pneumothorax *					
d. mediastinal bruising					
Comments:					
91. During repeat assessment of Mr. T. immediately post coronary bypass grafting, the nurse notices absence of a pulse. Normal sinus rhythm is displayed on the monitor. The nurse will:	0	0	0	0	0
a. repeat the pulse check every 5 minutes					
b. call for assistance and initiate basic life support *					
c. notify the surgeon and request a 12 lead ECG					
d. call the lab and request a stat hemoglobin and hematocrit					
Comments:	0	0	0	0	0
92. Following a right saphenous femoropopliteal bypass graft, which of these measures will the nurse monitor frequently?					
a. femoral, radial and brachial pulses					
b. level of consciousness and aphasia					
c. popliteal, dorsalis pedis and post tibial pulses *					
d. urinary retention and brachial pulses					
Comments:	0	0	0	0	0
93. Faint or difficult to palpate peripheral pulses should be evaluated utilizing:					
a. ultrasonic doppler *					
b. nerve stimulator					
c. amplified stethoscope					
d. blood pressure cuff					
Comments:					

	Content (IA)	Content (ANAE)	Content (A/U)	Content (A/E)	Content (A/AE)
	1	2	3	4	5
94. Immediately upon arrival to PACU following carotid endarterectomy, the nurse will be least concerned with:	0	0	0	0	0
a. orders for intravenous replacement fluids *					
b. raising the head of the bed 20 - 30 degrees					
c. assessing level of consciousness					
d. monitoring vital signs and the operative site					
Comments:					
95. The nurse would be most concerned if a patient voiced which of the following complaints in PACU following carotid endarterectomy ?	0	0	0	0	0
a. pain in upper right quadrant of abdomen					
b. tenderness over left scapula					
c. lump in their throat and difficulty swallowing *					
d. dry mouth and thirst					
Comments:					
96. When preparing to receive a 78 year old patient immediately following repair of aortic aneurysm, the nurse knows this patient will most likely require ?					
a. additional venous access for adequate fluid replacement					
b. respiratory support with a volume controlled ventilator*					
c. Rotorest bed for continuous position changes					
d. 12 lead ECG stat and every 2 hours for 12 hours					
Comments:					
97. After total hip replacement, the nurse will :	0	0	0	0	0
a. request a CPM machine immediately					
b. properly place an adduction pillow *					
c. secure skin traction with ace bandages					
d. raise knee gatch 15 degrees					
Comments:					

	Content (IA)	Content (ANAE)	Content (A/U)	Content (A/E)	Content (A/AE)
	1	2	3	4	5
98. Which of the following assessment findings would be of great concern during the immediate postoperative period for a patient with open reduction and internal fixation of a fractured femur?	0	0	0	0	0
a. anxiety, tachypnea, and appearance of petechiae over the chest wall *					
b. blood pressure 110/60 accompanied by a moderate amount of serosanguinous drainage on operative dressings					
c. 50 ml of dark red drainage in collection container					
d. complaints of sore throat and coughing					
Comments:					
	0	0	0	0	0
99. After closed reduction of fractured left tibia and cast application for a crush injury to lower left leg, the patient complains of severe, unrelenting pain with numbness, tingling and decreased capillary refill in toes of left foot, after the administration of pain medication, elevation and application of cold. The nurse suspects:					
a. deep vein thrombosis					
b. improper body alignment and positioning					
c. compartment syndrome *					
d. popliteal bruising and stasis					
Comments:					
	0	0	0	0	0
100. What is the most common cause of hypotension following spinal surgery with fusion?					
a. excessive intraoperative blood loss *					
b. inadequate crystalloid replacement					
c. reaction to anesthetic agents and urinary retention					
d. postoperative pain, anxiety and fear					
Comments:					

	Content (IA) 1	Content (ANAE) 2	Content (A/U) 3	Content (A/E) 4	Content (A/AE) 5
	0	0	0	0	0
101. An effective method to assess circulation in a patient's operated hand that is covered in a bulky dressing is:					
a. comparing blood pressure reading taken from both arms simultaneously					
b. placing a pulse oximeter sensor on a finger of the operated hand *					
c. pricking the end of a finger on the operated hand					
d. asking the patient to hold the operated hand above his head and checking the color of the finger tips					
Comments:					
	0	0	0	0	0
102. Prior to discharge from PACU following arthrotomy of the right shoulder, Mr. Smith will be encouraged to:					
a. sit on the side of the stretcher and take slow deep breaths					
b. perform active range of motion exercises with hand on operated side *					
c. return to work as soon as possible					
d. take pain medication only with moderate to severe pain					
Comments:					
	0	0	0	0	0
103. Hemodynamic stabilization for patients immediately following total hip replacement may include ?					
a. placing the patient in Trendelenberg position					
b. administering 100 ml of fluid orally every 30 minutes					
c. autotransfusion *					
d. positioning to the operated side					
Comments:					

	Content (IA) 1	Content (ANAE) 2	Content (A/U) 3	Content (A/E) 4	Content (A/AE) 5
104. Straight leg raises and quad setting exercises are initiated in PACU to :	0	0	0	0	0
a. speed recovery from spinal anesthesia					
b. improve muscle tone prior to discharge					
c. stimulate pain receptors and improve sensation					
d. prevent complications related to venous stasis *					
Comments:					
105. In the immediate postoperative period following knee surgery, changes in sensation over the dorsum of the foot on the operated side is assessed to detect:	0	0	0	0	0
a. compression of the peroneal nerve *					
b. return of circulation to lower extremity					
c. recovery from regional anesthesia					
d. none of the above					
Comments:					
106. Assessment parameters directed toward early recognition of increasing intracranial pressure include:	0	0	0	0	0
a. decreasing responsiveness, pupillary changes and widening systolic pressure					
b. increasing restlessness, nausea, vomiting and severe headache*					
c. bradycardia, alteration in respiration and decorticate posturing					
d. appropriate response to verbal commands and orientation to time, place and person					
Comments:					

	Content (IA)	Content (ANAE)	Content (A/U)	Content (A/E)	Content (A/AE)
	1	2	3	4	5
	0	0	0	0	0
107. The nurse examines the dressings of a craniotomy patient and discovers a spot of serosanguinous drainage surrounded by a ring of lighter colored drainage. Appropriate intervention includes:					
a. positioning the patient on the operated side and taking vital signs					
b. elevate the head of the bed 30 degrees and notify the neurosurgeon *					
c. administer IV antibiotics					
d. encourage the patient to turn, cough and deep breathe every 10 minutes					
Comments:					
	0	0	0	0	0
108. Proper positioning of the craniotomy patient is essential to protect the surgical site and to:					
a. improve patient comfort					
b. facilitate drainage from the operative site					
c. reduce surgical pain					
d. maintain an open airway *					
Comments:					
	0	0	0	0	0
109. One of the nurses' major responsibilities during a seizure is to:					
a. restrain the patient and call for help					
b. administer pain medication as ordered					
c. insert and oral airway and prepare for reintubation					
d. observe, report and document seizure activity *					
Comments:					
	0	0	0	0	0
110. During turning and painful procedures, the responsive, cooperative craniotomy patient should be instructed to:					
a. breathe in and out slowly through the mouth *					
b. request extra narcotics					
c. hold their breath and bear down					
d. take rapid shallow breaths					
Comments:					

- | | Content
(IA)
1 | Content
(ANAE)
2 | Content
(A/U)
3 | Content
(A/E)
4 | Content
(A/AE)
5 |
|--|----------------------|------------------------|-----------------------|-----------------------|------------------------|
| 111. Based on the following arterial blood gas results for a mechanically ventilated patient in PACU the nurse will plan to: | 0 | 0 | 0 | 0 | 0 |
| <p>pH = 7.44, pCO₂ = 27 mmHg,
 pO₂ = 134 mmHg, HCO₃ = 26 mEq/L.
 Ventilator settings are: Vt = 600 ml,
 rate = 12, FiO₂ = 0.6</p> <p>a. administer 25 mEq/L of NaHCO₃
 b. decrease rate *
 c. maintain existing ventilator settings
 d. decrease Vt</p> | | | | | |

Comments:

- | | | | | | |
|---|---|---|---|---|---|
| 112. Based on the following assessment data for a conscious extubated patient following ankle reconstruction, appropriate nursing intervention would include: | 0 | 0 | 0 | 0 | 0 |
| <p>pH = 7.52, pCO₂ = 30 mmHg,
 pO₂ = 98 mmHg, HCO₃ = 22 mEq/L,
 verbal pain rating = 9
 per scale of 1 - 10,
 respiratory rate = 40 per minute</p> <p>a. administration of pain medication *
 b. encouraging coughing and deep breathing exercises
 c. elevating the head of the bed 30 degrees
 d. positioning toward the operated side</p> | | | | | |

Comments:

- | | | | | | |
|--|---|---|---|---|---|
| 113. Following thyroidectomy or parathyroidectomy which of the following assessment findings would indicate pneumothorax or rupture of the trachea ? | 0 | 0 | 0 | 0 | 0 |
| <p>a. inspiratory wheezing
 b. expiratory stridor
 c. subcutaneous emphysema*
 d. paradoxical chest wall movement</p> | | | | | |

Comments:

	Content (IA)	Content (ANAE)	Content (A/U)	Content (A/E)	Content (A/AE)	
	1	2	3	4	5	
114. In the immediate postoperative period, the parathyroidectomy patient begins c/o tingling of the toes, fingers and circumoral area, the nurse recognizes these symptoms may indicate the onset of which of the following complications related to hypoparathyroidism ?	0	0	0	0	0	
a. tetany *						
b. laryngospasm						
c. tachycardia						
d. pneumothorax						
Comments:						
115. Which of the following indicates a positive Chvostek's sign?	0	0	0	0	0	
a. carpopedal spasm						
b. twitch of lip or facial muscle *						
c. extensor flexion						
d. inability to smile, grimace or raise the eyebrows						
Comments:						
116. Calcium lactate or calcium gluconate should be administered:	0	0	0	0	0	
a. orally to conscious cooperative patients						
b. slowly by continuous IV infusion *						
c. rapid IV push						
d. IM utilizing Z track technique						
Comments:						
117. Diagnostic signs and symptoms associated with thyroid storm include:	0	0	0	0	0	
a. bradycardia, bradypnea, hypotension and hypothermia						
b. normal respirations, tachycardia and normothermia						
c. tachycardia, tachypnea, hypertension and hyperthermia *						
d. nausea, vomiting and diarrhea						
Comments:						

