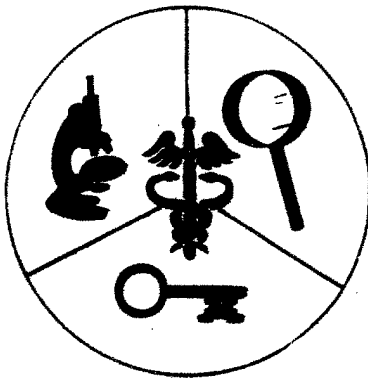




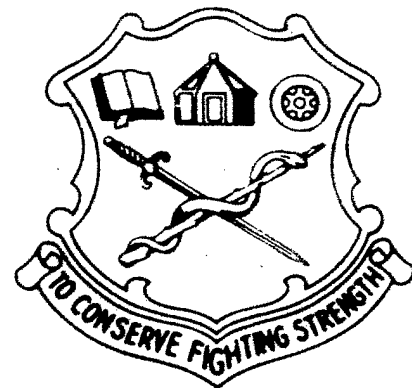
CENTER FOR
HEALTHCARE EDUCATION
AND STUDIES

**READINESS COMPETENCY OF NURSING
PERSONNEL IN THE AMEDD**

**HR 95-002
September 1997**

19980414 051

DTIC QUALITY INSPECTED 4



UNITED STATES ARMY
MEDICAL DEPARTMENT CENTER AND SCHOOL
FORT SAM HOUSTON, TEXAS 78234-6125

DISTRIBUTION STATEMENT A

Approved for public release;
Distribution Unlimited

NOTICE

The findings in this report are
not to be construed as an official
Department of the Army position
unless so designated by other
authorized documents.

* * * * *

Regular users of services of the Defence Technical Information
Center (per DoD Instruction 5200.21) may purchase copies direct
from the following:

Defense Technical Information Center (DTIC)
ATTN: DTIC-OCP
8725 John J. Kingman Road
Suite 0944
Fort Belvoir, VA 22060-6218

Telephone: DSN 427-8031
(703) 767-8031

FAX: DSN 427-8032
(703) 767-8032

All other requests for these reports will be directed to the following:

U.S. Department of Commerce
National Technical Information Services (NTIS)
5285 Port Royal Road
Springfield, VA 22161

REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.				
1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE 30 September 1997		3. REPORT TYPE AND DATES COVERED Final Report of study conducted 1993 - 1994
4. TITLE AND SUBTITLE Readiness Competency of Nursing Personnel in the AMEDD			5. FUNDING NUMBERS	
6. AUTHOR(S) Zadinsky, Julie K.				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Center for Healthcare Education and Studies 1608 Stanley Road Building 2268 Fort Sam Houston, Texas 78234-6125			8. PERFORMING ORGANIZATION REPORT NUMBER HR 95-002	
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) COL Susan C. McCall Assistant Chief, Army Nurse Corps Assistant to the Surgeon General for Nursing 5109 Leesburg Pike Room 669, Skyline Six Falls Church, VA 22041-3258			10. SPONSORING / MONITORING AGENCY REPORT NUMBER	
11. SUPPLEMENTARY NOTES				
12a. DISTRIBUTION / AVAILABILITY STATEMENT Unclassified / Unlimited			12b. DISTRIBUTION CODE	
13. ABSTRACT (Maximum 200 words) The primary purpose of the study was to describe the extent to which nursing personnel in the active and reserve components of the U.S. Army Medical Department (AMEDD) were prepared to provide patient care in a deployed or field status. A second purpose was to describe the focus of medical readiness training required to meet knowledge and performance needs identified in the study. The sample consisted of 1,085 officer and enlisted personnel in six nursing specialty areas in the active and reserve components of the AMEDD. Readiness competency was measured by participants' performance on competency based and written exercises that were developed for the study. A demographic questionnaire and semi-structured interviews were used to elicit participants' institutional training, operational assignment, and self development experiences related to their readiness competency as measured by the competency based and written exercises. It was concluded that study participants need training in clinical skills and functions that they do not routinely perform when working in civilian or military medical facilities during peacetime, but that they perform frequently or perform as life saving measures when working in a deployed or field status. It was recommended that a readiness training program focused on these skills and functions be developed for nursing personnel in the active and reserve components of the AMEDD.				
14. SUBJECT TERMS Medical Readiness, Readiness Competency			15. NUMBER OF PAGES 140	
			16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT UNCLASSIFIED	18. SECURITY CLASSIFICATION OF THIS PAGE UNCLASSIFIED	19. SECURITY CLASSIFICATION OF ABSTRACT UNCLASSIFIED	20. LIMITATION OF ABSTRACT UNLIMITED	

TABLE OF CONTENTS

DISCLAIMER	i
REPORT DOCUMENTATION PAGE	ii
TABLE OF CONTENTS	iii
LIST OF TABLES	v
LIST OF APPENDICES	vi
ABSTRACT	vii
PREFACE	viii
INTRODUCTION	1
Background	1
Research Questions	2
Assumptions	2
Delimitations	3
Framework	3
Review of Literature	6
METHODS	8
Study Sites and Sample	8
Selection of Study Sites	8
Selection of Participants	9
Data Collection Measures	10
Demographic Questionnaire	11
Competency Based Exercise	11
Written Exercise	16
Semi-Structured Interview	17
Study Procedures	19
Protection of Human Rights	19
Evaluator Training	19
Pilot Study	20
Data Collection	21
Data Analysis	23
Management of Data	23
Analysis of Research Questions	23

RESULTS	26
Sample Characteristics	26
Analyses of Research Questions	28
Research Question One	28
Research Question Two	38
DISCUSSION	48
CONCLUSIONS	51
RECOMMENDATIONS	53

LIST OF TABLES

TABLE		PAGE
1	Number of Active and Reserve Component Participants in Each Specialty Area and Grade	27
2	Mean Percent Scores on the Competency Based and Written Exercises According to Military Component and Specialty Area	30
3	Mean Percent Scores on Subscales of the Written Exercise for Active and Reserve Component Nursing Personnel in Each Specialty Area	31
4	Summary Statistics of Percent Scores for Medical Surgical and Perioperative Skills on the Competency Based Exercise for Active and Reserve Component Nursing Personnel	33
5	Summary Statistics of Percent Scores for Field Anesthesia Equipment Skills on the Competency Based Exercise for Active And Reserve Component Nurse Anesthetists	36
6	Summary Statistics of Percent Scores on the Competency Based Exercise for Junior and Senior Enlisted and Officer Nursing Personnel in the Active and Reserve Components of the AMEDD	39
7	Summary Statistics of Percent Scores on the Written Exercise for Junior and Senior Enlisted and Officer Nursing Personnel in the Active and Reserve Components of the AMEDD	40
8	General Linear Model (GLM) Analysis of the Relationship Between Education/Work Experiences and Competency Based Exercise Percent Scores for Active and Reserve Component (AC and RC) Medical Surgical Nurses	42
9	General Linear Model (GLM) Analysis of the Relationship Between Education/Work Experiences and Competency Based Exercise Percent Scores for Active and Reserve Component (AC and RC) Medical Specialists and Practical Nurses	43

LIST OF APPENDICES

APPENDIX A. DEMOGRAPHIC QUESTIONNAIRE	A-1
APPENDIX B. LIST OF SKILLS SELECTED FOR TESTING	B-1
APPENDIX C. COMPETENCY BASED EXERCISE	C-1
APPENDIX D. WRITTEN EXERCISE	D-1
APPENDIX E. DESCRIPTION OF SKILL STATIONS	E-1
APPENDIX F. GLOSSARY	F-1
APPENDIX G. BIBLIOGRAPHY	G-1
APPENDIX H. DOCUMENT DISTRIBUTION LIST	H-1

ABSTRACT

The primary purpose of the study was to describe the extent to which nursing personnel in the active and reserve components of the U.S. Army Medical Department (AMEDD) were prepared to provide patient care in a deployed or field status. A second purpose was to describe the focus of medical readiness training required to meet knowledge and performance needs identified in the study. The sample consisted of 1,085 officer and enlisted personnel in six nursing specialty areas in the active and reserve components of the AMEDD. Readiness competency was measured by participants' performance on competency based and written exercises that were developed for the study. A demographic questionnaire and semi-structured interviews were used to elicit participants' institutional training, operational assignment, and self development experiences related to their readiness competency as measured by the competency based and written exercises. It was concluded that study participants need training in clinical skills and functions that they do not routinely perform when working in civilian or military medical facilities during peacetime, but that they perform frequently or perform as life saving measures when working in a deployed or field status. It was recommended that a readiness training program focused on these skills and functions be developed for nursing personnel in the active and reserve components of the AMEDD.

PREFACE

While in the position of Chief Nurse, U.S. Army Forces Command, COL Susan McCall served as study director for this research project. She selected a core group of nurses with expertise in field nursing to help provide guidance for the study. These nurses met with COL McCall prior to the study to discuss the conceptualization of the readiness project, and they served on an expert panel throughout the course of the study. Their names and positions at the time they came together as a group are as follows: COL Morgan, CN, 62nd Medical Group; COL Tiernan, CN, 1st Medical Group; and COL Chudy, CN, 55th Medical Group. COL McCall also selected COL Schaeberle, CN, 44th Medical Brigade, and COL Scherb, Field Nurse Representative for Medical Force 2000, to serve on the expert panel throughout the study with the original group of four nurses.

Nursing personnel from various units in the active and reserve components of the AMEDD volunteered to serve as evaluators for the competency based exercise. These evaluators fulfilled their duties as data collectors in addition to their responsibilities in their own units. Other nursing personnel with field experience in the active and reserve components of the AMEDD also provided valuable input to the study. For example, LTC Janny, CRNA, developed the competency based exercise for the 885A anesthesia apparatus and drawover anesthesia system.

Personnel assigned to the Center for Healthcare Education and Studies (CHES), including Dr. Mangelsdorff, Dr. Karin Zucker, and Mr. Guenter Kreim, provided research support for this study in addition to their many other responsibilities. Of particular support throughout the study were Ms. Pat Twist, who provided graphic and administrative support, and Ms. Diane

Willette, who served as the budget analyst. Others assigned to CHES and to other areas of the AMEDDC&S provided support for the study as their schedules allowed. For example, Dr. Barbara Wojcik provided statistical consultation and Ms. Janice Ware served as a management assistant for portions of the study. Mr. Stan Morgan provided an invaluable service to the study by serving as a consultant on the systems approach to training and the development of test items for the competency based exercise.

Other major contributors to the study include Dr. Bill Thompson, who provided statistical consultation regarding the interpretation of study results for recommendation of policy changes, and Dr. Joyceen Boyle, who provided expert consultation regarding interpretation of the qualitative data. CPT Robin Baulding-Douglas, USAR shared her expertise in the development of multiple choice test items by developing draft questions for the written exercise used in the study. Also, Mr. James Zadinsky volunteered through the Red Cross to serve as a research assistant.

Finally, this study could not have been completed without the nursing personnel who served as study participants and their unit leaders. They eagerly volunteered their time and energy to the study in spite of their busy schedules. Also, the directors and personnel at the 41st Combat Support Hospital, Fort Sam Houston, Texas, and at several of the Regional Training Sites-Medical greatly enhanced the quality of the study by assisting with the use of their training areas as data collection sites.

Julie K. Zadinsky
COL, AN
Principal Investigator

INTRODUCTION

Background

The U.S. Army Medical Department (AMEDD) is responsible for maintaining the medical, clinical and technical readiness of personnel to support the Army during military operations. In the past, it has been assumed that the everyday experience of working in a civilian or military healthcare role during peacetime prepares personnel to provide patient care in a deployed or field status. However, there is now a widening gap between nursing practice in high technology, automated fixed healthcare facilities and nursing practice in a field environment. Most nursing personnel in the active and reserve components of the AMEDD currently work in specialized clinical roles in a high technology healthcare environment during peacetime. They use state-of-the-art, automated equipment and rely on specialized support services, such as pharmacy and respiratory therapy, to provide patient care. These personnel do not have an opportunity in their everyday work environment to practice many of the skills and functions they must perform in a deployed or field status.

Because of this changing healthcare environment, the Joint Services Nursing Advisory Group (JSNAG) to the Defense Medical Standardization Board (DMSB) recommended that a study be conducted to examine the readiness of nursing personnel to provide patient care in a field environment. In response to this recommendation, the AMEDD Study Board tasked the Directorate of Health Care Studies and Clinical Investigation (now the Center for Healthcare Education and Studies (CHES), AMEDD Center & School (AMEDDC&S)) to describe the readiness competency of nursing personnel in the AMEDD. Therefore, this study was undertaken for the purpose of describing the extent to which nursing personnel in the active

and reserve components of the AMEDD were prepared to provide patient care in a deployed or field status. A second purpose was to describe the focus of medical readiness training required to meet identified knowledge and performance deficits. Throughout the study, six nurses with expertise in field nursing worked together as an expert panel under the guidance of the Chief Nurse, U.S. Army Forces Command to provide input as needed. Each of these nurses had served in multiple positions in a field environment, to include working in a deployed status in one or more assignments outside the continental United States.

Research Questions

The following are the research questions for the study:

1. To what extent are nursing personnel in the active and reserve components of the AMEDD prepared to provide patient care in a deployed or field status?
2. How should training be focused to prepare nursing personnel in the active and reserve components of the AMEDD to provide patient care in a deployed or field status?

Assumptions

The following are basic assumptions that were made about nursing personnel in the active and reserve components of the AMEDD:

1. Nursing personnel are competent in the basic skills and functions of their area of concentration (AOC) or military occupational specialty (MOS).
2. Nursing personnel have been exposed to Deployable Medical Systems (DEPMEDS).
3. There are basic differences in nursing practice between tables of distribution and allowances (TDA) and tables of organization and equipment (TOE) medical facilities.

4. There are unique functions which nursing personnel must perform in support of patient care or unit management in a field environment.
5. There are limited resources available for the medical readiness training of nursing personnel.