	Content (IA) 1	Content (ANAE) 2	Content (A/U) 3	Content (A/E) 4	Content (A/AE) 5
118. To treat thyroid storm, the nurse will administer O2 and prepare for:	0	0	0	0	0
a. chest tube insertion					
b. delayed diuresis					
c. rapid IV administration of Epinephrine					
d. application of hypothermia blanket *					
Comments:					
	0	0	0	0	0
119. Which of the following pharmacologic interventions is indicated for immediate treatment of thyroid storm ?					
a. calcium gluconate, procainamide and atropine					
b. sodium iodide, corticosteroids and reserpine*					
c. bretylium, atropine and lidocaine					
d. isuprel, inderal and ibuprophen					
Comments:					
	0	0	0	0	0
120. Following rectal surgery, the patient c/o a feeling of fullness and discomfort over the lower abdomen. The nurse assesses this patient for ?					
a. spastic colon					
b. renal colic					
c. bladder spasms					
d. urinary retention *					
Comments:					
	0	0	0	0	0
121. Following ureteroileostomy the patient's vital signs are stable and the stoma has a bluish cast. The nurse will:					
a. immediately notify the surgeon*					
b. reposition for comfort and continue to monitor					
c. administer pain medication					
d. prepare the patient for discharge					
Comments:					
	0	0	0	0	0

	Content (IA)	Content (ANAE)	Content (A/U)	Content (A/E)	Content (A/AE)
	1	2	3	4	5
	0	0	0	0	0
122. Mr. M.'s vital signs are stable and return flow via his three way foley has been light pink following prostatectomy. You notice he is experiencing periods of mental confusion and an increase in blood pressure from 108/90 to 170/92. He c/o feeling short of breath and his respiratory rate increases from 14 - 28 per minute. The nurse suspects ?					
a. pulmonary emboli					
b. water intoxication *					
c. pneumonia					
d. transient cerebral ischemia					
Comments:					
	0	0	0	0	0
123. Following a right adrenalectomy, Mrs. S. is positioned on the right side and closely monitored for:					
a. hemorrhage and shock *					
b. excessive urinary output					
c. severe pain and discomfort					
d. improvement in mental status					
Comments:					
	0	0	0	0	0
124. Mr. J., age 30, is admitted to PACU following left inguinal hernia repair. Upon arrival, he develops a nosebleed accompanied by a rapid rise in blood pressure from 110/60 to 190/110. The cardiac monitor shows sinus tachycardia with frequent premature atrial and ventricular contractions. These signs may be indicative of:					
a. hemorrhage and shock					
b. cocaine use *					
c. uncontrolled pain					
d. bacterial sepsis					
Comments:					
	0	0	0	0	0
125. Immediately following endoscopy, Ms. S. becomes obtunded and apneic. She has a history of chronic alcohol and benzodiazepine use. The nurse provides ventilatory support and prepares to administer:					
a. Calcium Chloride					
b. normal saline bolus					
c. Ondansteron					
d. Romazicon IV *					
Comments:					

	Content (IA) 1	Content (ANAE) 2	Content (A/U) 3	Content (A/E) 4	Content (A/AE) 5
126. The patient who has an invasive temporary pacing device should NOT:	0	0	0	0	0
a. sit close to a television set					
b. use metallic utensils for eating					
c. have with an ungrounded electric razor*					
d. cough and deep breathe					
Comments:					
127. To prevent cardiac microshock when handling temporary pacing wires, the nurse should:	0	0	0	0	0
a. wear non-conductive shoes					
b. touch only one pacing wire at a time					
c. use non-conductive tweezers					
d. wear rubber gloves*					
Comments:					
128. Which complication is not associated with epicardial pacing?	0	0	0	0	0
a. endocarditis					
b. cardiac tamponade					
c. cardiac microshock					
d. thrombophlebitis*					
Comments:					
129. Which cardiac rhythm would indicate the need for a pacemaker?	0	0	0	0	0
a. symptomatic advanced heart block*					
b. symptomatic atrial fibrillation					
c. asymptomatic junctional escape					
d. symptomatic sinus tachycardia					
Comments:					

	Content (IA)	Content (ANAE)	Content (A/U)	Content (A/E)	Content (A/AE)
	1	2	3	4	5
	0	0	0	0	0
130. The role of the transducer in monitoring pressures is to:					
a. act as an alarm which indicates blockage of the catheter					
b. convert an electrical signal to a mechanical event which can be displayed					
c. convert a mechanical event into an electrical signal that can be displayed*					
d. display the waveform of pulmonary artery pressure					
Comments:					
	0	0	0	0	0
131. Pulmonary artery pressure monitoring is important in measuring cardiovascular status because:					
a. it allows direct measurement of the pressure in the left ventricle					
b. it allows visualization of the pulmonary artery					
c. it is an indirect reflection of the left ventricular end-diastolic*					
d. it is a direct reflection of mean arterial pressure					
Comments:					
	0	0	0	0	0
132. When attempting to inflate the balloon for a PCWP and no resistance is felt consider:					
a. the balloon may have ruptured*					
b. more volume is required to inflate the balloon					
c. the balloon should be refilled immediately					
d. the monitor is inoperative					
Comments:					
	0	0	0	0	0
133. The two primary determinants of cardiac output are?					
a. stroke volume and heart rate *					
b. stroke volume and ejection fraction					
c. heart rate and arterial blood pressure					
d. ejection fraction and arterial blood pressure					
Comments:					

	Content (IA)	Content (ANAE)	Content (A/U)	Content (A/E)	Content (A/AE)
	1	2	3	4	5
134. Elevated PAP pressures may reflect?	0	0	0	0	0
a. pulmonary disease					
b. hypertension					
c. embolism					
d. all of the above*					
Comments:					
135. Elevated PCWP may indicate?	0	0	0	0	0
a. LV failure					
b. mitral stenosis					
c. cardiac tamponade					
d. all of the above*					
Comments:					
136. A right ventricular wave pattern on the screen during pulmonary artery monitoring indicates:	0	0	0	0	0
a. proper positioning					
b. catheter may have slipped or coiled into the right ventricle*					
c. catheter whip is present					
d. balloon has remained inflated					
Comments:					
137. When monitoring the CVP with a triple lumen catheter, which lumen(port) is connected to the transducer?	0	0	0	0	0
a. proximal					
b. medial					
c. distal*					
d. introducer sheath					
Comments:					
138. Indication for the use of CVP/RAP monitoring include:	0	0	0	0	0
a. monitoring fluid status*					
b. monitoring preload, afterload, and contractility					
c. to estimate SVR					
d. Both a and b					
Comments:					

Content (IA)	Content (ANAE)	Content (A/U)	Content (A/E)	Content (A/AE)
1	2	3	4	5

Select the correct answer for each of the following:

What is the correct concentration for continuous infusion of the following?

139. a Nipride a. 50 mg in 250 ml D5W

Comments:

140. e Dobutamine b. 1 mg in 250 ml D5W

Comments:

141. d Dopamine c. 2 Gm in 500 ml D5W

Comments:

142. b Epinephrine d. 800 mg in 500 ml D5W

Comments:

143. f Levophed e. 250 mg in 250 ml D5W

Comments:

144. c Lidocaine f. 4 mg in 500 ml D5W

Comments:

Match the drug with the appropriate indication on the right.

145. g Inderal a. Atrial tachycardias

Comments:

146. e Epinephrine b. Metabolic acidosis

Comments:

147. f Procainamide c. Torsades, resistant
VF/VT

Comments:

			Content (IA)	Content (ANAE)	Content (A/U)	Content (A/E)	Content (A/AE)	
			1	2	3	4	5	
148.	<u>h</u>	Nitroglycerine	d. Pulmonary edema, fluid overload states	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Comments:								
149.	<u>i</u>	Dopamine	e. Restores Rhythm in arrest	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Comments:								
150.	<u>j</u>	Nipride	f. Antiarrhythmic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Comments:								
151.	<u>d</u>	Lasix	g. Beta blocker	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Comments:								
152.	<u>a</u>	Adenosine	h. Lowers preload, improves coronary perfusion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Comments:								
153.	<u>c</u>	MgSO4	i. Corrects hypotention	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Comments:								
154.	<u>b</u>	Sodium Bicarb	j. Rapidly lowers BP	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Comments:								
Please circle true or false for the following:								
155.	T F	Pentothal is an induction agent which produces hypnosis and amnesia but not analgesia. (t)		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Comments:								
156.	T F	Propofol (Diprivan) is rarely used in the OP setting due to the high incidence of nausea and vomiting postop. (f)		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Comments:								
157.	T F	Benzodiazepines potentiate narcotics. (t)		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Comments:								

			Content (IA)	Content (ANAE)	Content (A/U)	Content (A/E)	Content (A/AE)
			1	2	3	4	5
158.	T F	Ketamine does not depress the cardiovascular system.(t)	0	0	0	0	0
		Comments:					
159.	T F	Patients receiving Halothane must receive oxygen postop for 30 minutes to prevent diffusion hypoxia.(f)	0	0	0	0	0
		Comments:					
160.	T F	Nitrous oxide is associated with rare cases of hepatitis in adults.(f)	0	0	0	0	0
		Comments:					
161.	T F	Halothane is a potent bronchodilator.(t)	0	0	0	0	0
		Comments:					
162.	T F	Forane is the inhalation agent of choice in adults because of its mild effects on the CV system.(t)	0	0	0	0	0
		Comments:					
163.	T F	Fentanyl is 80 - 100 times more potent than Morphine.(t)	0	0	0	0	0
		Comments:					
164.	T F	Sufenta is not as potent as Fentanyl.(f)	0	0	0	0	0
		Comments:					
165.	T F	The desired effects of Alfenta last 30 minutes or less.(t)	0	0	0	0	0
		Comments:					
166.	T F	Droperidol potentiates narcotics.(f)	0	0	0	0	0
		Comments:					
167.	T F	Succinylcholine may result in prolonged neuromuscular blockade.(t)	0	0	0	0	0
		Comments:					

			Content (IA)	Content (ANAE)	Content (A/U)	Content (A/E)	Content (A/AE)	
			1	2	3	4	5	
168.	T	F	Pavulon may cause bradycardia.(f)	0	0	0	0	0
			Comments:					
169.	T	F	Tracrium is metabolized by the liver and excreted by the kidneys.(t)	0	0	0	0	0
			Comments:					
170.	T	F	Tachycardia is a common side effect of neostigmine.(f)	0	0	0	0	0
			Comments:					
171.	T	F	Cardiogenic shock responds to increased cardiac output.(t)	0	0	0	0	0
			Comments:					
172.	T	F	Vasoactive drugs may be administered through the arterial line.(f)	0	0	0	0	0
			Comments:					
173.	T	F	Direct pressure should be applied to the arterial site for 30 minutes after the catheter is removed.(f)	0	0	0	0	0
			Comments:					
174.	T	F	The CVP directly reflects LVEDP.(f)	0	0	0	0	0
			Comments:					
175.	T	F	A continuous wedged pulmonary capillary wedge pressure pattern indicates proper catheter placement.(f)	0	0	0	0	0
			Comments:					
176.	T	F	PCWP reflects LVEDP.(t)	0	0	0	0	0
			Comments:					
177.	T	F	Elevated PCWP may indicate hypovolemia.(f)	0	0	0	0	0
			Comments:					