Delimitations

The study was limited in scope to describing the individual medical readiness of nursing personnel. Furthermore, the study did not address the following: (a) common soldier tasks, (b) clinical skills specific to treatment of nuclear-biological-chemical casualties, (c) skills specific to the psychiatric nursing role of personnel assigned to a combat stress control team, (d) skills specific to the preventive medicine role of community health nurses in a field environment, and (e) patient documentation tasks. At the time of the study, there were no approved standardized patient documentation forms for use in the field environment.

Framework

The organizing framework of the study is based on the premise that institutional training, operational assignments, and self development activities, which are referred to in the Army as the three pillars of the leader development process, form the basis for medical readiness (STP 21-I-MQS, 1990; STP 21-II-MQS, 1991; STP 21-III-MQS, 1993). As used in this study, institutional training refers to the formal education and training that prepare nursing personnel to work in their AOC or MOS in entry level positions as well as positions of increasing responsibility. Operational assignments refer to duty assignments that offer nursing personnel the opportunity to use and build upon what they learn through their formal education and training. Self development activities refer to military and civilian continuing education,

correspondence courses, and self study activities that allow nursing personnel to expand on their knowledge base.

Medical readiness is defined as the initial abilities of nursing personnel to perform their patient care role in a field environment (JCS Pub 1-02). This includes their ability to deploy and employ without unacceptable delays. Note that as defined for the purposes of this study, medical readiness refers to individual readiness, as opposed to the readiness of a unit to perform collective tasks.

Medical readiness is measured in terms of readiness competency, which is defined as the ability of nursing personnel to perform skills and functions critical to their patient care role in a deployed or field status (Ellis, 1988). Readiness competency is measured on a continuum that ranges from knowing how to do something to knowing how to do it well. As used in this study, readiness competency does not include all professional aspects of patient care; instead, readiness competency refers to critical components of individual medical readiness that are unique to patient care in a field environment but that can be trained during peacetime.

Nursing personnel who are confident in their abilities to perform the skills and functions of these critical components of their field medical role will be better prepared to learn the full range of duties involved in the specific role to which they are assigned when placed in a deployed or field status.

The framework identifies three critical components of medical readiness: (a) soldier skills, which include non-medical tasks, such as setting up a temper tent, that are essential to the operation of a medical treatment facility in the field; (b) clinical skills that nursing personnel perform frequently or perform as life saving measures in a field environment, but do

not routinely perform in fixed healthcare facilities; and (c) battle focused functions, which are actions performed by nursing personnel in support of patient care or unit management in a field environment. Although soldier skills are recognized as an essential component of medical readiness, it was beyond the scope of this study to assess the competency of nursing personnel in these skills.

Clinical skills, which are the second component of medical readiness, can be divided into three categories of skills. The first category includes skills performed using field medical equipment, which usually are operated differently from equipment used to perform the same or similar skills in fixed facilities. The second category of skills includes those performed in the field without automated equipment or special support services commonly available in fixed medical treatment facilities (MTFs). For example, various types of intravenous flow meters and infusion pumps are readily available in fixed MTFs, but they are not always available in a field environment. The third category of skills includes those performed by nursing personnel in aspects of their role that are expanded from the fixed facility to the field environment. For example, administering a blood transfusion is an expanded role skill for medical specialists and practical nurses because this skill generally is not within their scope of practice for their fixed facility roles, but it is a critical skill for their role in some situations in a deployed status.

Battle focused functions, which are the third component of medical readiness, include five categories of functions. Command and control, medical evacuation, and medical supply functions require nursing personnel to interface with these systems when providing patient care in a field environment. Infection control functions are actions performed to prevent and control infections associated with (a) battle injuries and (b) disease and nonbattle injuries

(DNBI) in a field environment. Sustainment functions are actions performed in support of patients, oneself, or other staff to ensure ongoing patient care services in a field environment, to include patient care in aid stations, medical companies, dispensaries, clinics, and hospitals in all levels of care.

Review of Literature

The literature includes many reports of nurses' observations and experiences in a field environment. The most comprehensive historical review of this literature that has been done from a training perspective was conducted by McCall (1993). McCall based her trend-line analysis on training, conditions, innovations, and redeployment. She found that a lack of training and preparation of nursing personnel for the combat environment has been a common theme for all conflicts from World War II through Operation Desert Storm.

McCall (1993) reasoned that nursing personnel are most effective when their stress is at a manageable level, and therefore it is important that these personnel be prepared to work in combat conditions in an adaptive mode. She explained:

Adaptation remains the key to the effectiveness of the caregiver. Ability to adapt relates back to training. A person who has been trained to live and work in an austere environment will more readily adapt to the hostile combat environment. (McCall, 1993, p. 42)

If lessons are to be learned from our history of a lack of training, changes must be made in doctrine, publications, and training. McCall (1993) explained, "Documented change in doctrine with dissemination to the operational level through training provides the guidance

needed to transition from peacetime to combat nursing. Without a change these experiences will simply be termed 'observations' not lessons learned" (p. 43).

There have been no reported competency based studies of the individual medical readiness of nursing personnel. However, Hudak (1993) conducted a study of nurses' perceptions of their readiness to perform selected nursing tasks in DEPMEDS hospitals. She surveyed 1,462 active duty Army Nurse Corps officers of all AOCs and ranks. The majority of nurses rated their abilities to perform field nursing tasks listed on the questionnaire as fair or poor. It was concluded that there was a general need for medical readiness training for active duty nurses.

In summary, common themes in the literature have been a lack of training to prepare nursing personnel for their patient care role in a field environment and a perceived need for training these personnel in clinical skills and functions critical to their patient care role when they are in a deployed or field status. However, there have been no performance based evaluations of the readiness competency of nursing personnel that have been designed to describe their training needs. Therefore, this study was conducted to evaluate the readiness competency of nursing personnel in the active and reserve components of the AMEDD and to describe how training should be focused to prepare nursing personnel to provide patient care in a deployed or field status.

METHODS

In the methods section, selection of the study sites and participants are discussed, data collection measures are described, and study procedures are explained. Study procedures include those procedures used for protection of human rights, evaluator training, the pilot study, and data collection. Methods used to manage data and analyze the research questions are briefly reviewed.

Study Sites and Sample

Selection of Study Sites

Active Component Sites

Active component study sites were selected based on the need to obtain a sample of nursing personnel with a wide variety of TDA and TOE assignments. The AMEDDC&S was selected as one study site. At this site, nursing personnel enrolled in one Officers Advanced Course (OAC), one Basic Noncommissioned Officers Course (BNCOC), and one Advanced Noncommissioned Officers Course (ANCOC) participated in the study. Two other Army posts also were selected as study sites. At one of these sites, nursing personnel assigned to an Army Medical Center and to a Combat Support Hospital were study participants. At the other site, nursing personnel assigned to an Army Community Hospital, a Combat Support Hospital that was just coming out of caretaker status, and two divisions participated in the study. Nursing personnel assigned to a non-divisional, non-DEPMEDS unit also were invited to participate in the study, but this unit could not participate because it was preparing for deployment at the time of data collection.

Reserve Component Sites

All U.S. Army National Guard (ARNG) and U.S. Army Reserve (USAR) units that were scheduled for their annual training at one of the Regional Training Sites-Medical (RTS-MEDs) during the data collection period were contacted regarding their ability to meet the inclusion criteria for reserve units and their willingness to participate in the study. Inclusion criteria for reserve units were as follows: (a) The unit had to have completed its DEPMEDS New Equipment Training at an RTS-MED and (b) the unit had to have a minimum essential equipment for training (MEET) set that could be used for training. The only ARNG unit able to participate in the study was a Combat Support Hospital conducting its annual training at the Camp Shelby RTS-MED.

USAR personnel from one General Hospital and one Mobile Army Support Hospital (MASH) participated in the study at the Fort McCoy RTS-MED. At the Fort Devens RTS-MED, USAR personnel from one General Hospital participated in the study. This General Hospital was comprised of two General Hospitals and one Evacuation Hospital that had just merged and were coming together for the first time as one large General Hospital for their annual training.

Selection of Participants

All nursing personnel who were assigned to one of the units participating in the study and who would function in a deployed or field status as a medical surgical nurse (66H), operating room nurse (66E), nurse anesthetist (66F), practical nurse (91C), medical specialist (91B), or operating room specialist (91D) were eligible for inclusion in the study. Convenience sampling was used because of the need to conduct a time intensive data collection procedure

with nursing personnel who had other patient care, training, and school responsibilities. The number of nursing personnel who could be included in the convenience sample from units volunteering to participate in the study was judged to be adequate for analysis of the quantitative data.

Purposive sampling was used to invite selected study participants to participate in the semi-structured interviews. This type of sampling entails selecting participants according to the study needs (Morse, 1991). The first interview sampling criterion specified that the investigator would interview those who scored very good as well as those who scored very poorly on the competency based exercise so that experiences related to the entire range of readiness competency could be explored (Glaser, 1978; Morse, 1991). Second, participants were selected for an interview based on their ability to critically reflect and articulate their experiences related to developing their readiness competency. Third, as the interviews progressed, participants were selected based on their clinical speciality area so that nursing personnel from all specialty areas could be interviewed. Adequacy of sample size for the semi-structured interviews was achieved when the investigator experienced redundancy among all categories of nursing personnel in their descriptions of experiences related to their readiness competency (Morse, 1991, 1994).

Data Collection Measures

A demographic questionnaire, competency based and written exercises, and a semi-structured interview guide were developed to collect data related to the readiness competency of nursing personnel. The development and use of these data collection measures are briefly described.

Demographic Questionnaire

The investigator developed a 35 item demographic questionnaire based on the framework of the study (see Appendix A). The questionnaire was used to obtain information about participants' institutional training, operational assignments, and self development activities that may be related to their readiness competency. The same demographic questionnaire was administered to all study participants. However, some items were designed only for specific categories of nursing personnel (see Appendix A).

Competency Based Exercise

The investigator worked with the expert panel members to develop competency based exercises that would measure the readiness competency of each of the six main categories of nursing personnel in the study. Methods for development of the skill list and test items for the separate exercises were conducted according to a procedure for determination of an instrument's content validity (Lynn, 1986). A brief description of the procedures used for selecting the skills, developing the test items, and scoring the exercises follows.

Selection of Skills

Expert panel members started their work by agreeing on the definition of readiness competency as the ability of nursing personnel to perform skills and functions critical to their patient care role in a deployed or field status. They also agreed on the basic assumptions underlying the measurement of readiness competency. Previously listed as the assumptions of this study, these included the assumptions that nursing personnel are competent in the basic skills and functions of their AOC or MOS and that the skills and functions required for patient care differ from the fixed facility to the field environment. Given these assumptions, panel

members agreed that the extent to which nursing personnel are prepared to provide patient care in a field environment could be measured by their ability to perform skills and functions that they do not routinely perform in their AOC or MOS in their fixed facility roles, but that they perform frequently or perform as life saving measures in a deployed or field status.

Panel members proceeded by defining the content domain of readiness competency for each of the six main categories of nursing personnel in the study (66H, 66E, 66F, 91B, 91C, & 91D). They were given the DEPMEDS Task List, which was the only known list of skills required for patient care in a deployed or field status (Deployable medical systems task list, 1993). Panel members selected skills from the DEPMEDS Task List that they considered critical to the patient care role of nursing personnel in a deployed or field status. The panel compiled separate lists of critical skills for nursing personnel who function in a field environment as medical surgical nurses, operating room nurses, nurse anesthetists, practical nurses, medical specialists, and operating room specialists. After considering all skills on the DEPMEDS Task List, panel members added other skills as needed to the critical skill lists they were compiling for each of these six main categories of nursing personnel.

The panel's next task was to sample from the content domain of readiness competency for each of the six main categories of nursing personnel in the study. After discussing each skill, panel members used a content validity scale to rate the skill according to whether it was (1) not relevant, (2) somewhat relevant, (3) quite relevant, or (4) very relevant to the group of skills that each category of personnel perform frequently or perform as life saving measures in a deployed or field status, but do not routinely perform in a fixed facility. Panel members agreed that the extent to which a skill was relevant to this group of skills was representative of

the extent to which it measured the readiness of nursing personnel to provide care in a deployed or field status. Because there were six voting panel members, skills that were rated as 1 or 2 by two or more panel members for one of the categories of nursing personnel were not included in the skill list (Lynn, 1986).

After compiling the six main skill lists developed by the expert panel, the investigator obtained feedback on these lists from selected personnel in the active and reserve components of the AMEDD. Personnel consulted included (a) OTSG consultants for medical surgical nursing, operating room nursing, critical care nursing, emergency nursing, and nursing anesthesia; (b) instructors for MOS and AOC producing courses for the six main categories of nursing personnel in the study; and (c) nursing personnel, especially operating room nurses and nurse anesthetists, who had experience providing patient care in a deployed or field status. The investigator prepared for the panel members a report that summarized the input from all nursing personnel consulted.

Panel members met to finalize the list of skills to be included in the competency based exercise for each category of nursing personnel. After discussing the input from nurses consulted about the skill lists, panel members used the content validity scale to rate each skill on the new skill lists in the same manner that they had previously rated the skills. Again, skills rated as 1 or 2 by two or more panel members for one of the main categories of nursing personnel were not included in the skill list for those personnel. For each of the six main categories of nursing personnel, panel members' ratings for each skill remaining on the list were averaged to develop a score for each skill. These scores were used to prioritize the skills for their inclusion in the competency based exercise for each category of nursing personnel.

Development of Test Items

An AMEDDC&S employee with expertise in writing items for Self Development Tests served as a consultant for the development of test items for the skills that were to be included in the competency based exercises. He wrote or supervised the writing of most draft test items. Test items for the skills were based on existing performance based assessments of the skills and other information in soldier training publications, technical manuals, other Army publications, and professional medical literature.

Additionally, nursing personnel who had performed the skills in a field environment were consulted to describe critical elements of skill performance, evaluate the draft test items, and write additional test items as needed. For example, the investigator consulted a group of nurse anesthetists with expertise in nursing anesthesia and experience providing patient care in a field environment. This group evaluated the test items that a nurse anesthetist had written for the 885A anesthesia apparatus and drawover anesthesia system. These evaluations were used to revise the test items as needed.

In a few instances, test items were not developed for skills selected by the panel members because of difficulties the unit would have training the skill as well as difficulties the investigator would have conducting a performance based assessment of the skill in a peacetime environment. For example, panel members confirmed that equipment required for assessing skill performance would be very difficult to obtain for skills related to using the Stryker frame; therefore, these skills were not included on the final skill list. At the time of the study, a Stryker frame was not part of a unit's MEET set and was difficult to obtain for training or testing purposes.

The expert panel members reviewed the test items to be included in the competency based exercise for each category of nursing personnel. As a part of this review, panel members gave feedback on the format of the test items, refined the content as needed, and rated each test item according to its relevancy to measuring the readiness competency of nursing personnel. They used the same content validity scale to rate each test item in the same manner as they had rated the skills. Based on panel members' ratings, the competency based exercise for each category of nursing personnel had a content validity index of 1 (Lynn, 1986).

A list of skills assessed on the competency based exercise for each category of nursing personnel is included in Appendix B. Note that the expert panel members selected the advanced clinical skills, "intubate a patient" and "perform a needle chest decompression," only for those medical specialists who had a skill level equal to or greater than 20. It was expected that these more senior medical specialists would have completed BNCOC, where they learn more advanced clinical skills. Because junior and senior medical specialists were assessed on a slightly different set of skills, there were actually seven different competency based exercises used in the study.

Use of the Exercise

As previously stated, a separate competency based exercise was developed for each of the seven categories of nursing personnel. However, some skills and their test items were included on more than one competency based exercise. Performance on each skill was assessed the same on all competency based exercises. For each skill, the competency based exercise included (a) test conditions; (b) time allowed for skill performance; (c) statements for

the evaluator to read to each study participant; and (d) critical elements of skill performance (see Appendix C).

Expert panel members agreed that all critical elements of each skill are equally important to skill performance and that all skills on the exercises are equally important for patient care in a field environment. Therefore, a score for each skill on the competency based exercise was obtained by calculating the proportion or percentage of critical elements performed correctly. Each critical element was given a pass or fail rating independent of the other critical elements of the skill. One point was given for the correct performance and no points were given for the incorrect performance of a critical element. A score for each competency based exercise was obtained by averaging the scores of all skills on the exercise.

Written Exercise

The investigator worked with the expert panel members to develop a written exercise that would assess participants' understanding of battle focused functions, which were defined as actions performed by nursing personnel in support of patient care or unit management in a field environment. Expert panel members submitted subject matter for questions related to each of the five categories of battle focused functions, which included command and control, medical evacuation, medical supply, infection control, and sustainment functions. A nurse who was in the reserve component of the AMEDD and who had experience writing multiple choice test items used panel members' ideas together with field manuals, soldier training publications, and other Army publications to develop draft items for the written exercise.

The expert panel members met to review items for the written exercise in the same manner as they reviewed items for the competency based exercise. They gave feedback on the

format of the items and refined the content as needed. After discussing each item, panel members used the content validity scale to rate the item according to whether it was (1) not relevant, (2) somewhat relevant, (3) quite relevant, or (4) very relevant to measuring the principles of the content area (i.e., command and control, medical evacuation, medical supply, infection control, or sustainment) that nursing personnel need to know to function in a deployed or field status. Panel members' ratings were used to select items for the written exercise. Based on panel members' ratings, the written exercise had a content validity index of 1 (Lynn, 1986).

The final version of the written exercise consisted of 30 multiple choice items (see Appendix D). Six of the 30 items were related to each of the five categories of battle focused functions. The same written exercise was used for all nursing personnel. There were four possible answers for each item, and participants were instructed to select the one best answer for each item. A score for the entire exercise was obtained by calculating the percentage of items answered correctly. A score for each subset of items related to a category of battle focused functions was obtained by calculating the percentage of subset items answered correctly.

Semi-Structured Interview

From the beginning of data collection, the investigator was aware that participants were not performing well on the competency based and written exercises. Immediately after participants completed their exercises, the investigator informally discussed their performance with them. Field notes of these interactions provided compelling data about participants'

views, concerns, and reactions to the study that had not been elicited by the demographic questionnaire.

Therefore, semi-structured interviews were conducted with selected participants after they completed the demographic questionnaire and competency based and written exercises. The primary purpose of the interviews was to elicit participants' experiences with their institutional training, operational assignments, and self development activities that may have been related to their readiness competency as measured by their competency based and written exercises. Interviews were semi-structured by an interview guide, which consisted of general guiding questions addressing topical areas identified from the conceptual orientation of the study (Patton, 1990). The interview guide was used to provide "a framework within which the interviewer would develop questions, sequence those questions, and make decisions about which information to pursue in greater depth" (Patton, 1990, p. 284).

For each interview, the investigator had in hand the participant's completed competency based and written exercises and demographic questionnaire. At the beginning of the interview, the investigator invited participants to describe their performance on the competency based exercise. As the investigator scanned each participant's competency based exercise, she asked, "What experiences helped you perform well (or poorly) on [name of skill]?" The investigator then scanned the results of the participant's written exercise and asked, "What experiences helped you perform well (or poorly) on the part of the written exercise related to [name of subscale]?"

Throughout the interview, the investigator used probing questions and reflective statements to encourage further details and clarification regarding participants' explanations of

(a) institutional training, operational assignments, and self development experiences they perceived as having been particularly influential in their performance on the exercises and (b) other experiences they perceived as related to their performance on the exercises. Toward the end of the interview, the investigator asked participants to describe the type of training they thought would best prepare them to perform well on the competency based and written exercises. Some participants briefly described training experiences they thought they needed; others provided in-depth ideas about ways their unit could provide the training experiences they thought they needed. Finally, participants were asked what they thought would help them transition successfully from providing patient care in the fixed facility to providing patient care in a deployed or field status.

Study Procedures

Protection of Human Rights

The staff of the Clinical Investigation Regulatory Office, AMEDDC&S, reviewed the study proposal. They gave the study an exempt status in accordance with Army Regulation 40-38, the Clinical Investigation Program. The confidentiality and anonymity of participants were protected by using identification codes in place of individual names on all data collection forms, audiotapes, transcriptions of qualitative data, and field notes. All study reports were presented according to group findings.

Evaluator Training

Three groups of evaluators administered the competency based exercise to selected categories of nursing personnel. Evaluators were nursing personnel who had experience providing patient care in a deployed status and experience performing the skills on the

competency based exercise they administered. There were 15 evaluators for medical surgical nurses, practical nurses, and medical specialists; 5 evaluators for operating room nurses and operating room specialists; and 3 evaluators for nurse anesthetists. Evaluators completed individualized training in administering the competency based exercise before they began data collection. They practiced administering the competency based exercise during their evaluator training until they achieved an interrater reliability of 95% agreement (Portney & Watkins, 1993).

Evaluators were randomly paired with each other throughout the data collection period to obtain ongoing assessments of interrater reliability. The average percent agreement for all assessments of interrater reliability was 99%. Pairwise kappas had an average value of 0.95, with a range of 0.86 to 1.00 for the randomly paired raters.

Pilot Study

A pilot study of the testing procedure and the data collection forms was conducted after the first evaluator training session at the DEPMEDS training site of a Combat Support Hospital. Fifty nursing personnel were included in the study. The purposes of the pilot study were (a) to determine the feasibility of the proposed testing procedure and (b) to identify difficulties in use of the data collection instruments.

The results of the pilot study provided a basis for minor modifications in the testing procedure and data collection forms. For example, some of the evaluator statements on the competency based exercise were confusing to some participants in the pilot study. These statements were changed to improve the clarity of instructions given to study participants. In addition, time limits for performance of each skill were established for the final version of the

competency based exercise based on evaluators' assessments of participants' timed skill performance. Because of these changes in the data collection instruments, data from the pilot study were not included in the final data analysis.

Data Collection

Data were collected from the demographic questionnaire, competency based exercise, written exercise, and semi-structured interview at multiple data collection sites from March through August 1994. Data were collected at skill stations in a DEPMEDS facility set up by a TOE unit or an RTS-MED training site. There was only one instance in which data collection was not conducted in a DEPMEDS facility. In this instance, data collection was conducted in tents that were set up next to the DEPMEDS facility in which a reserve unit was conducting its annual training. Skill stations were set up with the same field medical equipment and supplies at each data collection site (see Appendix E).

Once participants arrived at the data collection site, the investigator described the study and the data collection procedure to them and asked if they would volunteer to participate in the study. Participants were given the demographic questionnaire and written exercise to complete in an area of the study site that was next to but separate from the competency based testing area. Participants could take as long as they wanted to complete these forms. They returned their completed questionnaire and written exercise to a research assistant, who checked the forms for completeness and legibility.

At most study sites, the evaluators escorted the participant between the check-in area and the skill stations where the competency based exercise was conducted. When the check-in area and skill stations were not located next to each other, participants were escorted between the

two areas by a designated "runner," who carried the data collection form for the competency based exercise. Participants were not excused from the data collection area until a research assistant determined that all data collection forms had been completed.

Participants typically completed the demographic questionnaire and written exercise before beginning the competency based exercise. In a few instances, the order of testing was reversed. This was done to facilitate the flow of participants through the data collection procedure. There was no significant difference in the scores of the written or competency based exercises that could be attributed to the order of testing.

Data were obtained from selected participants by means of semi-structured interviews conducted in a private area of the data collection site. Interviews were conducted with participants only after they had completed the demographic questionnaire and competency based and written exercises. Each interview lasted from 20 to 90 minutes and was audiotaped by means of a microcassette recorder with a built-in microphone.

The investigator conducted most interviews. Two of the evaluators, a medical surgical nurse with intensive care nursing experience and an operating room nurse, conducted a few interviews with participants to whom they had administered the competency based exercise. The investigator worked with these two nurses on their interview techniques and supervised their initial interviews until they became proficient in their use of the interview guide. When they began conducting their own interviews, the investigator was available to answer their questions and provide clarification as needed. All interviewers attempted to understand participants' views from the participants' unique perceptions by bracketing (temporarily suspending) their theoretical orientation and bias during the interviews.

Data Analysis

Management of Data

All completed demographic questionnaires, competency based exercises, and written exercises were screened for completeness and accuracy of information. Individuals who were designated as points of contact for their unit were consulted regarding missing or illogical information. Trained data entry personnel used a double key entry process in which each data point was verified by two data entry personnel before being entered in the data set. The entire data set was subjected to computer programs that used logical expressions making various assertions about the data. These assertions were tested against each record, a report of the violations of these expressions was generated, and data collection forms were used to correct the data set as needed.

Analysis of Research Questions

This descriptive study used simultaneous triangulation of quantitative and qualitative methods, with quantitative methods taking precedence but being complemented by qualitative methods (Morse, 1991). The first research question was analyzed by scoring the competency based and written exercises and using descriptive statistics to examine the scores of each category of nursing personnel being studied. Both quantitative and qualitative methods were used to analyze the second research question.

First, independent t-tests were used to analyze the significance of the relationship between selected demographic characteristics and scores on the competency based and written exercises. Also, the general linear model (GLM) procedure, which uses the method of least squares to fit general linear models, was used to analyze the relationship between selected

institutional training (education) and operational assignment (work) experiences and scores on the competency based and written exercises (Littell, Freund, & Spector, 1991). The convention of a probability value (p-value) equal to or less than .05 was used to identify important trends in the data.

The second research question also was analyzed by identifying common patterns or themes of factors in the interview data related to participants' performance on the competency based and written exercises. All interviews were audiotaped and transcribed verbatim onto the Ethnograph, a qualitative software program that facilitates management of text-based data (Seidel, 1988). Data were analyzed by the constant comparative method. According to this method, the data were systematically analyzed to compare and contrast major themes found both within each interview and also across the group of interviews (Glaser, 1978; Hammersley & Atkinson, 1989). Preliminary data analysis occurred simultaneously with data collection. Each participant's numbered Ethnograph file was read for initial insights of factors related to performance on the competency based and written exercises and then analyzed to identify first level codes or indexes (Whyte, 1984).

The investigator conducted the initial analysis to identify first level codes and abstracted these codes to the conceptual categories described in the study. To increase reliability of data interpretation, three nurses with experience in the clinical skills and battle focused functions being studied reviewed selected transcripts (Brink, 1991). One of these nurses had experience in the intensive care unit, another in the emergency department, and the third in the operating room. All three nurses agreed with the investigator's initial interpretation of the data.

Finally, an experienced qualitative researcher compared and contrasted major themes within and across a subset of 22 interviews that served as exemplars. This subset, which included interviews of personnel with all AOCs and MOSs in the study, contained rich descriptions of all major themes that had been identified across the larger data set. This researcher described the same conceptual categories that had been identified by the investigator.

The investigator wrote field notes after the interviews and at other times during the data collection procedure to record personal reflections and analyze interview techniques. These notes described participants' characteristics, nonverbal behaviors, affect, communication processes, rapport, and general impressions. They served to contextualize interview data and to verify their credibility, consistency, and coherence (Atkinson, 1990; Jackson, 1987; Mishler, 1986; Patton, 1990).

RESULTS

Presentation of the research results consists of a description of sample characteristics followed by an explanation of the quantitative and qualitative analyses for each research question. Release 6.08 of SAS was used for all quantitative statistical analyses.

Sample Characteristics

The sample consisted of 1,085 nursing personnel at six study sites. This number includes 599 personnel in the active component of the AMEDD, 132 personnel in the ARNG, and 354 personnel in the USAR. The distribution of nursing personnel according to their specialty area and grade for each military component is shown in Table 1. Because the total number of ARNG participants was relatively small and all of these participants were from one unit, data for the ARNG and USAR were analyzed together and reported as findings for participants in the reserve components of the AMEDD.