			Content (IA) 1	Content (ANAE) 2	Content (A/U) 3	Content (A/E) 4	Content (A/AE) 5
178.	T F	Normal PCWP ranges from 4 - 12 mmHg.(t)	0	0	0	0	0
Comments:							
179.	T F	Normal systolic PAP ranges from 20 - 30 mmHg.(t)	0	0	0	0	0
Comments:							
180.	T F	Nitroglycerine lowers preload, improves coronary perfusion.(t)	0	0	0	0	0
Comments:							

APPENDIX B

BLUE PRINT FOR ITEM DEVELOPMENT

Blueprint for Item Development
 Postanesthesia Phase I Basic Knowledge Assessment Tool – Field Version

Content	Questions	Number
Airway Management	50, 51, 61, 62, 71, 72, 73, 77, 79, 82, 84, 85, 86, 88, 89, 90, 95, 96, 98, 111, 112, 113, 125, 159, 161,	25
Circulation	01, 02, 03, 04, 05, 06, 11, 12, 13, 14, 16, 17, 18, 19, 20, 21, 22, 23, 54, 91, 92, 93, 104, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 162, 171, 174, 175, 176, 177, 178, 179, 180	42
Neurological	67, 81, 94, 97, 99, 100, 101, 105, 106, 107, 108, 109, 110, 114, 115, 167	16
Anesthesia Agents/Adjuncts And Medications	10, 15, 44, 46, 47, 60, 63, 64, 65, 74, 116, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 160, 168, 169, 170,	35
Conscious Sedation	32, 33, 34, 35, 36, 37, 38, 40, 41, 42, 43,	11
Renal	66, 120, 121, 122, 123,	5
Patient Comfort	52, 53, 68, 80, 102, 163, 164, 165, 166,	9
Thermoregulation	49, 117, 118, 119,	4
Age Specific Competencies	24, 28, 30, 31, 39, 45, 55, 56, 57, 58, 59	11
Education/Standards	26, 69, 70, 75, 172, 173,	6
Documentation/Legal	09, 25, 29, 76,	4
Other	07, 08, 27, 48, 78, 83, 87, 104, 124, 126, 127, 128,	12

Blueprint for Item Development
Postanesthesia Phase I Basic Knowledge Assessment Tool – Version B

Content	Questions	Number
Airway Management	20, 21, 26, 30, 31, 32, 33, 37, 44, 45, 50, 71, 72, 73, 93, 95	16
Circulation	01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12, 13, 34, 35, 54, 57, 58, 59, 60, 61, 62, 64, 65, 66, 67, 68, 76, 80, 81, 82, 83, 84, 85	34
Neurological	38, 39, 40, 41, 42, 43, 46, 101	8
Anesthesia Agents/Adjuncts and Medications	53, 63, 74, 75, 77, 78, 79, 86, 87, 88, 89, 90, 92, 94, 96, 100, 102, 103	18
Conscious Sedation	91, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113	11
Renal	23, 48, 49	3
Patient Comfort	18, 19, 24, 69, 70, 97, 98, 99	8
Thermoregulation	17, 47	2
Age Specific Competencies	15, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123,	11
Education/Standards	25, 27, 55, 56	4
Documentation/Legal	14, 36,	2
Other	22, 28, 29, 51, 52, 16	6

APPENDIX C

INSTRUCTIONS TO EXPERT PANEL

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DEPARTMENT OF EDUCATION

August 23, 1997

Linda Ziolkowski, BSN, RN, CPAN
ABPANC President & Manager OR/PACU
Henry Ford Hospital
Detroit, MI

Dear Linda,

As a doctoral candidate at Oklahoma State University and as the Critical Care Coordinator at Saint Francis Hospital, I am in the process of developing a valid and reliable instrument that determines the competency level of critical care nurses for our PACU Phase I Unit. As a first step in developing this instrument, I'm asking you to serve as a member of a panel of expert nurses reviewing the content. The items in the test are based on the Core Curriculum for Post Anesthesia Nursing Practice, 3rd Edition and the Competency Based Orientation Manual developed by ASPAN.

Please read the items carefully following the instructions on the instrument evaluation sheet. Notice that the directions ask you to evaluate each item. At the end of each question an area is provided for comments. Feel free to make any comment you feel would improve the item. Once I have included your suggestions in the instrument, I will return it to you for your final review.

I am trying to identify five hospitals to help me pilot the instrument. I will provide all the materials, grade the instruments and forward the results. If you are willing to assist me, please contact me for further details.

In order to meet all the timelines of my study, I ASK YOU TO RETURN THE COMPLETED INSTRUMENT BY SEPTEMBER 15, 1997 IN THE SELF ADDRESSED STAMPED EMVELOPE.

Summary:

1. Please review and critique test items using the Scan Tron Sheet.
2. Let me know whether you will be willing to participate in a pilot study to test the validity and reliability of the instrument.
3. Please return the completed form by September 15.

Sincerely,

Barbara Hannah, RN, MS, CPAN

enc: enclosures

PACU BASIC KNOWLEDGE ASSESSMENT TOOL EVALUATION – ROUND I

Please take the time to complete this instrument evaluation. Your input will be useful to improve the instrument and improve the instrument to assure validity and reliability.

INSTRUCTIONS: Please read each item carefully. Darken the circle that is closest to your opinion regarding whether the item covers content essential for competent nursing practice in the Phase I setting of postanesthesia nursing. Please rate each item from 1 to 5 using these categories:

- 1 = Item content inappropriate (IA)
- 2 = Item content appropriate but not absolutely essential (A/NAE)
- 3 = Item content appropriate and useful (A/U)
- 4 = Item content appropriate and essential (A/E)
- 5 = Item content appropriate and absolutely essential (A/AE)

In addition to ranking each item, the space below each question is for your comments.

APPENDIX D

ITEM RANKING BY EXPERT PANEL

Summary of Item Ranking by Expert Panel Members (PM)

Mean Score Ranking for 180 Items

Item #	PM # 1	PM #2	PM # 3	PM # 4	ms	Item Modification
1	4	4	4	3	3.75	None
2	3	4	4	4	3.75	Word change
3	3	3	5	5	4.0	None
4	2	2	4	4	3.0	None
5	2	3	3	4	3.0	None
6	3	3	4	4	3.5	None
7	4	4	4	4	4.0	None
8	2	3	3	4	3.0	None
9	3	3	3	4	3.25	None
10	3	3	3	4	3.25	None
11	3	3	3	3	3.0	None
12	2	3	3	4	3.0	None
13	2	2	3	4	2.75	Rewrite Stem
14	4	4	4	5	4.25	None
15	3	3	4	4	3.5	None
16	5	5	5	5	5.0	None
17	4	4	5	5	4.5	None
18	5	5	5	5	5.0	Word Change
19	4	4	4	4	4.0	None
20	3	3	4	4	3.5	None
21	5	5	5	5	5.0	None
22	4	4	5	5	4.5	Word Change
23	5	5	5	5	5.0	Word Change
24	3	3	3	4	3.25	None
25	3	3	5	5	4.0	None
26	2	3	3	4	3.0	Item Rewritten
27	1	1	2	2	1.5	Item deleted
28	3	3	3	5	3.5	None
29	3	3	3	4	3.25	None
30	3	3	3	4	3.25	None
31	4	4	4	4	4.0	Item Rewritten
32	2	3	3	4	3.0	None
33	4	4	4	4	4.0	Distracter Rewritten
34	4	4	4	4	4.0	Word Change
35	3	3	3	5	3.5	Rekeyed
36	3	3	5	5	4.0	None
37	3	3	3	4	3.25	None
38	3	3	4	4	3.5	None
39	3	3	3	4	3.25	None

40	3	3	4	4	3.5	None
41	3	3	4	4	3.5	None
42	3	3	3	4	3.25	None
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56	3	3	4	5	3.75	Rewrite Distracters
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66	3	3	3	4	3.25	None
67	3	3	3	4	3.25	None
68	3	3	3	3	3.0	Rewrite distracter
69	2	2	4	4	3.0	Rewrite distracter
70	3	3	4	4	3.5	None
71	3	3	3	3	3.0	None
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76	4	4	4	5	4.25	None
77	3	4	4	5	4.0	None
78	3	3	4	4	3.5	None
79	4	4	4	4	4.0	None
80	2	2	4	4	3.0	Revise Distracters
81	3	3	4	4	3.5	None
82	3	3	4	4	3.5	None
83	3	3	4	4	3.5	None
84	4	4	4	5	4.25	None

85	3	3	3	5	3.5	None
86	3	3	3	3	3.0	Rewrite Stem
87	3	3	4	4	3.5	Reword distracter
88	4	4	4	5	4.25	Reword distracter
89	4	4	4	5	4.25	Reword distracter
90	3	3	4	4	3.5	none
91	2	3	5	5	3.75	Reword stem
92	3	3	4	4	3.5	Reword stem
93	3	3	3	4	3.25	None
94	3	3	3	4	3.25	Revise distracters
95	3	3	4	5	3.75	None
96	3	3	3	3	3.0	None
97	3	2	3	3	2.75	Revise distracter
98	4	4	4	5	4.25	None
99	4	4	4	5	4.25	Reword stem
100	3	3	3	5	3.5	Revise item
101	3	3	4	4	3.5	None
102	2	2	2	3	2.75	Delete item
103	2	3	3	4	3.0	Reword stem
104	3	3	3	3	3.0	None
105	2	4	4	4	3.5	None
106	4	4	4	5	4.25	None
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110	3	3	3	3	3.0	None
111	3	3	3	4	3.25	None
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114	3	3	3	4	3.25	None
115	3	3	3	4	3.25	None
116	3	3	3	4	3.25	Revise stem
117	3	3	3	4	3.25	None
118	3	3	3	3	3.0	Rewrite distracters
119	2	2	4	4	3.0	Rewrite item
120	3	3	4	4	3.5	None
121	4	4	5	5	4.5	None
122	4	4	5	5	4.5	None
123	4	4	4	5	4.25	None
124	3	1	2	2	2.0	Delete
125	3	3	4	4	3.5	Revise stem
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127	2	2	2	3	2.25	Delete
128	2	2	2	3	2.25	Delete
129	3	3	4	4	3.5	None