All nurses who may function in a field environment as a medical surgical nurse were given the competency based exercise for medical surgical nurses. This included the following number of active and reserve component nurses who held seven different areas of concentration (AOCs): 8 nurse administrators (66A), 5 community health nurses (66B), 17 psychiatric/mental health nurses (66C), 14 pediatric nurses (66D), 15 obstetric and gynecologic nurses (66G), 45 clinical nurses (66J), and 284 medical surgical nurses (66H). Note that since data were collected for this study, the AOCs 66A and 66J have been converted to the AOC 66H.

Table 1

Number of Active and Reserve Component Participants in Each Specialty Area and Grade

Characteristic	Active Component	Reserve Components		Total
		ARNG	USAR	
Specialty Area				
66H	212	34	142	388
66E	39	9	28	76
66F	23	1	11	35
91B10	62	19	47	128
91B20+	91	15	17	123
91C	106	39	69	214
91D	66	15	40	121
All	599	132	354	1085
Grade				
E2 - E4	111	37	85	233
E5 - E9	214	51	88	353
O1 - O3	223	33	116	372
O4 - O6	51	11	65	127
All	599	132	354	1085

Note. Specialty Area refers to the area of concentration (AOC) or military occupational specialty (MOS) in which participants would function in a field environment. 66H = medical surgical nurse. 66E = operating room nurse. 66F = nurse anesthetist. 91B10 = medical specialist with a skill level of 10. 91B20+ = medical specialist with a skill level equal to or greater than 20. 91C = practical nurse. 91D = operating room specialist.

Analyses of Research Questions

Research Question One

The first research question was: To what extent are nursing personnel in the active and reserve components of the AMEDD prepared to provide patient care in a deployed or field status? To analyze this question, the competency based and written exercises were scored as previously described. Recall that a percent score for the competency based exercise was obtained by averaging the percentage of critical elements performed correctly for each skill on the exercise. A percent score for the written exercise was obtained by calculating the percentage of items answered correctly. Summary statistics of the competency based exercise were calculated separately for each of the seven categories of nursing personnel which had its own exercise with a unique set of skills (see Appendix B). Although the same written exercise was administered to all nursing personnel, summary statistics were calculated separately for each of these seven categories of nursing personnel.

One of the test items, "operate a surgical suction apparatus," was dropped from the competency based exercise for all categories of nursing personnel for purposes of this report. When the research team arrived at one of the data collection sites, it was discovered that personnel had obtained the wrong equipment for testing this skill. Because a surgical suction apparatus could not be obtained before data collection was to begin, 187 nursing personnel could not be tested on this skill even though it was on their competency based exercise.

Personnel at other data collection sites who were tested on the skill, "operate a surgical suction apparatus," had a mean score of 22.5% on this test item. Data analysis revealed that including this skill in the competency based exercise for the subset of personnel who had been

tested on it lowered their mean score. Furthermore, all analyses of the second research question were performed for the entire sample without this test item and for the subset of nursing personnel who had been tested on this skill. There were no differences between these two groups in the results of the analyses for the second research question.

After this one skill was dropped from the competency based exercise, mean percent scores on the seven competency based exercises for all nursing personnel ranged from 37% to 57% (see Table 2). On the average, nursing personnel correctly performed 49% of the critical elements of the field clinical skills that they should be prepared to perform in their specialty area. In five of the seven specialty areas, active component personnel scored slightly higher than reserve component personnel (see Table 2). However, when data for all specialty areas were considered together, there was no difference between the mean percent scores for active and reserve component personnel (50% versus 49%).

Mean percent scores on the entire written exercise for the seven categories of all nursing personnel ranged from 45% to 58% (see Table 2). On the average, nursing personnel answered 52% of the items on the written exercise correctly. In each specialty area, active component personnel scored slightly higher, on the average, than did reserve component personnel. Mean percent scores on the five written exercise subscales for nursing personnel in each specialty area ranged from 35% to 67% (see Table 3). The subscales with the lowest mean percent scores for the specialty areas were medical supply and sustainment.

Because there was little difference in mean percent scores on the competency based exercise between active and reserve component personnel, percent scores for both components were combined to present summary statistics for the individual medical surgical and

Table 2

Mean Percent Scores on the Competency Based and Written Exercises According to Military Component and Specialty Area

Component	Specialty Area							
	66H	66E	66F	91B10	91B20+	91C	91D	All
Competency Based Exercise								
AC M (SD)	53 (13)	58 (18)	61 (17)	36 (13)	42 (14)	56 (12)	44 (15)	50 (16)
RC M (SD)	57 (15)	54 (12)	49 (21)	39 (15)	38 (20)	48 (15)	39 (17)	49 (17)
All M (SD)	55 (14)	56 (15)	57 (19)	37 (14)	39 (16)	52 (14)	42 (16)	49 (17)
Written Exercise								
AC M (SD)	59 (10)	59 (12)	59 (8)	47 (11)	54 (10)	53 (11)	48 (9)	55 (11)
RC M (SD)	53 (10)	53 (9)	54 (8)	44 (9)	51 (11)	49 (11)	44 (9)	50 (11)
All M (SD)	56 (11)	56 (11)	58 (8)	45 (10)	53 (11)	51 (11)	46 (9)	52 (11)

Note. Specialty Area refers to the area of concentration (AOC) or military occupational specialty (MOS) in which participants would function in a field environment. 66H = medical surgical nurse. 66E = operating room nurse. 66F = nurse anesthetist. 91B10 = medical specialist with a skill level of 10. 91B20+ = medical specialist with a skill level equal to or greater than 20. 91C = practical nurse. 91D = operating room specialist. AC = Active Component. RC = Reserve Components.

Table 3

Mean Percent Scores on Subscales of the Written Exercise For Active and Reserve Component Nursing Personnel in Each Specialty Area

Subscale	Specialty Area						
	66H	66E	66F	91B	91C	91D	All
Command and Control <u>M (SD)</u>	62 (20)	61 (19)	62 (19)	58 (20)	58 (19)	52 (18)	59 (20)
Medical Evacuation <u>M (SD)</u>	59 (20)	60 (21)	67 (19)	57 (20)	54 (20)	49 (18)	57 (20)
Medical Supply <u>M (SD)</u>	52 (21)	48 (22)	49 (19)	41 (22)	43 (21)	35 (19)	45 (22)
Infection Control <u>M (SD)</u>	60 (19)	60 (19)	60 (16)	49 (19)	54 (19)	50 (20)	55 (19)
Sustainment <u>M (SD)</u>	50 (18)	52 (15)	50 (13)	40 (20)	44 (17)	46 (19)	46 (18)

Note. Specialty Area refers to the area of concentration (AOC) or military occupational specialty (MOS) in which participants would function in a field environment. 66H = medical surgical nurse. 66E = operating room nurse. 66F = nurse anesthetist. 91B = medical specialist. 91C = practical nurse. 91D = operating room specialist.

perioperative skills (see Table 4). Summary statistics of percent scores for the individual field anesthesia equipment skills performed by nurse anesthetists are presented separately in Table 5. Because the total number of nurse anesthetists in the sample was relatively small ($n=35$), percent scores for the active and reserve component personnel also were combined to present summary statistics for the individual field anesthesia equipment skills. After reviewing participants' percent scores on the individual skills, the expert panel members and nurse anesthetist consultants concluded that, in general, the greater the difference in how the skill is performed between the fixed facility and the field environment, the lower the percent score for the skill. They also noted that some skills associated with low percent scores simply were not performed by nursing personnel in those specialty areas in fixed facilities.

Table 4

Summary Statistics of Percent Scores for Medical Surgical and Perioperative Skills on the
Competency Based Exercise for Active and Reserve Component Nursing Personnel

Skill (AOC / MOS)	<u>M</u>	<u>SD</u>	Mode	<u>Mdn</u>	Range	<u>n</u>
Skills Performed Using Field Medical Equipment						
Operate a ventilator (66H, 66F, 91C)	6.1	17	0	0	0 - 100	637
Operate a blood recovery and delivery system (66F)	11.1	13	0	10	0 - 50	35
Obtain a 12-Lead EKG (66H, 91B, 91C)	12.1	26	0	0	0 - 89	853
Set up a blood recovery and delivery system (66F, 91D)	16.7	21	0	10	0 - 80	156
Operate a surgical suction apparatus* (66H, 66E, 91B, 91C)	22.5	32	0	0	0 - 100	742
Operate a pulsed irrigation and suction system (66E, 91D)	25	30	0	13	0 - 100	197
Operate a field sterilizer (66E, 91D)	30.1	22	13	27	0 - 100	197
Operate a cardiac monitor-recorder (66H, 66E, 66F, 91B, 91C)	39.4	36	0	33	0 - 100	964
Operate an intermittent suction- aspirator system (66E, 91D)	40.4	35	0	43	0 - 100	197
Operate a field portable oropharyngeal suction apparatus (66H, 66F, 91B, 91C)	47.1	42	0	60	0 - 100	888
Operate a mobile ultrasonic cleaner (66E, 91D)	60.6	27	86	71	0 - 100	197
Operate a field operating table (66E, 91D)	64.2	24	75	75	0 - 100	197

(table continues)

Table 4 (continued)

Skill (AOC / MOS)	<u>M</u>	<u>SD</u>	Mode	<u>Mdn</u>	Range	<u>n</u>
Operate a field oxygen delivery system (66H, 91B, 91C)	67.7	32	88	75	0 - 100	853
Operate an electrosurgical apparatus (66E, 91D)	69.3	25	80	80	0 - 100	197
Skills Performed Without Automated Equipment or Specialized Support Services						
Calculate the flow rate for an IV infusion (66H, 66E, 91B, 91C)	36.7	48	0	0	0 - 100	929
Measure CVP using a water manometer system (66H, 66F)	46.1	45	0	40	0 - 100	423
Prepare sterile items for storage (66E, 91D)	48.8	24	20	40	0 - 100	197
Perform high level disinfection (66E, 91D)	57.5	32	60	60	0 - 100	197
Measure a patient's blood pressure (66H, 91B, 91C)	80.3	20	100	83	0 - 100	853
Calculate an oral medication dosage (66H, 91B, 91C)	80.3	40	100	100	0 - 100	853
Prepare an IV additive (66H, 66E, 91C)	83.6	20	100	80	0 - 100	678
Measure a patient's oral temperature (66H, 91B, 91C)	84.1	19	100	80	0 - 100	853
Skills Performed in an Expanded Role in the Field						
Set up Buck's unilateral leg traction (66H, 91B, 91C)	9.0	22	0	0	0 - 100	853
Perform a needle chest decompression (91B20+)	32.8	34	0	20	0 - 100	123
Manage peritoneal dialysis (66H)	35.5	30	0	29	0 - 100	388

(table continues)

Table 4 (continued)

Skill (AOC / MOS)	<u>M</u>	<u>SD</u>	Mode	<u>Mdn</u>	Range	<u>n</u>
Intubate a patient (91B20+)	36.4	39	0	20	0 - 100	123
Administer blood to a patient (91B, 91C)	37.2	32	0	30	0 - 100	465
Treat a hemorrhaging patient (91B)	63.7	26	71	71	0 - 100	251
Triage casualties (66H, 91B)	68.5	34	100	75	0 - 100	639

Note. The categories of nursing personnel who were assessed on the skill are included in parentheses after the name of the skill. These categories refer to the area of concentration (AOC) or military occupational specialty (MOS) in which participants would function in a field environment. 66H = medical surgical nurse. 66E = operating room nurse. 66F = nurse anesthetist. 91B = medical specialists of all skill levels. 91B20+ = medical specialists with a skill level equal to or greater than 20. 91C = practical nurse. 91D = operating room specialist. *Not all participants in the designated specialty areas could be assessed on the skill, "operate a surgical suction apparatus," because of difficulties obtaining this equipment at one of the data collection sites.

Table 5

Summary Statistics of Percent Scores for Field Anesthesia Equipment Skills on the
Competency Based Exercise for Active and Reserve Component Nurse Anesthetists

Skill	<u>M</u>	<u>SD</u>	Mode	<u>Mdn</u>	Range	<u>n</u>
Operate an 885A Field Anesthesia Apparatus						
Convert the adult rebreathing system to a pediatric partial rebreathing circuit	25.7	43	0	0	0 - 100	35
Establish a second oxygen source from the "H" oxygen cylinder to the 885A anesthesia apparatus	45.7	48	0	33	0 - 100	35
Connect a ventilator to an 885A field anesthesia apparatus	50.5	45	0	67	0 - 100	35
Assemble a fully functional 885A field anesthesia system utilizing an adult rebreathing system	62.4	41	100	83	0 - 100	35
Describe utilization of the vaporizer	65.7	48	100	100	0 - 100	35
Identify the deficiencies in an 885A anesthesia apparatus & propose corrective actions	66.4	34	100	75	0 - 100	35
Perform a pre-use check-out of the 885A anesthesia apparatus	66.9	37	80	80	0 - 100	35
Set up a ventilator to the 885A anesthesia apparatus	72.4	42	100	100	0 - 100	35
Describe the procedure for changing tanks during use of the 885A field anesthesia apparatus	85.7	36	100	100	0 - 100	35
Fill, drain, & activate the vaporizer	88.6	32	100	100	0 - 100	35

(table continues)

Table 5 (continued)

Skill	<u>M</u>	<u>SD</u>	Mode	<u>Mdn</u>	Range	<u>n</u>
Operate a Universal PAC Drawover Anesthesia Apparatus						
Configure the universal PAC vaporizer for Isoflurane use	46.9	35	40	40	0 - 100	35
Assemble a fully functional universal PAC drawover anesthesia system using a non-rebreathing adult circuit	47.1	43	0	50	0 - 100	35
Perform a pre-use check-out of the universal PAC drawover anesthesia apparatus	50.7	35	75	50	0 - 100	35
Utilize a universal PAC vaporizer	69.3	40	100	75	0 - 100	35

Note. Only nurse anesthetists were assessed on these field anesthesia equipment skills.

Research Question Two

The second research question was: How should training be focused to prepare nursing personnel in the active and reserve components of the AMEDD to provide patient care in a deployed or field status?