130	2	3	3	4	3.0	None
131	3	3	3	4	3.25	Reword distracter
132	4	4	5	5	4.5	Revise stem
133	3	3	4	4	3.5	None
134	4	4	4	4	4.0	None
135	4	4	4	4	4.0	Revise stem
136	4	4	5	5	4.5	None
137	4	4	4	4	4.0	None
138	4	4	4	4	4.4	None
139	1	1	1	3	1.5	Delete
140	1	1	1	3	1.5	Delete
141	1	1	1	3	1.5	Delete
142	1	1	1	2	1.25	Delete
143	1	1	1	3	1.5	Delete
144	1	1	2	3	1.75	Delete
145	4	4	4	5	4.25	Revise
146	4	4	4	5	4.25	Revise
147	4	4	4	4	4.0	Revise
148	4	4	4	4	4.0	Revise
149	4	4	4	5	4.25	Revise
150	4	4	4	5	4.25	Revise
151	4	4	5	5	4.5	Revise
152	4	4	4	4	4.0	Revise
153	4	4	4	5	4.25	Revise
154	4	4	4	4	4.0	Revise
155	3	3	4	4	3.5	None
156	3	4	4	4	3.75	None
157	4	4	4	4	4.0	None
158	3	3	3	4	3.25	None
159	3	3	3	3	3.0	None
160	2	3	4	3	3.0	None
161	3	3	4	4	3.5	None
162	3	3	3	3	3.0	Revise stem
163	4	4	4	4	4.0	None
164	3	3	4	4	3.5	None
165	2	3	4	4	3.25	None
166	3	3	3	3	3.0	Rekey
167	4	4	4	4	4.0	Reword stem
168	3	3	3	4	3.25	None
169	3	3	3	4	3.25	Rekey
170	3	3	3	4	3.25	None
171	3	3	3	4	3.25	None
172	4	4	4	4	4.0	None
173	3	4	4	4	3.75	None
174	3	3	3	3	3.0	None

175	4	4	4	5	4.25	Revise stem
176	3	3	4	4	3.5	Revise stem
177	3	4	4	4	3.75	None
178	3	4	4	4	3.75	Revise stem
179	3	4	4	4	3.75	None
180	3	4	5	5	4.25	None

APPENDIX E
RECOMMENDATIONS FOR INSTRUMENT
REVISION

Saint Francis Hospital

6161 South Yale Avenue
Tulsa, OK 74136
918.494.1190
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DEPARTMENT OF EDUCATION www.saintfrancis.com

Saint Francis Health System

Founded by The William K. Warren Foundation

September 9, 1997

Barbara Hannah, MS, RN, CPAN
Department of Education
Saint Francis Hospital
6161 S. Yale Ave.
Tulsa, OK 74136

Dear Barbara,

Thank you for the opportunity to be a part of the review panel for your instrument to test competency of new practitioners in PACU. As you are aware there continues to be an increased pressure from the various accrediting bodies for methods that will ensure the competency of staff caring for patients. I will be looking forward to help pilot the test when your committee approves it for pilot.

Although I do not pretend to be an expert in the nursing practice in PACU, I hope my comments regarding test construction and formatting will be helpful.

In order to make this test instrument applicable in all of the settings where patients are recovering from anesthesia, I would encourage you to look at the 180 items as covering and representative of the entire domain of post anesthesia nursing knowledge. Your content experts should validate this during their review of the items. If you accept the 180 items as representative of the domain you can sample from that domain and have 3 or 4 tests and can avoid a test – re-test validity issue.

I would also encourage you to format the test in a way that would allow exclusion of a particular area of content testing if it does not apply in a given setting. It would seem appropriate to cover the material in the following manner:

1. General knowledge that applies across all area of PAC nursing
2. Medication issues
3. Conscious sedation issues
4. Pediatric care
5. Specialized care in a system format

My rationale on using this approach makes identifying weak areas in the individual's knowledge base easier and helps direct orientation to the PACU.

I personally do not like to see various types of testing mixed together i.e., Multiple Choice, True/False and Matching. If you want to test base line knowledge, I believe it is better to use methods that limit the "guessing"—not a criticism, just an observation.

If you have any questions regarding my comments please contact me.

Sincerely,

Patti Muller-Smith, R. N., Ed.D.
Director, Department of Education

PMS/ajm

APPENDIX F

PACU INSTRUMENT—VERSION B

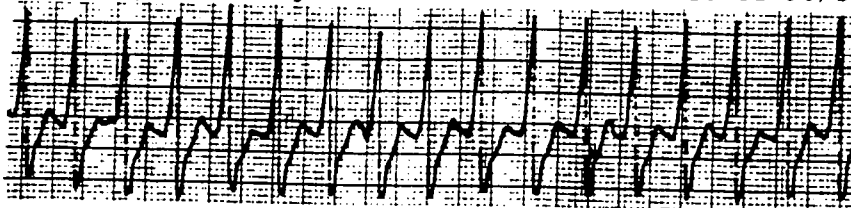
SECTION I

PACU Test B

Please select the correct answer to the following multiple choice questions:

Case # 1:

The patient with the rhythm shown below is c/o shortness of breath, a tight feeling in her chest and has a BP of 90/50.



1. Identify the rhythm.
 - a. PSVT
 - b. atrial fibrillation
 - c. sinus tachycardia
 - d. accelerated junctional rhythm

2. To treat this patient's heart rate anesthesia will most likely order:
 - a. Lidocaine
 - b. Procainamide
 - c. Adenosine
 - d. Atropine

3. Identify the following rhythm:

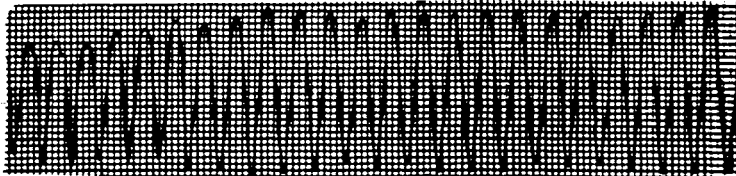


- a. junctional Tachycardia
- b. accelerated idioventricular rhythm
- c. appropriate AV pacing
- d. normal sinus rhythm with artifact

4. What interventions would you employ to correct "failure to pace"?
 - a. reposition the patient
 - b. increase the MA
 - c. check all connections between the pacemaker and the pulse generator
 - d. all of the above
5. What is the initial dose of Lidocaine for the treatment of frequent multifocal PVC's?
 - a. 0.5 - 0.75 mg/kg IVP
 - b. 1.0 - 1.5 mg/kg IVP
 - c. 2.0 - 3.0 mg/kg IVP
 - d. 3.5 - 4.0 mg/kg IVP

Case # 2:

You are admitting a 56 year old male following a lumbar laminectomy. The patient is extubated with spontaneous respirations of 10/minute. You apply O₂ per nasal catheter and apply the pulseoximeter. You are unable to get an SAO₂ reading on the monitor. As you apply the BP cuff and connect the cardiac monitor you notice the following rhythm on the monitor.

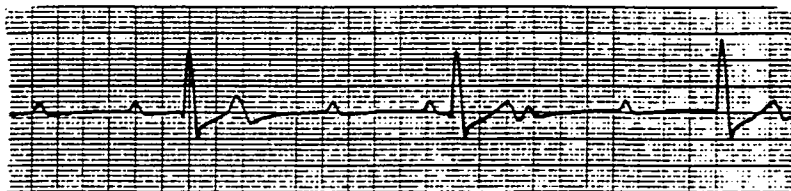


6. Identify the rhythm.
 - a. pulseless electrical activity
 - b. ventricular tachycardia
 - c. PSVT
 - d. ventricular fibrillation
7. You are able to palpate a carotid pulse and the B/P is 80/50. The patient responds verbally but inappropriately to your questions. The CRNA tells you the patient was in normal sinus rhythm during the procedure with BP's in the 110/80 range. What is the appropriate intervention?
 - a. synchronized cardioversion at 100 joules
 - b. Procainamide 20 mg/minute
 - c. Verapamil 5 mg IVP
 - d. Lidocaine 5 mg/kg slow IV

8. The monitor shows the same rhythm and the patient deteriorates. He is now unresponsive and pulseless. The Anesthesiologist at the bedside will most likely:

- a. order an H & H
- b. defibrillate at 200 joules
- c. administer Verapamil 10 mg/kg
- d. cardiovert at 50 joules

9. Interpret the following rhythm:

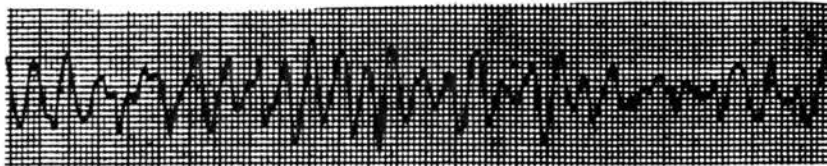


- a. sinus bradycardia
 - b. ventricular standstill
 - c. complete heart block
 - d. junctional bradycardia
10. If the patient has a pulse, the most appropriate immediate treatment for this rhythm is:
- a. Verapamil 5 mg IVP
 - b. transcutaneous pacing
 - c. Bretyllium 20 mg/kg IVP
 - d. Atropine 10 mg IV drip

Case # 3:

Mrs. Wilson, age 65, is admitted to your slot following a Thyroidectomy. She has a history of multiple MI's in the past and a CABG one year ago. She is intubated and being ambu'd by the Anesthesiologist. You connect her to the bedside ventilator at a rate of 10, 100% O₂, and TV of 800. Pulseoximetry is not indicating a pulse. The following cardiac rhythm appears on the monitor. Mrs. Wilson has **no** palpable pulse.