Quantitative Analysis

First, independent t-tests were used to analyze the significance of the relationship between selected demographic characteristics and scores on the competency based and written exercises. It was noted that military rank had a strong relationship with scores on these exercises. As a group, senior nursing personnel (E5 - E9 and O4 - O6) scored significantly higher on the competency based and written exercises than did their junior counterparts (E2 - E4 and O1 - O3). This was true for both active and reserve component personnel on the competency based exercise (see Table 6). On the written exercise, this was true for all categories of personnel except active component officers (see Table 7). Note that of all categories of personnel examined, active component officer personnel had the fewest number of participants ($n = 51$) in the senior group.

Second, responses on the demographic questionnaire were examined to determine whether participants' institutional training (education) or operational assignment (work) experiences were related to their scores on the competency based and written exercises. No pattern of relationships was found between these experiences and participants' written exercise scores. Therefore, only analyses for the competency based exercise scores are presented here.

Table 6

Summary Statistics of Percent Scores on the Competency Based Exercise For Junior and Senior Enlisted and Officer Nursing Personnel in the Active and Reserve Components of the AMEDD

	Competency Based Exercise Scores				
Junior/Senior Rank	<u>M</u>	<u>SD</u>	Range	<u>n</u>	<u>p</u> *
Active Component					
Enlisted Personnel					.0001
E2 - E4	37.5	13	13 - 73	111	
E5 - E9	49.6	16	15 - 96	214	
Officer Personnel					.0001
O1 - O3	52.4	13	15 - 89	223	
O4 - O6	63.7	16	19 - 87	51	
Reserve Component					
Enlisted Personnel					.0009
E2 - E4	38.7	16	10 - 84	122	
E5 - E9	45.5	17	4 - 80	139	
Officer Personnel					.0151
O1 - O3	54.0	15	23 - 94	149	
O4 - O6	59.3	15	22 - 87	76	

Note. *All p-values indicate significant differences detected by t-tests between the junior and senior competency based exercise percent scores for each category of personnel listed in the table.

Table 7

Summary Statistics of Percent Scores on the Written Exercise For Junior and Senior Enlisted and Officer Nursing Personnel in the Active and Reserve Components of the AMEDD

	Written Exercise Percent Scores				
Junior/Senior Rank	<u>M</u>	<u>SD</u>	Range	<u>n</u>	<u>p</u> *
Active Component					
Enlisted Personnel					.0001
E2 - E4	46.4	10	23 - 73	111	
E5 - E9	53.3	10	23 - 73	214	
Officer Personnel					.6946
O1 - O3	59.5	10	27 - 90	223	
O4 - O6	58.9	9	40 - 77	51	
Reserve Component					
Enlisted Personnel					.0001
E2 - E4	43.5	9	23 - 77	122	
E5 - E9	49.7	11	23 - 73	139	
Officer Personnel					.0016
O1 - O3	51.4	10	30 - 77	149	
O4 - O6	55.8	9	30 - 77	76	

Note. *All p-values indicate significant differences detected by t-tests between the junior and senior written exercise percent scores for each category of personnel listed in this table except active component officer personnel.

Separate general linear models (GLMs) were used to analyze the relationship between each variable of interest and percent scores on the competency based exercise. Because of the strong relationship between military rank and these percent scores, military rank (senior versus junior rank) as well as an education or work variable were placed in each model. Results of the GLM procedures that demonstrated a significant relationship between an education or work variable and active or reserve component medical surgical nurses' scores on the competency based exercise are presented in Table 8. The least squares means and p-values for the Type III tests for these variables represent the effect of education or work experience on the competency based exercise percent scores after adjusting for the effect of military rank.

For active component medical surgical nurses, having Intensive Care Unit (ICU) work experience; having an Intensive Care (8A) ASI; having completed an Advanced Cardiac Life Support (ACLS) course, a Combat Trauma Nurse Course, a Trauma Nurse Core Course, or any level of Emergency Medical Technician (EMT) education or certification; and being a Certified Emergency Nurse (CEN) were related to higher scores on the competency based exercise (see Table 8). All of these work and education experiences except for being a CEN also were related to higher competency scores for reserve component medical surgical nurses. Note that only 9 of these reserve nurses were CENs.

Results of the GLM procedures for medical specialists and practical nurses with and without the same type of education and work experiences are presented in Table 9. Again, least squares means and p-values for the Type III tests for these variables represent the effect

Table 8

General Linear Model (GLM) Analysis of the Relationship Between Education/Work Experiences and Competency Based Exercise Percent Scores for Active and Reserve Component (AC and RC) Medical Surgical Nurses

66H Education / Work Experience	LSM (SE)		n		p*
	Without Experience	With Experience	Without Experience	With Experience	
In ICU Position					
AC	56.6 (1.3)	63.4 (2.1)	159	53	.0006
RC	55.4 (1.4)	62.8 (2.3)	128	48	.0047
8A ASI					
AC	55.9 (1.4)	62.2 (1.9)	156	56	.0013
RC	55.4 (1.3)	65.5 (2.6)	141	35	.0004
ACLS					
AC	51.7 (1.6)	61.5 (1.3)	80	132	.0001
RC	53.6 (1.4)	63.6 (1.8)	106	70	.0001
CTNC / TNCC					
AC	56.7 (1.3)	65.2 (2.7)	188	24	.0017
RC	56.2 (1.3)	63.0 (2.8)	146	30	.0264
EMT Educ / Certif					
AC	57.3 (1.3)	63.8 (3.3)	196	16	.0452
RC	56.1 (1.3)	66.6 (3.4)	156	20	.0035
CEN					
AC	57.0 (1.3)	68.6 (3.4)	198	14	.0008
RC	57.0 (1.2)	64.4 (5.2)	167	9	.1598

Note. Output from GLM procedures analyzing the effect of rank and education/work experience on competency based exercise percent scores. * P-values for Type III tests, with the effect of education/work experience adjusted for the effect of military rank. 66H = medical surgical nurse. LSM = least squares means for competency based exercise percent scores. In ICU Position = practicing in an Intensive Care Unit (ICU) position. 8A ASI = Intensive Care Additional Skill Identifier. ACLS = Advanced Cardiac Life Support Course. CTNC = Combat Trauma Nurse Course. TNCC = Trauma Nurse Core Course. EMT Educ/Certif = Emergency Medical Technician education and/or certification. CEN = Certified Emergency Nurse.

Table 9

General Linear Model (GLM) Analysis of the Relationship Between Education/Work Experiences and Competency Based Exercise Percent Scores for Active and Reserve Component (AC and RC) Medical Specialists and Practical Nurses

91B & 91C Education / Work Experience	<u>LSM</u> (<u>SE</u>)		<u>n</u>		p*
	Without Experience	With Experience	Without Experience	With Experience	
In ICU Position					
AC	42.0 (1.0)	56.5 (3.1)	237	22	.0001
RC	42.4 (1.4)	44.7 (1.9)	130	76	.3178
ACLS					
AC	42.2 (1.0)	53.0 (2.6)	224	35	.0001
RC	42.6 (1.2)	49.0 (3.7)	187	19	.1030
BTLS					
AC	42.8 (1.1)	44.9 (2.1)	197	62	.3382
RC	41.6 (1.2)	50.8 (2.6)	169	37	.0017
EMT Educ / Certif					
AC	42.8 (1.5)	43.5 (1.3)	102	157	.7324
RC	39.9 (1.4)	48.1 (1.7)	123	83	.0003

Note. Output from GLM procedures analyzing the effect of rank and education/work experience on competency based exercise percent scores. * P-values for Type III tests, with the effect of education/work experience adjusted for the effect of military rank. 91B = medical specialist. 91C = practical nurse. LSM = least squares means for competency based exercise percent scores. In ICU Position = practicing in an Intensive Care Unit (ICU) position. ACLS = Advanced Cardiac Life Support Course. BTLS = Basic Trauma Life Support Course. EMT Educ / Certif = Emergency Medical Technician education and/or certification.

of the education or work experience on the competency based exercise percent scores after adjusting for the effect of military rank. For active component medical specialists and practical nurses, having ICU work experience and having completed an ACLS course were related to higher scores on their competency based exercise. For reserve component medical specialists and practical nurses, having completed the Basic Trauma Life Support (BTLS) course and having completed EMT education or certification were related to higher scores on their competency based exercise.

Qualitative Analysis

As previously discussed, qualitative analyses of the second research question consisted of analyzing interview data to identify common patterns or themes of factors related to participants' performance on the competency based and written exercises. Study participants who were interviewed consistently described their eagerness to learn field skills and functions as well as their desire "to carry their own weight" when providing patient care in a field environment. However, none of the participants described their previous field training experiences as preparing them to perform the skills and functions assessed by the competency based and written exercises. Moreover, none of the participants could relate work or training experiences that prepared them to do well on the written exercise. However, analysis of the interview data revealed that, for the participants interviewed, developing their competencies in field clinical skills could be described as an educational process based on their institutional training, operational assignments, and self development experiences. Following is a brief description of these three types of experiences reported by the participants.

Institutional Training.

Institutional training refers to the formal education and training that prepare nursing personnel to work in their AOC or MOS in entry level positions as well as positions of increasing responsibility. The more senior group of participants who had graduated from their basic nursing training earlier than the other participants reported that what helped them do well on the competency based exercise was a process of learning described as "learning by principles." They reported that they learned to study the general principles underlying the performance of a skill and then to apply these principles to their specific clinical situation. They explained that this approach to performing an unfamiliar skill helped them develop their problem solving and critical thinking abilities. One participant described how he tried to use this teaching method to develop his students' critical thinking abilities:

Because I can't teach them the specifics about everything they're ever going to need to know, I try and teach them that if you're confronted with a new piece of equipment, what is it supposed to do? What has it got available? What are you trying to accomplish? What are you monitoring? So that you can look at something new and get through it quickly.

These participants also described how being taught to improvise or "to come up with something else to do the same job" helped them perform skills on the competency based exercise. As one participant explained, "People need to get some experience in improvising because you will not always have what you need in the field."

In contrast, the more junior group of participants who had recently graduated from their basic nursing training generally could not relate to a teaching method of "learning by

principles" or to the need to improvise in the field. This group of participants knew how to operate state of the art equipment and how to perform skills needed in their specialized nursing roles in fixed facilities. However, they had difficulty drawing upon this knowledge to help them perform the skills on the competency based exercise.

Operational Assignments.

Operational assignments refer to duty assignments that offer nursing personnel the opportunity to use and build upon what they learn through their formal education and training. Many participants who described their duty assignments as helping them perform well on their competency based exercise were working or had worked as nursing personnel in an operating room, emergency department, or critical care area in a military or civilian facility or as an emergency medical technician in a civilian agency. They reported that many of the competencies they needed to maintain for their peacetime critical care or emergency nursing role were similar to the competencies being assessed in the exercise.

Conversely, participants who did poorly on the competency based exercise described themselves as having had duty assignments in which they did not perform skills similar to those on the competency based exercise. For example, active component medical specialists who had several assignments in field units complained that they performed poorly on the competency based exercise because they had very few opportunities to practice or perform any clinical skills in their duty assignments. Also, some participants from reserve and guard units reported that they had little or no opportunity to improve their clinical skills because their active duty time was filled with administrative duties and taskings that did not require use of their clinical skills. Furthermore, some participants stated that they performed poorly on parts

of the competency based exercise because they were assessed on skills that they were not allowed to perform in their duty assignments in a non-deployed status.

Self Development Activities.

Self development activities refer to military and civilian continuing education, correspondence courses, and self study activities that allow nursing personnel to expand on their knowledge base. Some participants described self development activities that helped them perform the skills on the competency based exercise. They recounted behaviors and attributes that reflected both a love of learning and an innate curiosity about their environment. For example, one participant said that he always calculated intravenous rates "by hand" to make certain that the intravenous infusion equipment was working correctly. Other participants described how they always checked the unit dose system by calculating the medication dosage by hand because they enjoyed doing it. One reservist reported that one afternoon during a training weekend, she read the manual on the blood recovery and delivery system and "for the fun of it" assembled and disassembled the system "just to see if she could do it."

In contrast, other personnel simply complained that they performed poorly on the competency based exercise because their "field training" had consisted of familiarization lectures and being taught how to work collectively as a team. They stated that this training did not allow "hands-on" experience with the equipment or the nursing skill to be performed and did not help them perform well on the competency based exercise. They also complained that they did not have the time or the knowledge to engage in self development activities that would help them become more competent in these types of field skills.

DISCUSSION

In peacetime, most nursing personnel develop and sustain their competencies in entry level and advanced clinical skills used in their specialized areas of practice in high technology, automated fixed healthcare facilities. The findings of this study indicate that most nursing personnel do not have the opportunity in their peacetime work environment to practice and become proficient in many of the skills and functions they must perform in a deployed or field status. Nursing personnel generally had the most difficulty performing skills that were not similar to any skills they typically performed in their everyday fixed facility roles.

These results indicate that individual medical readiness training for nursing personnel should focus on skills and functions that they perform frequently or perform as life saving measures in a field environment, but that they do not routinely perform in the same manner in fixed facilities. In this study, skills that were found to differ from the fixed facility to the field environment are those performed in the field with field medical equipment, without automated equipment or special support services commonly available in fixed facilities, and in an expanded role. Participants also reported that the command and control, medical evacuation, medical supply, infection control, and sustainment battle focused functions assessed in the written exercise were very different from these types of functions they performed in their fixed facility roles.

The higher competency based and written exercise scores of the more senior participants may be partially attributed to a good selection process that has retained the most knowledgeable and skilled personnel in the senior ranks. Also, the higher scores of the more senior participants may be related to the cumulative effect of their institutional training,

operational assignments, and self development experiences. Senior participants could not relate their previous experiences to their ability to do well on the written exercise. However, they stated in their interviews that they felt they were able to perform well on the competency based exercise because of the problem-solving manner in which they had been trained to approach a new skill, their training to improvise when needed, and their previous work assignments in lower technology and less automated environments than are commonly seen in hospitals today.

The results of the general linear model (GLM) procedure used to analyze the relationship between participants' institutional training (education) and operational assignment (work) experiences and their competency based exercise scores should be interpreted with caution. The number of observations with the experience being examined in each model generally was very low compared to the number of observations in the model without the experience. The GLM data should be interpreted for overall trends, not specific information about each education and work experience analyzed.