11. Identify this rhythm:



- a. AV dissociation
 - b. asystole
 - c. ventricular fibrillation
 - d. ventricular tachycardia
12. What is the cardiac output associated with this rhythm?
- a. 25%
 - b. 50%
 - c. 0%
 - d. 5%
13. Your initial action to treat this rhythm will be to:
- a. initiate synchronized external pacing immediately
 - b. administer synchronized cardioversion at 50 joules
 - c. prepare for a transvenous pacemaker insertion
 - d. call a "code" and prepare to defibrillate at 200 joules
14. One very important safety consideration the nurse must remember during defibrillation is to:
- a. increase the MA to 50
 - b. set the monitor/defibrillator in the SYNC mode
 - c. initiate transcutaneous pacing
 - d. stand clear and be certain everyone else is standing clear

15. All of the following are priorities when planning the immediate postoperative care for the elderly patient except:
- correcting preoperative dehydration
 - promoting optimal gas exchange
 - administering large doses of narcotics
 - promoting skin integrity
16. Sylvia, age 24, has a history of allergy to apples, banana and avocados. The PACU nurse should be aware she may also be sensitive to which of the following?
- cotton
 - latex
 - vinyl
 - polyester
17. During the assessment of a 25 year old male, following arthroscopy of the left knee, the PACU nurse notices a pulse rate of 160, accompanied by an SAO₂ of 70 and muscle rigidity. The nurse might suspect the onset of:
- renal failure
 - malignant hyperthermia
 - addisonian crisis
 - hypoglycemia
18. Mrs. M. arrives in PACU following an abdominal hysterectomy. Mrs. M. is moaning and tossing on the stretcher. Her vital signs are: BP 150/80, pulse 110, and respirations 10 - 12 per minute. She is extubated and dressings are dry and intact. The patient has no known sensitivity to medications. To relieve her pain the PACU nurse would administer:
- Naloxone 1 mg IV push
 - Morphine Sulfate 10 mg slow IV push
 - Meperidine 50 mg IM
 - Codeine 10 mg IM

19. Mr. Lee, age 62, began to c/o chest discomfort and shortness of breath during the immediate postoperative period. His BP was 120/60 and pulse was 98. The cardiac monitor shows about 6 - 8 multiformed PVC's per minute. On 12 lead ECG, ST segment elevation is noted in leads 2,3, and AVF. SAO₂ is 92% on 4 L/O₂ per nasal cannula. After notifying the physician, the nurses' immediate actions might include:
- sublingual Nitroglycerine and starting a continuous Nitroglycerine infusion
 - Morphine Sulfate slow IV - titrating to effect
 - Lidocaine bolus followed by a continuous Lidocaine fusion
 - all of the above
20. Mr. J. is scheduled for elective inguinal hernia repair at your ambulatory surgery center. During the assessment, he relates he gets short of breath and has a little chest discomfort climbing a couple of flights of stairs. The nurse noted moderate jugular venous distension and a systolic heart murmur. These signs and symptoms are commonly associated with.
- pulmonary insufficiency
 - aortic stenosis
 - mitral insufficiency
 - tricuspid stenosis
21. Stephen, age 54, is intubated and coughing on arrival to PACU post appendectomy. The CRNA relates difficulty achieving intubation intraoperatively. The nurse anticipates which of the following complications?
- atelectasis and pneumonia
 - laryngospasm and pulmonary edema
 - abdominal dehiscence and evisceration
 - acute postoperative asthma
22. A 78 year old female patient is admitted to PACU following hip replacement. After 45 minutes, the patient responds appropriately to verbal stimuli. BP and pulse are within normal limits, but the patient remains too weak to extubate. The PACU nurse suspects:
- early onset pneumonia
 - advanced renal disease
 - acquired pseudocholinesterase deficiency
 - delayed onset depression

23. Mr. F., age 70, develops hypotension following a cystoscopy with biopsy utilizing spinal anesthesia. He is awake and alert on arrival to PACU. His blood pressure drops from 140/90 to 90/60. He c/o feeling weak and tired. There are no signs of bleeding. Which of the following interventions would the nurse expect to implement first.
- Place the patient in Trendelenburg position and check his temperature
 - administer isotonic IV fluid and elevate the patient's legs
 - order a 12 lead ECG and prepare for CVP insertion
 - infuse Nipride at 5 mcg/minute IV
24. Mrs. T. c/o pain in her left hand following tendon repair of the third and fourth fingers. A Bier block has used to perform the procedure. Her vital signs are stable and the fingers distal to the operative site are warm and dry with intact sensation and rapid capillary refill. After consulting the postoperative orders, the nurse would:
- administer IV narcotics as ordered
 - order and xray of the left hand to check alignment
 - call the physical therapist for a consult
 - infuse IV antibiotics
25. Rapid assessment of the patient's postoperative cardiopulmonary status would provide:
- airway and respiratory function, pulse, blood pressure and condition of the operative site
 - pupillary reaction, urinary output and gross motor function
 - review of preoperative documentation, and interviews with significant others
 - none of the above
26. Capnography can be utilized by the PACU nurse to:
- detect malignant hyperthermia
 - assess alveolar ventilation
 - identify esophageal intubation and ventilation equipment problems
 - all of the above

27. Appropriate discharge criteria for Phase I PACU patients include:
- stable vital signs and pain control
 - documentation by the primary nurse
 - minimal recovery time has lapsed
 - urinary output is 15 ml/hour with moderate sedation
28. The single most important precaution in PACU to prevent the spread of postoperative infection is:
- administration of IV antibiotics
 - wearing hospital provided surgical scrubs
 - thorough handwashing following patient contact
 - wiping overbed tables and other equipment with antiseptic solution
29. Following stapedectomy of the left ear, Mrs. B. begins coughing and is unable to stop. The PACU nurse:
- administers Codeine 30 mg IV
 - encourages continued coughing
 - recognizes cough as a normal reaction to intubation
 - monitors vital signs closely
30. To manage serious complications associated with maxillofacial surgery, the nurse will:
- extubate the patient immediately
 - avoid oral suctioning
 - make wire cutters readily available
 - suction the endotracheal tube every 5 minutes
31. Nursing intervention for patients immediately following bronchoscopy is directed toward:
- adequate hydration and monitoring urinary output
 - maintaining an open airway
 - forcing oral fluids and frequent tracheal suctioning
 - encouraging coughing and deep breathing
32. For the patient with chest tubes, which of the following assessment findings indicates proper functioning of a water seal system?
- intermittent bubbling in the water seal bottle with expiration
 - fluctuation of fluid in water seal tubing with respiration
 - moderate amount of serosanguinous drainage in lower chest tube
 - continuous bubbling in the water seal bottle

33. Following a left pneumonectomy, the nurse properly positions the patient:
- on the operative side
 - in the Trendelenburg position
 - prone with the arms extended
 - on the nonoperated side
34. During repeat assessment of Mr. T. immediately post coronary bypass grafting, the nurse notices absence of an apical pulse. Normal sinus rhythm is displayed on the monitor. The nurse will:
- repeat the pulse check every 5 minutes
 - call for assistance and initiate basic life support
 - notify the surgeon and request a 12 lead ECG
 - call the lab and request a stat hemoglobin and hematocrit
35. Following a right saphenous femoral-popliteal bypass graft, which of the following measures will the nurse monitor frequently?
- femoral, radial and brachial pulses
 - level of consciousness and aphasia
 - popliteal, dorsalis pedis and post tibial pulses
 - urinary retention and brachial pulses
36. Immediately upon arrival to PACU following carotid endarterectomy, the nurse will be least concerned with:
- orders for intravenous replacement fluids
 - checking the operative site
 - assessing level of consciousness
 - monitoring vital signs
37. When preparing to receive a 78 year old patient immediately following repair of aortic aneurysm, the nurse knows this patient will most likely require?
- additional venous access for adequate fluid replacement
 - respiratory support with a volume controlled ventilator
 - Rotorest bed for continuous position changes
 - 12 lead ECG stat and every 2 hours for 12 hours
38. After total hip replacement, the nurse will:
- request a CPM machine, immediately
 - properly place an adduction pillow
 - secure skin traction with ace bandages
 - raise knee gatch 15 degrees

39. After closed reduction of fractured left tibia and cast application for a crush injury to the lower left leg, the patient c/o severe, unrelenting pain with numbness, tingling and decreased capillary refill in the toes of the left foot even after repeated doses of pain medication, elevation and application of cold. The nurse suspects:
- deep vein thrombosis
 - improper body alignment and positioning
 - compartment syndrome
 - popliteal bruising and stasis
40. What is the most common cause of hypotension following spinal surgery with fusion?
- excessive intraoperative blood loss
 - vigorous crystalloid replacement
 - reaction to anesthetic agents and urinary retention
 - postoperative pain, anxiety and fear
41. In the immediate postoperative period following knee surgery, changes in sensation over the dorsum of the foot on the operated side is assessed to detect?
- compression of the peroneal nerve
 - return of circulation to lower extremity
 - recovery from regional anesthesia
 - none of the above
42. The nurse examines the dressings of a craniotomy patient and discovers a spot of serosanguinous drainage surrounded by a ring of lighter colored drainage. Appropriate intervention includes:
- positioning the patient on the operated side and taking vital signs
 - elevate the head of the bed 30 degrees and notify the neurosurgeon
 - administer IV antibiotics
 - encourage the patient to cough, turn and deep breathe every 10 minutes
43. One of the nurses' major responsibilities during a seizure is to:
- restrain the patient and call for help
 - administer pain medication as ordered
 - insert an oral airway and prepare for intubation
 - observe, report and document seizure activity

44. Based on the following arterial blood gas results for a mechanically ventilated patient in PACU the nurse will plan to:
- pH = 7.44, pCO₂ = 27 mmHg, pO₂ = 134 mmHg, HCO₃ = 26 mEq/L.
Ventilator settings are Vt = 600 ml, rate = 12, FiO₂ = 0.6
- administer 24 mEq/L of NaHCO₃
 - decrease rate
 - maintain existing ventilator settings
 - decrease Vt
45. Following thyroidectomy or parathyroidectomy which of the following assessment findings would indicate pneumothorax or rupture of the trachea?
- inspiratory wheezing
 - expiratory stridor
 - subcutaneous stridor
 - paradoxical chest wall movement
46. Which of the following indicates a positive Chvostek's sign?
- carpopedal spasm
 - twitch of lip or facial muscle
 - extensor flexion
 - inability to smile, grimace or raise the eyebrows
47. Diagnostic signs and symptoms associated with thyroid storm include:
- bradycardia, bradypnea, hypotension and hypothermia
 - normal respiration, tachycardia and normothermia
 - tachycardia, tachypnea, hypertension and hyperthermia
 - nausea, vomiting and diarrhea
48. Following rectal surgery, the patient c/o a feeling of fullness and discomfort over the lower abdomen. The nurse assesses this patient for?
- spastic colon
 - renal colic
 - bladder spasms
 - urinary retention

49. Mr. M.'s vital signs are stable and return flow via his three way foley has been light pink following prostatectomy. You notice he is experiencing periods of mental confusion and an increase in blood pressure from 108/90 to 170/92. He c/o feeling short of breath and his respiratory rate increases from 14 - 28 per minute. The nurse suspects?
- pulmonary emboli
 - water intoxication
 - pneumonia
 - transicnt cerebral ischemia
50. Immediatly following endoscopy, Ms. S. becomes obtunded and apneic. She has a history of chronic alcohol and benzodiazepine use. The nurse provides ventilatory support and prepares for:
- administration of Calcium Chloride
 - normal saline bolus
 - administration of Ondansetron
 - endotracheal intubation
51. Which complication is not associated with epicardial pacing?
- endocarditis
 - cardiac tamponade
 - cardiac microshock
 - thrombophlebitis
52. The role of the transducer in monitoring pressures is to:
- act as an alarm which indicates blockage of the catheter
 - convert an electrical signal to a mechanical event which can be displayed
 - convert a mechanical event into an electrical signal that can be displayed
 - display the waveform of pulmonary artery pressure

Please select true or false for each of the following:

53. Tachycardia is a common side effect of neostigmine.
- a. True
 - b. False
54. Cardiogenic shock responds to increased cardiac output.
- a. True
 - b. False
55. Vasoactive drugs may be administered through the arterial line.
- a. True
 - b. False
56. Direct pressure should be applied to the arterial site for 30 minutes after the catheter is removed.
- a. True
 - b. False
57. The CVP is a direct reflection of LVEDP.
- a. True
 - b. False
58. A continuous wedged pulmonary artery occlusion pressure pattern indicates proper catheter placement.
- a. True
 - b. False
59. PAOP reflects LVEDP.
- a. True
 - b. False
60. Elevated PAOP may indicate hypovolemia
- a. True
 - b. False
61. Normal PAOP ranges from 4 - 12 mmHg.
- a. True
 - b. False

62. Normal systolic PAP ranges from 20 - 30 mmHg.
- a. True
 - b. False
63. Nitroglycerine lowers preload and improves coronary perfusion.
- a. True
 - b. False

SECTION IIMedications:

64. How much atropine is recommended as the initial dose for bradycardia?
- a. 0.2 mg - 0.3 mg IV
 - b. 0.5 mg - 1.0 mg IV
 - c. 2.0 mg - 3.0 mg IV
 - d. 3.0 mg - 4.0 mg IV
65. Which of the following medications will be administered to slow PSVT and restore a normal sinus rhythm?
- a. Lidocaine
 - b. Procainamide
 - c. Adenosine
 - d. Atropine
66. The anesthesiologist orders an Epinephrine drip for your patient in cardiogenic shock. What is the recommended dosage range?
- a. 1 - 2 mcg/minute
 - b. 2 - 10 mcg/kg/minute
 - c. 2 - 10 mcg/minute
 - d. 10 - 20 mcg/kg/minute
67. What is the initial dose of Lidocaine for the treatment of multifocal PVC's?
- a. 0.5 mg/kg IVP
 - b. 1.0 - 1.5 mg/kg IVP
 - c. 2.0 - 3.0 mg/kg IVP
 - d. 3.5 - 4.0 mg/kg IVP
68. Choose the recommended continuous IV drip rate for the administration of Lidocaine following resuscitation from ventricular fibrillation immediately post myocardial infarction:
- a. 2 - 4 mg per minute
 - b. 200 micrograms per second
 - c. 1 Gram every 12 minutes
 - d. none of the above

69. Adverse effects related to the administration of remifentanyl include:
- hypotension, bradycardia, apnea and muscle rigidity
 - pruritis, tachypnea, tachycardia, and muscle fasciculation
 - respiratory depression, hypertension, agitation, and seizures
 - hypertension, ventricular dysrhythmias, muscle fasciculation, and neuralgia
70. Appropriate nursing interventions for the PACU patient exhibiting signs of hemodynamic compromise during or following administration of remifentanyl may include immediately stopping the infusion and administering:
- sublingual nitroglycerine
 - sufenta
 - naloxone
 - roamzicon
71. Immediately following administration of Succinylcholine, the PACU nurse expects:
- muscular fasciculations, complete muscle relaxation and apnea
 - muscular rigidity, tachycardia, and tachypnea
 - Cheyne-Stokes respirations, bradycardia, and tetany
 - hypertension, muscle relaxation, and tachypnea
72. Following successful reintubation with Succinylcholine, the nurse would expect:
- return of spontaneous respiratory effort within 4 - 6 minutes
 - paralysis for at least 30 minutes
 - reversal of muscle relaxation with Neostigmine
 - mechanical respiratory support for at least an hour postreintubation
73. Following administration of Pancuronium Bromide, the nurse expects:
- muscle fasciculations, apnea and tetany
 - return of normal respiration within 5 - 10 minutes
 - slight reduction in heart rate, muscular relaxation, and mild increase in blood pressure
 - forced expiration against the ventilator within minutes of administration of Pancuronium Bromide

74. The anesthesiologist administers Neostigmine and Atropine IV to Mr. F. upon arrival in PACU. In addition to signs of reversal, the nurse will carefully assess the patient for:
- changes in blood pressure, pulse and appearance of cardiac dysrhythmias
 - apnea, hypertension, and tachycardia
 - spontaneous respiration, pupillary constriction and SVT
 - wheezing, stridor and bradypnea
75. Following reversal of a nondepolarizing muscle relaxant with Neostigmine and Atropine, the patient has persistent bradycardia. After ruling out other causes for the slow cardiac rhythm, the nurse would anticipate the administration of:
- Adenosine
 - Lidocaine
 - Glycopyrrolate
 - Epinephrine
76. Which of the following drugs would never be used in cardiopulmonary emergencies?
- Epinephrine
 - Atropine
 - Ondansetron
 - Lidocaine
77. Which of the following pharmacologic interventions is indicated for immediate treatment of thyroid storm?
- Calcium Gluconate, Procainamide, and Atropine
 - Sodium Iodide, Propranolol, and Glucocorticosteroids
 - Bretylium, Atropine, and Lidocaine
 - Isuprel, Inderal, and Ibuprophen
78. Inderal is classified as a/an:
- Beta-blocker
 - antiarrhythmic
 - alpha stimulator
 - antioxidant

79. Epinephrine is indicated for the treatment of:
- metabolic acidosis
 - atrial tachycardias
 - cardiac arrest
 - hypertension
80. Procainamide is classified as a/an:
- Beta-blocker
 - antiarrhythmic
 - antihypertensive
 - inotrope
81. Nitroglycerine is indicated to treat:
- pulmonary edema
 - hypotension
 - dysrhythmias
 - angina pectoris
82. Dopamine is administered to correct:
- hypertension
 - hypotension
 - abnormal rhythms
 - Torsades'
83. Nipride is a/an:
- Beta-blocker
 - antihypertensive
 - antiarrhythmic
 - inotrope
84. Lasix is indicated for the treatment of:
- fluid overload states
 - hypotension
 - metabolic acidosis
 - atrial tachycardias
85. Adenosine is indicated for the treatment of:
- Torsades'
 - pulmonary edema
 - atrial tachycardias
 - complete heart block

86. MgSO₄ is indicated for the treatment of:
- a. hypotension
 - b. fluid overload states
 - c. Torsades'
 - d. PEA
87. Sodium Bicarbonate is indicated in the treatment of:
- a. hypertension
 - b. hypotension
 - c. metabolic acidosis
 - d. metabolic alkalosis
88. Which of the following drugs is administered concurrently with neostigmine to counteract bradycardia, bronchoconstriction, and excess secretions?
- a. Lidocaine
 - b. Inderal
 - c. Atropine
 - d. Versed

Please select true or false for the following:

89. Pentothal is an induction agent which produces hypnosis and amnesia but not analgesia.
 - a. True
 - b. False

90. Propofol (Diprivan) is rarely used in the OP setting due to the high incidence of nausea and vomiting postop.
 - a. True
 - b. False

91. Benzodiazepines potentiate narcotics.
 - a. True
 - b. False

92. Ketamine does not depress the cardiovascular system.
 - a. True
 - b. False

93. Patients receiving Halothane must receive oxygen postop for 30 minutes to prevent diffusion hypoxia.
 - a. True
 - b. False

94. Nitrous oxide is associated with rare cases of hepatitis in adults.
 - a. True
 - b. False

95. Halothane is a potent bronchodilator.
 - a. True
 - b. False

96. Desflurane is the inhalation agent of choice in adults because of its mild effects on the CV system.
- a. True
 - b. False
97. Fentanyl is 80 - 100 times more potent than Morphine.
- a. True
 - b. False
98. Sufenta is not as potent as Fentanyl.
- a. True
 - b. False
99. The desired effects of Alfenta last 30 minutes or less.
- a. True
 - b. False
100. Droperidol potentiates narcotics.
- a. True
 - b. False
101. Succinylcholine may produce prolonged neuromuscular blockade.
- a. True
 - b. False
102. Pavulon may cause bradycardia.
- a. True
 - b. False
103. Tracrium is metabolized by the liver and excreted by the kidneys.
- a. True
 - b. False

Section IIIIV Conscious Sedation:

104. Which statement regarding IV conscious sedation is most correct?
- a controlled state of unconsciousness
 - fully awake and oriented to time, place and person
 - partial loss or complete loss of protective reflexes
 - responsive to physical and verbal stimuli
105. During conscious sedation, the patient experiences signs and symptoms of shock with a systolic blood pressure of < 70 mmHg. Appropriate nursing intervention would include:
- discontinuing IV administration of medication and administering the appropriate reversal agent(s)
 - positioning the patient and administering oxygen
 - no action is required
 - a and b are correct
106. Flumazenil has been ordered for a patient experiencing deep sedation. Which of the following statements is true regarding this drug?
- Flumazenil is a narcotic reversal agent
 - the duration effect of Flumazenil may be shorter than that of benzodiazepines
 - a and b are correct
 - b is correct
107. Assessment factors of restlessness, agitation, and an initial increase in pulse and blood pressure, after conscious sedation medication administration may be the result of:
- allergic reaction to the medication
 - low oxygen saturation
 - deep sedation
 - none of the above

Answer T for true and F for false to each of the following questions related to patients receiving IV conscious sedation:

108. Prior to conscious sedation an informed consent should be obtained.
 - a. True
 - b. False
109. A patient in deep sedation should have vital signs taken and documented every 15 minutes.
 - a. True
 - b. False
110. All conscious sedation patients need to have concurrent oxygen administration and continuous pulse oximetry monitoring.
 - a. True
 - b. False
111. Cardiac monitoring is recommended for patients over 65 years of age or known to have preexisting cardiac disease and all patients in deep sedation.
 - a. True
 - b. False
112. Diazepam has a longer duration of action than Midazolam.
 - a. True
 - b. False
113. Resedation may occur following administration of a reversal agent.
 - a. True
 - b. False