The overall trend noted in the GLM results was that critical care and emergency nursing education and work experiences generally were related to higher scores on the competency based exercise. This was especially true for medical surgical nurses. These data are validated by participants' reports that their critical care and emergency nursing work experiences helped them perform well on the competency based exercise.

Most inconsistencies in this trend of the GLM results were noted for medical specialists (91Bs) and practical nurses (91Cs). Some of these inconsistencies may be due to the incorrect interpretation of some questions on the demographic questionnaire. For example, while

practicing in an intensive care unit (ICU) was related to higher scores on the competency based exercise for active component 91Bs and 91Cs, this relationship did not hold true for their reserve component counterparts. Some reserve component 91Bs and 91Cs may have reported that they were practicing in an ICU position in that they held this type of position in their reserve unit, although they did not actually work in this role in their civilian work environment.

Other inconsistencies in the relationship of critical care and emergency nursing education and work experiences to higher scores on the competency based exercise suggest that these types of education experiences are most beneficial for personnel when they have an opportunity to practice these skills in their work environment. For example, BTLS and EMT education were associated with higher competency scores for reserve component 91Bs and 91Cs, but not for active component 91Bs and 91Cs. Some of these reserve component personnel also worked as medics for an ambulance company in their civilian position, and they were able to practice their emergency skills in their work environment. However, active component 91Bs and 91Cs generally did not have this type of work experience. Some of the active component 91Bs worked as field medics, but they reported that they were not able to practice their medic skills in this type of duty assignment. Further studies are needed to explore how education and work experiences interact in their relationship to competencies in field clinical skills.

CONCLUSIONS

Results of this study indicate that nursing personnel in the active and reserve components of the AMEDD have training needs in skills and functions that they perform frequently or perform as life saving measures in a field environment, but that they do not routinely perform in the same manner in fixed facilities. More specifically, these training needs include training in skills that are performed in a field environment (a) with field medical equipment, (b) without automated equipment or special support services, and (c) in an expanded role.

Identified training needs also include training in the following types of battle focused functions performed in a field environment: (a) command and control, (b) medical evacuation, (c) medical supply, (d) infection control, and (e) sustainment functions. These training needs were identified for medical surgical nurses, operating room nurses, nurse anesthetists, practical nurses, medical specialists, and operating room specialists in both the active and reserve components of the AMEDD.

Moreover, study findings indicate that institutional training, operational assignments, and self development experiences help nursing personnel develop their competencies in field clinical skills. In particular, critical care and emergency nursing education and work experiences were related to higher scores on the competency based exercise. Additionally, participants reported that the method of "learning by principles," being taught to improvise, and having "hands-on" practice with specific skills helped them improve their competencies in field clinical skills. In contrast, no education or work experiences were related to participants' knowledge of battle focused functions. Findings also suggest that current field training

experiences are not helping nursing personnel develop their competencies in field clinical skills and battle focused functions.

It is concluded that experiences nursing personnel obtain from their institutional training, operational assignments, and self development experiences are necessary, but not sufficient, to prepare them for their patient care role in a deployed or field status. Critical care and emergency nursing education and work experiences were found to be particularly important in preparing nursing personnel for their patient care role in a deployed or field environment. In addition to these types of experiences, nursing personnel also need medical readiness training focused on the training needs identified in this study--i.e., skills and battle focused functions that nursing personnel perform frequently or perform as life saving measures in a field environment, but that they do not routinely perform in the same manner in fixed facilities.

RECOMMENDATIONS

It is recommended that a task force develop a readiness training program to meet the training needs identified in this study. It is also recommended that a study be conducted to evaluate the effectiveness of this training program. Once an effective readiness training program is developed, it should be the shared responsibility of the Chief Nurse, U.S. Army Forces Command, and the Chief, Department of Nursing Science, AMEDDC&S, to institutionalize the program throughout the active and reserve components of the AMEDD.

Furthermore, it is recommended that an officer at each Regional Medical Command be designated to coordinate readiness training for all units in their region. The readiness training program that is to be developed based on this study should be a part of the training program for units in each Regional Medical Command. The training status of the individual medical readiness of each unit should be included in their Unit Status Report.

Finally, it is recommended that this study be replicated with other groups of personnel in the AMEDD, to include Medical Corps officers. Training needs should be identified for these personnel in the active and reserve components of the AMEDD. Training programs should be developed based on these needs, and the effectiveness of the training programs should be evaluated before institutionalizing them throughout the AMEDD.

APPENDIX A

READINESS COMPETENCY OF NURSING PERSONNEL DURING DEPLOYMENT

DEMOGRAPHIC QUESTIONNAIRE

A. SITE _____

B. DATE _____

C. ID _____

D. TIME IN _____

TIME OUT _____

E. MILITARY STATUS:

1. Active Duty
2. ARNG
3. USAR

F. MOS/AOC:

1. 91B (Medical Specialist) 10 20 30 40 50

Circle "20" if soldier has completed BNCOC/91B20 Phase II

Circle "30" if soldier has completed 91B30/Medical NCO course

2. 91C (Practical Nurse) 10 20 30 40 50
3. 91D (OR Technician) 10 20 30 40 50
4. 66A (Nurse Administrator)
5. 66B (Community Health Nurse)
6. 66C (Psychiatric/Mental Health Nurse)
7. 66D (Pediatric Nurse)
8. 66E (Operating Room Nurse)
9. 66F (Nurse Anesthetist)
10. 66G (Obstetric and Gynecologic Nurse)
11. 66H (Medical-Surgical Nurse)
12. 66J (Clinical Nurse)

**For each question, circle the correct numbered response(s) or write in your response.
If your response is zero, write in "0." Do not leave any blanks.**

G. What is your present grade?

- | | |
|-------|--------|
| 1. E1 | 11. 01 |
| 2. E2 | 12. 02 |
| 3. E3 | 13. 03 |
| 4. E4 | 14. 04 |
| 5. E5 | 15. 05 |
| 6. E6 | 16. 06 |
| 7. E7 | |
| 8. E8 | |
| 9. E9 | |

H. What is your gender?

1. Male
2. Female

I. How long have you served in the **reserve component (ARNG and/or USAR) of the Army Medical Department? ____ years ____ months**

J. How long have you served on **active duty in the Army Medical Department?
____ years ____ months**

**K. How much of your active duty service has been with a TOE (field) unit?
____ years ____ months**

L. How many **months have you spent providing patient care in a deployed status since January 1990? ____ months**

M. How many **months have you spent providing patient care during a field training exercise (FTX) since January 1990?
____ months**

N. How many **days** have you spent training with field medical equipment in the last 12 months?
_____ days

O. What is your current position in the military? (If you are assigned as a student now, what was your position in your last assignment?) Circle all that apply.

1. Nurse Assistant/Nurse Aide/Medical Specialist
2. Emergency Medical Technician
3. Licensed Practical Nurse
4. Operating Room Technician
5. Other Technician (please specify) _____
6. Medical NCO/NCOIC/Wardmaster
7. Staff Nurse
8. Head Nurse
9. Section Supervisor
10. Chief Nurse/Director of Nursing
11. Instructor/Professor
12. Researcher
13. Nurse Anesthetist
14. Nurse Midwife
15. Nurse Practitioner, Adult
16. Nurse Practitioner, Family
17. Nurse Practitioner, OB/GYN
18. Nurse Practitioner, Pediatrics
19. Clinical Nurse Specialist (specify area of practice) _____
20. Staff Officer (specify area of practice) _____
21. Other (please specify) _____

P. What is your current area of practice in the military? (If you are assigned as a student now, what was your area of practice in your last assignment?)

1. Administration
2. Ambulatory Care (outpatient clinic)
3. Community Health
4. Coronary Care Unit
5. Emergency Room
6. Infection Control
7. Intensive Care Unit--Medical (MICU)
8. Intensive Care Unit--Neonatal (NICU)
9. Intensive Care Unit--Surgical (SICU)
10. Intensive Care Unit--Combined (ICU)
11. Medical-Surgical
12. Newborn Nursery
13. Nurse Anesthesia
14. Nursing Education & Staff Development/Training
15. Obstetrics/Gynecology
16. Operating Room
17. Orthopedics
18. Pediatrics
19. Post Anesthesia Care Unit (Recovery Room)
20. Psychiatric/Mental Health
21. Quality Assurance/Risk Management
22. Other (please specify) _____

Q. For Officers: What are your Additional Skill Identifiers (ASIs)?

1. 5K (Instructor)
2. 5P (Parachutist/Airborne)
3. 7T (Clinical Nurse Specialist)
4. 7U (Field Nursing)
5. 7V (Nurse Recruiting)
6. 8A (Intensive Care)
7. 8D (Midwifery)
8. 8E (Nurse Practitioner)
9. 8J (Infection Control)
10. 8K (CMS)
11. Other (please specify) _____
12. I do not have any ASIs.

R. For Enlisted Personnel: What are your Additional Skill Identifiers (ASIs)?

1. M3 (Dialysis)
2. N8 (Urology Specialty)
3. P5 (Master Fitness Trainer)
4. Y8 (Allergy-Clinical Immunology)
5. Other (please specify) _____
6. I do not have any ASIs.

S. For Enlisted Personnel: What are your Special Qualification Identifiers (SQIs)?

1. C (NBC)
2. G (Ranger)
3. H (Instructor)
4. M (First Sergeant)
5. P (Parachutist)
6. V (Ranger Parachutist)
7. X (Drill Sergeant)
8. Z (Alcohol & Drug Abuse Prevention & Control Program)
9. 4 (Non-Career Recruiter)
10. Other (please specify) _____
11. I do not have any SQIs.

T. What professional licenses do you hold?

1. LPN/LVN
2. Registered Nurse
3. Nurse Practitioner
4. Other (please specify) _____
5. I do not have any professional licenses.

U. What certifications do you hold?

1. Certified Critical Care Nurse (CCRN)
2. Certified Emergency Nurse (CEN)
3. Certified Medical-Surgical Nurse (RN,C)
4. Certified Nurse, Operating Room (CNOR)
5. Certified Nurse, Orthopedics (ONC)
6. Certified Nurse Practitioner (specify area) _____
7. Certified Registered Nurse Anesthetist (CRNA)
8. Emergency Medical Technician - Basic (Ambulance)
9. Emergency Medical Technician - Intermediate
10. Emergency Medical Technician - Paramedic
11. Other (please specify) _____
12. I do not have any certifications.

V. What is the highest academic degree that you have earned?

1. Associate Degree in Nursing
2. Associate Degree in a non-nursing field
3. Bachelor of Science Degree in Nursing
4. Bachelor's Degree in a non-nursing field
5. Master's Degree in Nursing
6. Master's Degree in a non-nursing field
7. Doctorate in Nursing
8. Doctorate in a non-nursing field
9. I have taken some college courses, but I have not earned a degree.
10. I have not taken any college courses.

W. What military academic courses have you completed?

1. PLDC
2. BNCOC
3. ANCOC
4. First Sergeants Course
5. Operations Sergeant Course
6. Sergeants Major Academy
7. Officer Basic Course
8. Officer Advanced Course
9. Head Nurse Course
10. PANA Course
11. AMEDD S2/S3 Course
12. AMEDD Pre-Command Course
13. Combined Arms and Services Staff School (CAS3) - Phase I
14. Combined Arms and Services Staff School (CAS3) - Phase II
15. Command & General Staff Officer Course (CGSOC)
16. Armed Forces Staff College
17. Industrial College of the Armed Forces
18. War College
19. Other (please specify) _____
20. I have not completed any military academic courses.

X. What military or civilian medical education courses have you completed?

1. Advanced Burn Life Support (ABLS)
2. Advanced Cardiac Life Support (ACLS)
3. Advanced Trauma Life Support (ATLS)
4. Basic Trauma Life Support (BTLS)
5. Combat Anesthesia Course (CA)
6. Combat Casualty Care Course (C4)
7. Combat Casualty Care Management Course (C4A)
8. Combat Trauma Nurse Course (CTNC)
9. Deployment Medicine Course (DMC)
10. Emergency Medical Technician Training - Basic (Ambulance)
11. Emergency Medical Technician Training - Intermediate
12. Emergency Medical Technician Training - Paramedic
13. Medical Defense Against Biological Warfare & Infectious Disease
14. Medical Effects of Nuclear Weapons
15. Nuclear Hazards Training Course
16. Medical Management of Chemical Casualties
17. Pre-Hospital Trauma Life Support (PHTLS)
18. Trauma Nurse Core Course (TNCC)
19. Other (please specify) _____
20. I have not completed any military or civilian medical education courses.

Y. **For Active Duty Personnel:** Are you a part of the Professional Officer Filler System (PROFIS) or Medical Filler System (MEDFIS)? (If you are a student, were you on PROFIS/MEDFIS at your last duty station?)

1. Yes
2. No
3. Don't know

Z. For Active Duty Personnel: To what type of unit are you currently assigned?

(If you are a student, your last assignment was at what type of unit?)

1. TDA
2. TOE
3. Don't know

AA. For Nurse Anesthetists: Have you ever administered an anesthetic agent using the 885A Field Anesthesia Apparatus?

1. Yes
2. No

Have you ever administered an anesthetic agent using the Universal PAC Draw-Over Anesthesia Apparatus?

1. Yes
2. No

AB. For Nurse Anesthetists: In the last year, how many cases have you done using the 885A Field Anesthesia Apparatus?

1. ____ cases

In the last year, how many cases have you done using the Universal PAC Draw-Over Anesthesia Apparatus?

2. ____ cases

**CONTINUE WITH THE REST OF THE QUESTIONNAIRE
ONLY IF YOU ARE ARNG OR USAR PERSONNEL**

AC. How many days of training for your nursing role in the ARNG or USAR have you had in the last year? Training may include classes, practical exercises, patient play scenarios, practice working with field medical equipment, and/or other classroom-type experiences related to your clinical nursing role.

_____ days in the last year

AD. How many days of patient care in your ARNG or USAR nursing role have you had in the last year?