SECTION IV:PEDIATRICS:

114. To defibrillate a child, the initial energy level is:
- 1 joule/kg
 - 2 joules/kg
 - 3 joules/kg
 - 4 joules/kg
115. Which of the following characteristics is a true anatomical difference in pediatric patients as compared to adults and has important implications for airway management in the immediate postoperative period?
- location of the larynx is at the C5 to C6 level in infants
 - epiglottis is short, narrow, stiff, and U shaped in infants
 - chest is larger in proportion to the head in infants
 - neck is longer in infants to compensate for head to chest proportions
116. Which of the following statements is/are true regarding pediatric patients:
- pediatric patients are miniature adults
 - the postoperative goal for nursing care is to return pediatric patients to their preanesthesia state
 - pediatric patients in general can tolerate much greater fluctuations in their homeostatic state
 - parental anxiety has minimal effects on the nursing care of the pediatric patient
117. Brian, age 4, has a history of allergy to bananas, apples, and avacodos. The PACU nurse must also be aware that he may also be sensitive to which of the following?
- cotton
 - latex
 - vinyl
 - polyester

118. During assessment of a 5 year old boy following bilateral myringotomy, the PACU nurse notices a pulse rate of 200, accompanied by an SAO₂ of 70% and muscle rigidity. The nurse might suspect the onset of:
- renal failure
 - malignant hyperthermia
 - addisonian crisis
 - hypoglycemia
119. Stephanie, age 4, is intubated and coughing on arrival to PACU post appendectomy. The CRNA relates difficulty achieving intubation intraoperatively. The nurse anticipates which of the following complications:
- atelectasis and pneumonia
 - laryngospasm and pulmonary edema
 - abdominal distention and evisceration
 - acute onset asthma
120. A 4 year old is admitted to PACU following repair of an inguinal hernia. He received Ultane for mask induction intraoperatively. In the immediate postoperative phase the nurse will be least concerned about:
- laryngospasm
 - prolonged recovery time
 - cardiovascular effects
 - decreased cerebral circulation
121. Elizabeth, age 13, was admitted to PACU following posterior fusion of L1 to L5 vertebrae with instrumentation to correct her scoliosis. A priority nursing intervention is directed toward:
- administering a loop diuretic to reduce facial edema
 - assisting Elizabeth to turn using the trapeze bar for support
 - positioning Elizabeth in the prone position to facilitate drainage of secretions
 - encouraging Elizabeth to perform deep breathing exercises

122. To provide comfort for 4 year old Jeffery recovering from bilateral inguinal hernia repair, the PACU nurse would include all of the following except:
- a. apply a warm blanket and provide a quiet environment
 - b. have parents present when Jeffery awakens from anesthesia
 - c. administer small doses of Fentanyl for pain
 - d. stimulate Jeffery to keep him awake during his stay in PACU
123. Robert, age 5, awakens in PACU and begins to cry. He does not respond appropriately to verbal stimuli or to his parents. He is combative, confused, seems disoriented. His SAO₂ is 97% and vital signs are stable. The nurse suspects:
- a. hypoxemia
 - b. emergence delirium
 - c. hypovolemia
 - d. separation anxiety

APPENDIX G

HOSPITALS PARTICIPATING IN STUDY

Beth Israel Deaconess Hospital
330 Brookline Avenue
Boston, MA 02215

Brigham and Women's Hospital
75 Francis Street
Boston, MA 02115

Baptist Regional Health Center
200 Second Avenue South West
Miami, OK 74335-1207

Norman Regional Hospital
901 Porter Box 1308
Norman, OK 73070-1308

Presbyterian Hospital
700 North East 13th
Oklahoma City, OK 73104

Jane Phillips Medical Center
3500 E. Frank Phillips Boulevard
Bartlesville, OK 74006-2464

Henry Ford Hospital
Main Campus
2799 W. Grand Boulevard
Detroit, MI 48202

Saint Luke Hospital
5901 Moncova, Road
Maumec, Ohio 43571

Midwest Regional Hospital
2825 Parklawn Drive
Midwest City, Oklahoma 73110

Arrowhead Community Hospital
18701 N. 67th Avenue
Glendale, Arizona 85308

Memorial Herman Hospital
7600 Beechnut
Houston, Texas 77074

Saint Joseph Hospital
2260 Wrightsboro Road
Augusta, GA 30904

Deaconess Hospital
5501 N. Portland
Oklahoma City, OK 73112

St. Joseph's Hospital
1835 Franklin Street
Denver, CO 80218-1191

University Community Hospital
19005 Dove Creek Drive
Tampa, FL 33640

Saint Francis Hospital
6161 S. Yale
Tulsa, OK 74136

Saint Luke Medical Center
2632 E. Washington
Pasadena, CA 91107

APPENDIX H

INSTRUCTIONS TO NURSE MANAGERS

January 7, 1998

Kim Litwak, PhD, RN, CPAN
6160 Chamblee Court NE
Albuquerque, NM 87111

Dear Kim,

Thank you for reviewing the content of the instrument designed to determine the competency level of critical care nurses in PACU Phase I practice. The enclosed revised instrument represents input from the entire panel of expert nurses. I appreciate your willingness to participate in the second phase of this project by asking the Phase I Postanesthesia nurses in your facility to complete the test to assist with establishing the reliability of this instrument.

As you will note, the instrument has been divided into sections to allow managers and educators to evaluate content areas specific to clinical practice and patient populations.

Section I covers content applicable to all Phase I areas providing care for critically ill patients as well as patients undergoing elective and less critical procedures. Section one should be completed by everyone.

Section II or the Medication Section is also applicable to the Phase I setting and should be answered by everyone completing **Section I**.

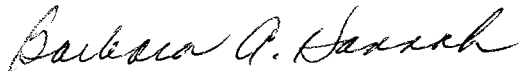
Sections III & IV should be answered if the Phase I area recovers IV conscious sedation patients and/or pediatric patients.

In addition, please ask each participant to complete the demographics sheets included with each instrument. A separate scantron sheet answer sheet is provided for ease of scoring and tabulation.

Please return **all** of the testing materials enclosed in the postage paid, self-addressed envelope provided by February 28, 1998. A summary of the results of this study will be provided for you following completion of this project. For reliability, it is extremely important that testing is closely monitored and all materials returned.

Again, I thank you for your support and enthusiastic cooperation. Please contact me if there is anything I can do for you. You have been a wonderful support and mentor during this long and very tedious process. Please contact me with questions or concerns. I can be reached at W - (918)494-1190 or H - (918)396-3270.

Sincerely,



Barbara A. Hannah, MS, RN, CPAN
Doctoral Candidate, OSU

enclosure: testing instruments, demographics sheets & scantron
answer forms

APPENDIX I

INSTRUCTIONS TO PARTICIPANTS

Sample Letter for Participants

Date:

Dear PACU Phase I Nursing Colleague,

Thank you for assisting with the development and reliability testing of an instrument that will measure competency for critical care nurses in Phase I Perianesthesia Nursing. In addition to responding to each question, please complete the demographics information sheet attached and return it with the exam and Scan Tron answer sheet to the individual monitoring the exam. You may choose not to complete the IV Conscious sedation Section and/or the Pediatrics Section if you do not provide direct patient care for those types of patients. Please complete all of the items in the first two sections. These areas cover general nursing knowledge and understanding of medications, treatments and nursing intervention applicable to all Phase I Perianesthesia Care Units. Completion of all sections will greatly assist with the statistical evaluation for reliability.

Your identity and test results will remain anonymous. If you would like a copy of your results, note the number on the Scan Tron answer sheet you have been given and contact me at (918) 494-1190. To provide your individual results, I must have the number on the answer sheet and the name of the facility where you took the test. Each individual test item will be statistically analyzed to establish reliability. The instrument will be revised and refined based on your participation. Please contact me if you have any additional questions or concerns.

Sincerely,

Barbara A. Hannah, MS, RN, CPAN
Doctoral Candidate - OSU

INSTRUCTIONS FOR PARTICIPANTS PRINTED ON SCAN TRON FORMS

Identification Number*: _____.

- This identification number and name of testing site are required to obtain your test results.
- Please select the correct answer to each of the multiple choice or true or false questions in the test booklet and mark them in the corresponding space on the Scan Tron answer sheet(s) provided.
- Please match the number of the test question with the same answer number on the Scan Tron answer sheet.
- Please return the test, Scan Tron answer sheets and demographic information sheet before March 1, 1998. Thank you for assisting to establish the reliability of the items included in this instrument.

APPENDIX J

DEMOGRAPHIC DATA SHEET

Demographics Information Sheet for You and Your Facility

Please complete and return with your test booklet and Scan Tron answer sheets.

1. How many beds is your hospital licensed for? _____.
2. How would you classify your facility? Check all that apply:

<input type="checkbox"/> Profit	<input type="checkbox"/> Hospital based
<input type="checkbox"/> Not for Profit	<input type="checkbox"/> Free Standing/Ambulatory
<input type="checkbox"/> Government	<input type="checkbox"/> Private/Physician based
<input type="checkbox"/> Teaching	<input type="checkbox"/> Other(please specify) _____
<input type="checkbox"/> Other	
3. Patient classifications receiving care in your Postanesthesia Phase I Care area. Please check all that apply:

<input type="checkbox"/> Outpatients	<input type="checkbox"/> Day of Surgery	<input type="checkbox"/> Inpatients
<input type="checkbox"/> Critical Care	<input type="checkbox"/> ICU Overflow	
4. Please check the range that most closely approximates your daily case load:

<input type="checkbox"/> Less than 25	<input type="checkbox"/> 26 – 50
<input type="checkbox"/> 51 – 75	<input type="checkbox"/> 76 - > 100
5. How many operating rooms does your facility have? _____
6. How many recovery spaces do you have? _____
7. Approximately what is your peak daily census? _____
8. About how many nurses are employed in the Phase I area? _____
9. About how many nurses work in your facility? _____
10. Do you recover patients receiving conscious sedation? _____
11. Do you recover pediatric patients? _____
12. Do you recover ECT patients? _____
13. About what % of your patients are outpatients? _____
14. About what % of your patients are inpatients? _____
15. About what % of your patients are ICU/CCU patients? _____

Information about you:

1. How long have you been in nursing practice:

<input type="checkbox"/> < 1 yr	<input type="checkbox"/> 1 – 5 yrs	<input type="checkbox"/> 6 – 10 yrs	<input type="checkbox"/> > 10 years
---------------------------------	------------------------------------	-------------------------------------	-------------------------------------
2. How long have you practiced in the Phase I Postanesthesia Care Setting?