_____ days in the last year

AE. In your **civilian** place of employment, do you work in a nursing role?

1. Yes
2. No

AF. If yes, is this nursing role in your **civilian** place of employment the same as your nursing role in the ARNG or USAR?

1. Yes
2. No

AG. If you do not work in a nursing role in your civilian place of employment, what is your current **position** and **place of employment**? _____

AH. If you work in a nursing role in your **civilian** place of employment, what is your current position?

1. Nurse Assistant/Nurse Aide/Medical Specialist
2. Emergency Medical Technician
3. Licensed Practical Nurse
4. Operating Room Technician
5. Other Technician (please specify) _____
6. Medical NCO/NCOIC/Wardmaster
7. Staff Nurse
8. Head Nurse
9. Section Supervisor
10. Chief Nurse/Director of Nursing
11. Instructor/Professor
12. Researcher
13. Nurse Anesthetist
14. Nurse Midwife
15. Nurse Practitioner, Adult
16. Nurse Practitioner, Family
17. Nurse Practitioner, OB/GYN
18. Nurse Practitioner, Pediatrics
19. Clinical Nurse Specialist (specify area of practice) _____
20. Staff Officer (please specify) _____
21. Other (please specify) _____
22. I do not work in a nursing role in my civilian place of employment.

AI. If you work in a nursing role in your **civilian** place of employment, what is your area of practice?

1. Administration
2. Ambulatory Care (outpatient clinic)
3. Community Health
4. Coronary Care Unit
5. Emergency Room
6. Infection Control
7. Intensive Care Unit--Medical (MICU)
8. Intensive Care Unit--Neonatal (NICU)
9. Intensive Care Unit--Surgical (SICU)
10. Intensive Care Unit--Combined (ICU)
11. Medical-Surgical
12. Newborn Nursery
13. Nurse Anesthesia
14. Nursing Education & Staff Development/Training
15. Obstetrics/Gynecology
16. Operating Room
17. Orthopedics
18. Pediatrics
19. Post Anesthesia Care Unit (Recovery Room)
20. Psychiatric/Mental Health
21. Quality Assurance/Risk Management
22. Other (please specify) _____
23. I do not work in a nursing role in my civilian place of employment.

APPENDIX B

LIST OF SKILLS SELECTED FOR TESTING

SKILL	AOC/MOS					
	66H	66E	66F	91B	91C	91D
<u>Skills Performed Using Field Medical Equipment</u>						
1.01: Operate a cardiac monitor-recorder	X	X	X	X	X	
1.02: Obtain a 12-Lead EKG	X			X	X	
1.03: Operate a field portable oropharyngeal suction apparatus	X		X	X	X	
1.04: Operate a surgical suction apparatus	X	X		X	X	
1.05: Operate a field oxygen delivery system	X			X	X	
1.06: Operate a ventilator	X		X		X	
1.07: Operate a mobile ultrasonic cleaner		X				X
1.08: Operate a field sterilizer		X				X
1.09: Operate a field operating table		X				X
1.10: Operate an electrosurgical apparatus		X				X
1.11: Operate an intermittent suction-aspirator system		X				X
1.12: Operate a pulsed irrigation and suction system		X				X
1.13: Set up a blood recovery and delivery system			X			X
1.14: Operate a blood recovery and delivery system			X			
1.15: Operate an 885A field anesthesia apparatus			X			
1.16: Operate a universal PAC draw-over anesthesia apparatus			X			

SKILL	AOC/MOS					
	66H	66E	66F	91B	91C	91D
<u>Skills Performed Without Automated Equipment or Specialized Support Services</u>						
2.01: Measure CVP using a water manometer system	X		X			
2.02: Measure a patient's oral temperature	X			X	X	
2.03: Measure a patient's blood pressure	X			X	X	
2.04: Prepare an IV additive	X	X			X	
2.05: Calculate an oral medication dosage	X			X	X	
2.06: Calculate the flow rate for an IV infusion	X	X		X	X	
2.07: Prepare sterile items for storage		X				X
2.08: Perform high level disinfection		X				X

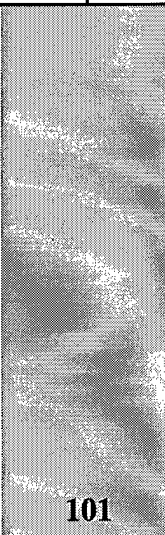
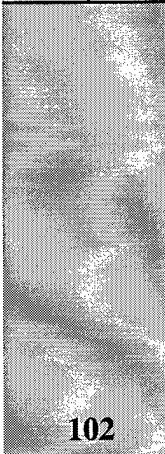
Skills Performed in an Expanded Role in the Field

3.01: Triage casualties	X			X		
3.02: Intubate a patient*				X		
3.03: Perform a needle chest decompression*				X		
3.04: Treat a hemorrhaging patient				X		
3.05: Administer blood to a patient				X	X	
3.06: Set up Buck's unilateral leg traction	X			X	X	
3.07: Manage peritoneal dialysis	X					

* The expert panel selected these advanced clinical skills for testing only those medical specialists (91Bs) with a skill level equal to or greater than 20. It was expected that these more senior medical specialists would have completed the Basic Noncommissioned Officers Course (BNCOC), where they learn more advanced clinical skills.

APPENDIX C

COMPETENCY-BASED EXERCISE

Readiness Competency of Nursing Personnel During Deployment		GO	NO GO
Competency-Based Exercise			
TASK 101 Triage Casualties (66H, 91B)			
Conditions: Picture of treatment facility & written description of each casualty with a prompt to respond with triage category, rationale, and treatment steps. Time: 9 min.			
"You are the triage officer. A 5-ton truck just arrived with 12 casualties. The only medical personnel available are 1 general medical officer, 1 general surgeon, and a few nursing personnel. You are the first medical providers to see these casualties. Assign 1 or more possible triage categories to each of the 4 casualties and explain why you chose each category. Describe the steps in treating each of the casualties. Use the picture of the treatment facility to identify areas of treatment."			
1. Casualty 1.	1.		
2. Casualty 2.	2.		
3. Casualty 3.	3.		
4. Casualty 4.	4.		
TASK 102 Intubate a Patient (NOTE: ADMINISTER to 91B20/30/40/50 ONLY)			
Conditions: 1 laryngoscope with 1 straight and 1 curved blade, 1 stylet, 1 each of 6, 7, & 8 mm ET tubes in sterile wrappers, 10-20 cc syringe in sterile wrapper, 1 roll of adhesive tape, & 1 spray can of lubricant that can be used to intubate the mannequin; intubation mannequin positioned on bed for easy intubation. Time: 5 min.			
"This 27-year-old patient is not breathing, but his airway is patent. He is being oxygenated with a bag-valve-mask. Prepare your equipment and intubate this mannequin."			
1. Lock blade in place & check light.	1.		
2. Select 7 or 8 mm ET tube.	2.		

**Readiness Competency of Nursing Personnel During Deployment
Competency-Based Exercise**

		GO	NO GO
3. Check ET tube cuff by inflating with 10 cc of air.	3.		
4. Insert stylet into ET tube so that tip is recessed ½ inch from ET tube tip & bend other end of stylet at a 90° angle so it can go no further into ET tube.	4.		
5. Lubricate tube prior to intubation.	5.		
6. Insert blade to visualize vocal cords.	6.		
7. Insert ET tube until cuff is just below level of vocal cords.	7.		
8. Remove blade & stylet.	8.		
"When you place an ambu bag over the end of the ET tube and blow air into the tube, how would you know if the tube is in place?"			
9. Verbalize that chest should rise symmetrically or lung sounds should be auscultated bilaterally.	9.		
"What would you do to keep the ET tube in place?"			
10. Inflate cuff & secure with tape.	10.		
TASK 103 <i>Perform a Needle Chest Decompression</i> (NOTE: ADMINISTER to 91B20/30/40/50 ONLY)			
Conditions: 1 each of a 14 & 18 gauge needle in a sterile wrapper, a 20 cc syringe in a sterile wrapper, 1 box of sterile alcohol swabs, & 1 roll of adhesive tape on table; 1 mannequin (1/2 or full-body mannequin with chest landmarks visible) on bed. Time: 5 min.			
"This patient is unconscious. He has left chest trauma and severe respiratory distress with cyanosis. What are 2 signs that may indicate a tension pneumothorax?"			
Poor ventilation despite an open airway.			
Neck vein distention.			
Tracheal deviation (away from side of injury).	1.		
Absent/decreased breath sounds on side of injury.			
Hyperresonance (tympany) to percussion on affected side.	2.		

**Readiness Competency of Nursing Personnel During Deployment
Competency-Based Exercise**

"You have ventilated the patient with high-flow oxygen. Use this mannequin to show me how you would treat a patient with a tension pneumothorax."

3. Choose insertion site: Either the 2nd ICS in the midclavicular line (approximately in line with the nipple) or the 4th or 5th ICS in the midaxillary line on the same side as the pneumothorax.

4. Clean insertion site with sterile alcohol wipe.

5. Choose 14 gauge needle & attach syringe.

6. Demonstrate how to insert needle tip, bevel up, just above rib margin.

7. Demonstrate how to decompress affected side by aspirating air with syringe to relieve patient's symptoms.

8. Verbalize how to initiate closed chest drainage with underwater seal or how to apply commercial or improvised one-way flutter valve.

9. Verbalize need to secure needle to chest.

"How do you know when you have inserted the needle far enough (penetrated the pleura)?"

10. "I have inserted the needle far enough when I feel a 'pop' as the needle enters the pleural space."

TASK 104 *Treat a Hemorrhaging Patient (91B)*

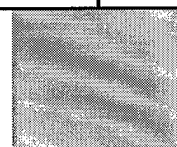
Conditions: 2 field dressings, 2 field bandages, & 3 tongue blades on table; 1 full-body mannequin with wound marked on lower forearm, just below elbow joint. **Time:** 4 min.

"You are working as a field medic during a field training exercise. This soldier has a wound on the left lower arm that is bleeding profusely. Show me what steps you would take to treat the soldier whose wound continues to hemorrhage." (At completion of #1, #2, & #3--may use prompt, "The wound continues to hemorrhage.")

1. Demonstrate applying & securing pressure dressing.

GO

NO
GO



3.

4.

5.

6.

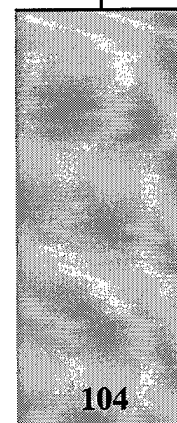
7.

8.

9.



10.



104

1.

**Readiness Competency of Nursing Personnel During Deployment
Competency-Based Exercise**

		GO	NO GO
2. Demonstrate elevating arm above level of heart. (May demonstrate either #1 or #2 first.)	2.		
3. Demonstrate applying digital pressure to arterial pressure point at elbow.	3.		
4. Demonstrate and explain application of tourniquet using field bandage (when previous measures do not control hemorrhage):			
a. Use correct location, applying tourniquet between wound & heart--about 2" above wound site & above joint.	4.		
5. b. Use tongue blades to apply appropriate tightness.	5.		
6. c. Verbalize need to mark T on forehead.	6.		
7. d. Verbalize need to mark time of initiation on forehead or on Field Medical Card.	7.		

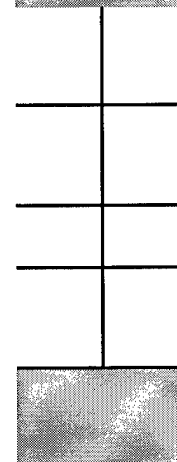
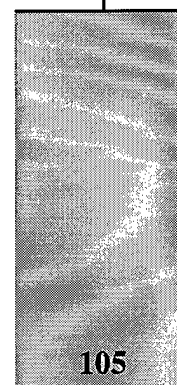
TASK 105 Administer Blood to a Patient (91B, 91C)

Conditions: 1 labeled blood pack with red fluid in bag to simulate blood, 1 SF 518 completed with patient information, 1 blood recipient set, & 1 liter of IV solution other than normal saline on table; an IV pole. **Time:** 6 min.

"You have just received a unit of blood that is to be administered to a patient. Show me what you would do to evaluate the blood pack and the patient before administering the unit of blood."

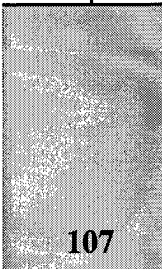
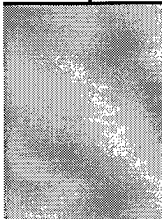
- | | | | |
|---|----|--|--|
| 1. Together with an RN (if RN available), verify blood pack label with requisition form data. | 1. | | |
| 2. Verify blood pack label with patient's name, blood type, & ID. | 2. | | |
| 3. Inspect blood for abnormalities. | 3. | | |
| 4. Evaluate patient's allergies, previous reactions to blood products, & vital signs. | 4. | | |

"Show me how you would set up the unit of blood to administer it to a patient."

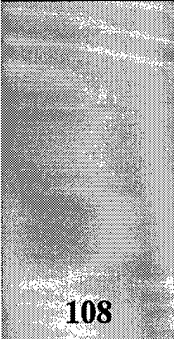
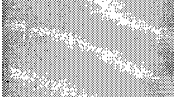


**Readiness Competency of Nursing Personnel During Deployment
Competency-Based Exercise**

	GO	NO GO
5. Prime blood line & infusion tubing with normal saline, using sterile technique. (May prompt, "What type of IV fluid would you use for IV flush?")		
6. Administer blood with a 16-19 gauge catheter. (May prompt, "What gauge of IV catheter would you use to administer the blood?")		
"What would you monitor and observe the patient for while administering the blood transfusion?"		
7. Monitor vital signs and observe for indication of adverse reaction to blood transfusion.		
"What would you do when the patient has received the unit of blood?"		
8. Flush line with normal saline, take patient's vital signs, & document on SF 518.		
"Name 1 sign or symptom of an adverse reaction to a blood transfusion."		
9. Fever, chills, hypotension, tachycardia, flushed appearance, headache, nausea, anxiety, etc.		
"What is the first action you should take if your patient shows signs of an adverse reaction to the blood?"		
10. Stop the transfusion.		
TASK 106 Set Up Buck's Unilateral Leg Traction (66H, 91B, 91C)		
Conditions: Soft padding, moleskin, ace wrap, traction cord, approximately 3"x3"x3/4" board, & stockinette on table; IV pole; full-body mannequin (with legs & feet) on bed. Time: 4 min.		
"Use this mannequin and these materials to show me how you would set up Buck's traction on the right leg. Demonstrate how you would set up the traction and how you would assess the leg."		
1. Pad bony prominences of lower leg.		