<input type="checkbox"/> < 1 yr	<input type="checkbox"/> 1 – 5 yrs	<input type="checkbox"/> 6 – 10 yrs	<input type="checkbox"/> > 10 years
---------------------------------	------------------------------------	-------------------------------------	-------------------------------------
3. Please check all other areas of nursing in which you have had experience prior to entering postanesthesia nursing: Medical – Surgical, Critical Care, Maternal – Child, Ortho – Neuro – Renal, Surgery, Emergency Care, Other, please specify: _____.
3. Nursing Education: Please check all that apply: Diploma, AD/AS, BS/BSN
4. MS/MSN, Ed.D/ Ph.D, Other, please specify: _____.

APPENDIX K

SUMMARY OF DEMOGRAPHIC DATA

Summary of Demographic Data

Information about the facility:

1. Hospital size ranged from 107 – 950 beds.
2. All hospitals but three were “Not-For-Profit” facilities.
3. All Postanesthesia Phase I Units were hospital based.
4. All hospitals provided care for inpatients, outpatients, day of surgery, critical care patients and intensive care overflow patients.
5. Daily Postanesthesia Phase I patient census ranged from 25 to > 100 patients.
6. Number of operating rooms per facility ranged from 4 – 34.
7. Available Postanesthesia Phase I bed capacity ranged from six to 40 beds.
8. Peak daily census ranged from 10 – 55 patients.
9. Number of nurses per Postanesthesia Phase I Unit ranged from 10 – 40.
10. Number of nurses employed per health care facility ranged from 200 – 2000.
11. All facilities recovered patients receiving conscious sedation.
12. All facilities recovered pediatric patients.
13. Only two facilities recovered patients receiving Electroconvulsive Treatments.
14. Inpatient population ranged from 10 – 35%; outpatient population ranged from 50 – 80%; and critical care and ICU overflow patients ranged from 5 – 15%.

Information about the participants

1. 0 had been in nursing practice less than 1 year; 7 one to five years; 13 six to ten years; and 94 more than 10 years.
2. 23 had been in Postanesthesia < one year; 28 one to five years; 25 six to ten years; and 38 above ten years.
3. All 114 participants had experience in critical care nursing, emergency nursing or surgery prior to working in Postanesthesia Phase I.
4. Nursing education: 25 Diploma; 41 AD/AS; 42 BS/BSN; and 5 MS/MSN.

APPENDIX L

PERCENTAGES OF CORRECT AND INCORRECT
RESPONSES PER ITEM

APPENDIX L

PERCENTAGES OF CORRECT AND INCORRECT RESPONSES PER ITEM

Item #	Number of Respondents	% Correct	% Incorrect
Item 1	114	91.2	8.8
Item 2	114	84.2	15.8
Item 3	114	93.8	6.2
Item 4	114	80.7	19.3
Item 5	114	73.7	26.3
Item 6	114	93.8	6.2
Item 7	114	75.4	24.6
Item 8	114	96.5	3.5
Item 9	114	94.7	5.3
Item 10	114	88.6	11.4
Item 11	114	97.4	2.6
Item 12	114	85.1	14.9
Item 13	114	93.9	6.1
Item 14	114	95.6	4.4
Item 15	114	94.7	5.3
Item 16	114	98.2	1.8
Item 17	114	93.0	7.0
Item 18	114	88.4	11.6
Item 19	114	80.7	19.3
Item 20	114	23.0	77.0
Item 21	114	88.6	11.4
Item 22	114	79.1	20.9
Item 23	114	96.5	3.5
Item 24	114	96.5	3.5
Item 25	114	88.5	11.5
Item 26	114	49.1	50.9
Item 27	114	99.1	0.9
Item 28	114	98.2	1.8
Item 29	114	72.3	27.7
Item 30	114	96.5	3.5
Item 31	114	95.6	4.4
Item 32	114	27.9	72.1
Item 33	114	2.7	97.3
Item 34	114	76.3	23.7
Item 35	114	99.1	0.9
Item 36	114	91.2	8.8
Item 37	114	69.3	30.7
Item 38	114	76.4	32.6
Item 39	114	76.3	23.7

APPENDIX L (Continued)

Item #	Number of Respondents	% Correct	% Incorrect
Item 40	114	60.2	39.8
Item 41	114	44.6	55.4
Item 42	114	96.5	3.5
Item 43	114	78.1	21.9
Item 44	114	46.5	53.5
Item 45	114	14.3	85.7
Item 46	114	66.7	33.3
Item 47	114	91.9	8.1
Item 48	114	83.0	17.0
Item 49	114	52.7	47.3
Item 50	114	88.6	11.4
Item 51	114	75.7	24.3
Item 52	114	69.6	30.4
Item 53	114	45.0	55.0
Item 54	114	65.2	34.8
Item 55	114	89.5	10.5
Item 56	114	83.8	16.2
Item 57	114	78.8	21.2
Item 58	114	86.0	14.0
Item 59	114	78.6	21.4
Item 60	114	85.7	14.3
Item 61	114	80.4	19.6
Item 62	114	77.7	22.3
Item 63	114	92.0	8.0
Item 64	114	91.2	8.8
Item 65	114	83.3	16.7
Item 66	114	30.1	69.9
Item 67	114	86.0	14.0
Item 68	114	76.1	23.9
Item 69	114	80.5	19.5
Item 70	114	87.6	12.4
Item 71	114	96.5	3.5
Item 72	114	54.9	45.1
Item 73	114	55.6	44.4
Item 74	114	70.5	29.5
Item 75	114	57.5	42.5
Item 76	114	100.0	0.0
Item 77	114	64.3	35.7
Item 78	114	94.7	5.3
Item 79	114	100.0	0.0
Item 80	114	91.2	8.8
Item 81	114	91.2	8.8

APPENDIX L (Continued)

Item #	Number of Respondents	% Correct	% Incorrect
Item 82	114	93.0	7.0
Item 83	114	85.1	14.9
Item 84	114	99.1	0.9
Item 85	114	87.6	12.4
Item 86	114	71.4	28.6
Item 87	114	96.5	3.5
Item 88	114	96.5	3.5
Item 89	114	86.0	14.0
Item 90	114	98.2	1.8
Item 91	114	85.7	14.3
Item 92	114	68.8	31.2
Item 93	114	53.6	46.4
Item 94	114	70.3	29.7
Item 95	114	71.2	28.8
Item 96	114	74.5	25.5
Item 97	114	77.9	22.1
Item 98	114	82.0	18.0
Item 99	114	78.4	21.6
Item 100	114	77.0	23.0
Item 101	114	78.8	21.2
Item 102	114	55.8	44.2
Item 103	114	61.5	38.5
Item 104	114	28.9	71.1
Item 105	114	91.2	8.8
Item 106	114	40.5	59.5
Item 107	114	21.9	78.1
Item 108	114	97.4	2.6
Item 109	114	36.3	63.7
Item 110	114	88.6	11.4
Item 111	114	96.5	3.5
Item 112	114	81.8	18.2
Item 113	114	96.5	3.5
Item 114	114	63.4	36.6
Item 115	114	79.3	20.7
Item 116	114	89.5	10.5
Item 117	114	98.2	1.8
Item 118	114	99.1	0.9
Item 119	114	87.5	12.5
Item 120	114	22.7	77.3
Item 121	114	87.6	12.4
Item 122	114	79.1	20.9
Item 123	114	89.2	10.8

APPENDIX M
INSTITUTIONAL REVIEW BOARD (IRB)
APPROVAL FORM

OKLAHOMA STATE UNIVERSITY
INSTITUTIONAL REVIEW BOARD
HUMAN SUBJECTS REVIEW

Date: 06-29-98

IRB #:ED-98-132

Proposal Title: THE DEVELOPMENT OF A BASIS KNOWLEDGE ASSESSMENT TOOL FOR
POSTANESTHESIA PHASE I

Principal Investigator(s): Robert E. Nolan, Barbara A. Hannah

Reviewed and Processed as: Exempt

Approval Status Recommended by Reviewer(s): Approved

ALL APPROVALS MAY BE SUBJECT TO REVIEW BY FULL INSTITUTIONAL REVIEW BOARD AT
NEXT MEETING, AS WELL AS ARE SUBJECT TO MONITORING AT ANY TIME DURING THE
APPROVAL PERIOD.

APPROVAL STATUS PERIOD VALID FOR DATA COLLECTION FOR A ONE CALENDAR YEAR
PERIOD AFTER WHICH A CONTINUATION OR RENEWAL REQUEST IS REQUIRED TO BE
SUBMITTED FOR BOARD APPROVAL.

ANY MODIFICATIONS TO APPROVED PROJECT MUST ALSO BE SUBMITTED FOR APPROVAL.

Comments, Modifications/Conditions for Approval or Disapproval are as follows:

This is anonymous and therefore exempt.

Signature: Thomas C. Collins

Interim Chair of Institutional Review Board
cc: Barbara A. Hannah

Date: June 30, 1998

VITA

Barbara A. Hannah

Candidate for the Degree of

Doctor of Education

Thesis: THE DEVELOPMENT OF A BASIC KNOWLEDGE ASSESSMENT TOOL
FOR POSTANESTHESIA PHASE I NURSES

Major Field: Occupational and Adult Education

Biographical:

Personal Data: Born in Pawnee, Oklahoma, September 25, 1943, the daughter of Rev. Harold R. and Betty J. Norris.

Education: Received a GED for High School equivalency from the state of Oklahoma in 1968; received the Associate of Science degree from Rogers State College, Claremore, Oklahoma in 1974; received a Bachelor of Science degree from University of Tulsa, Tulsa, Oklahoma in 1976; received the Masters of Science degree from University of Oklahoma, Norman, Oklahoma in 1985. Completed the requirements for the Doctor of Education degree at Oklahoma State University in July, 1998.

Professional Experience: Staff Nurse, Critical Care & Trauma Emergency Services, Saint Francis Hospital, Tulsa, Oklahoma, 1969–1977; Director of Clinical Production, CSI Productions, Tulsa, Oklahoma, 1977–1986; Education Specialist, Saint Francis Hospital, Tulsa, Oklahoma, 1986–1990; Director of Nursing, Cleveland Area Hospital, Cleveland, Oklahoma, 1990–1991; Clinical Manager, Departments of Outpatient Admission & Discharge and Postanesthesia Phase I, Saint Francis Hospital, Tulsa, Oklahoma, 1991–1996; Critical Care Education Coordinator, Saint Francis Hospital, Tulsa, Oklahoma, 1996–present.

Honors and Achievements: Sigma Theta Tau, 1976.