Readiness Competency of Nursing Personnel During Deployment Competency-Based Exercise		GO	NO GO
2. Attach moleskin medially & laterally (min. 30") & extend it 2-3" past end of foot.	2.		
3. Secure wooden block inside of moleskin.	3.		
4. Develop method of setting up traction cord (e.g., drill hole through wooden block or tie cord around it).	4.		
5. Develop method of stabilizing traction (e.g., string it over IV pole).	5.		
6. Apply weight (e.g., sand-filled stockinette or MRE bag).	6.		
7. Raise heel off of bed.	7.		
8. Assess alignment of extremity.	8.		
9. Assess neurovascular status & skin of affected leg.	9.		
TASK 107 <i>Manage Peritoneal Dialysis (66H)</i>			
Conditions: A 1-liter bag of IV fluid with label "peritoneal dialysate" on bag & IV tubing on table; 1 empty IV bag with opening positioned on mannequin to simulate a peritoneal catheter; an IV pole. Time: 5 min.			
"What would you do to prepare the patient for peritoneal dialysis?"			
1. Verbalize need to empty patient's bladder & obtain vital signs.	1.		
"What kind of aseptic technique would you use when assisting the physician to insert the peritoneal catheter?"			
2. Glove, gown, and mask.	2.		
"Here is the peritoneal catheter that has just been inserted. You are to manage the peritoneal dialysis. The order is to use 1 liter of this peritoneal dialysate and to let it dwell in the peritoneal cavity for 2 hours. Explain all that you would do with the patient--being sure to show how you would infuse the dialysate."			
3. Verbalize need to warm dialysate and prime tubing.	3.		
4. Demonstrate method of infusing peritoneal dialysate.	4.		

**Readiness Competency of Nursing Personnel During Deployment
Competency-Based Exercise**

		GO	NO GO
5. Verbalize need to monitor patient's vital signs during procedure.	5.		
6. Demonstrate method of removing peritoneal dialysate & assessing fluid.	6.		
7. Verbalize need to calculate fluid balance volume.	7.		
TASK 108- 109 Assemble a Water Manometer System & Measure CVP (66H, 66F)			
Conditions: CVP manometer that is not assembled, a 1 liter bag of IV fluid with IV tubing connected, & 1 small basin on table; IV pole; 1 full-body mannequin (with arms) on bed. Time: 4 min.			
"Assemble and position a water manometer system for measuring the CVP from a central venous catheter. Flush the IV fluid path."			
1. Adjust manometer so 0 mark is level with patient's atrium (mid-axillary line). (May prompt, "Why are you positioning the manometer there?")	1.		
2. Connect manometer between IV bag & patient.	2.		
3. Flush IV fluid path.	3.		
"Fill the manometer to 20 cm."			
4. Fill manometer to 20 cm mark.	4.		
"What will happen when the manometer fluid path is opened to the patient with a CVP of 10 and closed to the IV bag?"			
5. "The fluid will go to the 10 cm mark."	5.		
TASK 110 Operate a Cardiac Monitor/Recorder (66H, 66E, 66F, 91B, 91C)			
Conditions: Hewlett-Packard cardiac monitor/recorder (with a 5-lead electrode lead set stored in its compartment) connected to an electrical source; 4 metal plate limb electrodes with rubber straps, 1 suction cup electrode, 1 tube of electrolyte gel, 1 roll of recorder paper, & 1 box of alcohol swabs on table; 1 full-body mannequin (with arms & legs) on bed. Time: 4 min.			

**Readiness Competency of Nursing Personnel During Deployment
Competency-Based Exercise**

"Set up this cardiac monitor/recorder. Prepare the monitor to obtain an EKG tracing."

1. Turn machine on & connect lead cable.

2. Press lead select button for monitoring patient.

"Turn on the high and low alarms and set them to 50 & 120."

3.

"Use the mannequin to show me how and where you would place the electrodes."

4. Demonstrate correct placement of 1 arm & 1 leg electrode. Apply electrodes over fleshy areas--leg electrode on medial or lateral aspect of calf & arm electrode on inner aspect of arm or forearm.

5. Demonstrate correct use of alcohol swabs and/or electrolyte gel with the electrodes.

"Show me how to obtain a rhythm strip."

6. Push Run/Stop button while in Lead II.

TASK 111 *Obtain a 12-Lead EKG Using a Cardiac Monitor/Recorder (66H, 91B, 91C)*

Conditions: Hewlett-Packard cardiac monitor/recorder connected to an electrical source; 5-lead electrode lead set connected to monitor; 4 metal plate limb electrodes with rubber straps, 1 suction cup electrode, 1 tube of electrolyte gel, 1 roll of recorder paper, 1 box of alcohol swabs; 1 full-body mannequin (with arms & legs) on bed. **Time:** 4 min.

"Use the mannequin to show me how to obtain a 12-lead EKG."

1. Use Lead Select Switch to change EKG source between leads I, II, III, aVR, aVL, & aVF & run short strip in each position.

2. Place Lead Select Switch in Lead V to run a short strip in each of the following V leads.

GO

NO
GO

110

1.

2.

3.

4.

5.

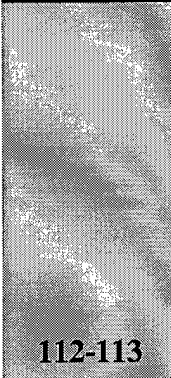
6.

111

1.

2.

**Readiness Competency of Nursing Personnel During Deployment
Competency-Based Exercise**

Readiness Competency of Nursing Personnel During Deployment		GO	NO GO
Competency-Based Exercise			
3. Connect suction cup electrode to chest lead & position at V1: 4th ICS @ RSB.	3.		
4. Position electrode at V2: 4th ICS @ LSB.	4.		
5. Position electrode at V3: Halfway between V2 & V4.	5.		
6. Position electrode at V4: 5th ICS @ L midclavicular line.	6.		
7. Position electrode at V5: 5th ICS @ L anterior axillary line.	7.		
8. Position electrode at V6: 5th ICS @ L midaxillary line.	8.		
9. Label each section of EKG strip with appropriate V lead label.	9.		
TASK 112-113 <i>Set Up & Operate a Field Portable Oropharyngeal Suction Apparatus (66H, 66F, 91B, 91C)</i>		 112-113	
Conditions: 1 field portable oropharyngeal suction apparatus connected to an electrical source; suction tubing, suction catheter, & 1 small container of water on table. Time: 3 min.			
"Set up the suction apparatus for use with electrical power. Set a maximum vacuum level of 100 mm Hg and suction water out of the container."			
1. Attach all tubing.	1.		
2. Turn mode selector switch to AC.	2.		
3. Adjust the vacuum regulator to a maximum vacuum level of 100 mm Hg.	3.		
4. Attach suction catheter to tubing.	4.		
5. Suction water out of basin.	5.		
TASK 114-115 <i>Set Up & Operate a Surgical Suction Apparatus (66H, 66E, 91B, 91C)</i>			

**Readiness Competency of Nursing Personnel During Deployment
Competency-Based Exercise**

Conditions: 1 Gomco surgical suction apparatus with 3 drainage bottles; connecting tubing that is not assembled, 2 clamps, & 1 bottle of sterile water on table. **Time:** 6 min.

"Set up the surgical suction apparatus and set the vacuum to 20 cm H₂O."

1. Fill patient bottle with 2 cm sterile water or fill until tubes are submerged.
2. Connect suction apparatus tubing.
3. Turn suction machine on.
4. Pinch off patient's tube & adjust vacuum level.

"Show me how to change the drainage bottles while the patient's chest tube is still connected to the surgical suction apparatus."

5. Turn suction machine off.
6. Place 2 clamps securely on tubing between patient and patient bottle.
7. Unscrew cap & remove bottle.
8. Place 2 cm water in new sterile bottle or fill until tubes are submerged.
9. Re-connect tubing, maintaining sterility.
10. Take off clamps & turn machine on.

TASK 116- 117 *Set up & Operate a Field Oxygen Delivery System (66H, 91B, 91C)*

Conditions: "H" oxygen cylinder in a secured position; pressure regulator with flowmeter & Christmas tree adapter to attach oxygen administration device, non-sparking wrench, & oxygen tubing with face mask on table. **Time:** 4 min.

"Assemble a system to deliver oxygen to a patient using these materials."

1. Attach pressure regulator to the cylinder.

GO	NO GO
----	-------

114

1.

2.

3.

4.

115

5.

6.

7.

8.

9.

10.

116

1.

Readiness Competency of Nursing Personnel During Deployment
Competency-Based Exercise

	GO	NO GO
2. Crack oxygen cylinder.	2.	
3. Attach oxygen administration device.	3.	
"Set the flow rate at 4 liters per minute."		117
4.	4.	
"How much remaining pressure is in the oxygen tank?"		
5.	5.	
"At what pressure should you change the oxygen tank?"		
6. 200-500 psi	6.	
"What is 1 safety procedure to follow when using the oxygen tank?"		
7.	7.	
"Discontinue the oxygen and take off the pressure regulator."		
8. Turn off the oxygen cylinder first and then bleed the regulator.	8.	
TASK 118- Set Up & Operate a Ventilator (66H, 66F, 91C)		
119		
Conditions: 1 Uni-Vent Model 750 & 1 PLV 100 or 102 ventilator with nearby electrical source. Required ventilator circuits, oxygen connecting tubing, oxygen regulator, and test lung on table. "H" oxygen cylinder in a secured position. All ventilator settings initially at 0--except high alarm at maximum setting. Time: 15 min.		
"Would you like to set up the Uni-Vent (check GO column) or the PLV 100/102 (check NOGO column)?" (If no preference, set up Uni-Vent.)		118
	0.	
"Set up the ventilator using an electrical and gas source and the required circuits."		
1. Connect to gas and/or electrical source.	1.	
2. Connect circuits to ventilator.	2.	

Readiness Competency of Nursing Personnel During Deployment
Competency-Based Exercise

	GO	NO GO
"Calibrate the machine and perform a pressure check."		
3. Calibrate the machine.	3.	
4. Perform a pressure check.	4.	
"Explain how you would know if there are any leaks."		
5.	5.	
"Adjust the ventilator to IMV mode, FI_O₂ 100%, and a rate of 12 bpm."		119
6. Mode IMV	6.	
7. FI _O ₂ 100%	7.	
8. Rate 12 bpm	8.	
Uni-Vent: "Set the flow adjust to 1000 & inspiratory time to 0.8 sec. to get a tidal volume of 800 ml."		
PLV: "Set the tidal volume to 800 ml & set the inspiratory flow rate between 40 & 60."		
9.	9.	
"Set the high & low pressure alarms 10 cm H₂O from the peak pressure."		
10.	10.	
TASK 120- Measure a Patient's Oral Temperature & BP 121 (66H, 91B, 91C)		
Conditions: 1 oral & 1 rectal thermometer in a small container designated for clean thermometers, 1 oral thermometer that can be used to test reading a thermometer, 1 small container designated for dirty thermometers, 1 box of sterile alcohol swabs, 1 adult BP cuff with sphygmomanometer, & 1 double stethoscope on table; 2 chairs. Time: 6 min.		
"Without putting this thermometer in your mouth, show me how you would take an oral temperature and how you would care for the thermometer between patient use."		120

Readiness Competency of Nursing Personnel During Deployment
Competency-Based Exercise

	GO	NO GO
1. Choose oral thermometer and shake thermometer to lower mercury below 96°F.	1.	
2. Verbalize placing thermometer in heat pocket under tongue.	2.	
3. Verbalize leaving thermometer in place with mouth firmly closed for at least 3 minutes.	3.	
4. Read temperature in agreement with evaluator.	4.	
5. Verbalize need to place in cleaning solution between patient use.	5.	
"Take my BP using this equipment."		121
6. Position evaluator with arm palm up at approximately heart level and supported.	6.	
7. Palpate for pulse & place cuff at brachial artery site (center of bladder directly over medial aspect of arm).	7.	
8. Position stethoscope over brachial pulse site.	8.	
9. Inflate cuff.	9.	
10. State systolic BP as 1st distinct sound heard. (A tolerance of +/- 6 mm Hg is allowed.)	10.	
11. State diastolic BP as point at which sound changes-- i.e., becomes muffled or unclear. (A tolerance of +/- 6 mm Hg is allowed.)	11.	
TASK 122 Prepare an IV Additive (66H, 66E, 91C)		
Conditions: Piggy-back IV bag, 5-10 cc syringe in sterile wrapping, 1 needle in sterile wrapping, 1 medication vial, medication labels, 1 box of sterile alcohol swabs, & 1 pencil on desk; 1 chair.		
Time: 2 min. for 1st question & 3 min. for calculation question.		
"Demonstrate how to prepare 2 ml of this medication to be given IV piggy-back."		122
1. Prepare medication, using sterile technique.	1.	

**Readiness Competency of Nursing Personnel During Deployment
Competency-Based Exercise**

GO

NO
GO

2. Clean injection port of sterile IV bag & inject medication into solution.

2.

3. Attach medication label.

3.

4. Gently mix medication with solution.

4.

"Calculate the correct volume of an IV medication to give in the situation written here. Show your calculations."

5.

A patient needs 90 mg of gentamicin piggy-backed into the IV solution. You have gentamicin on hand in the strength of 40 mg per ml. What volume of gentamicin would you add to the solution that is to be piggy-backed into the intravenous infusion?

_____ml

TASK 123 Calculate an Oral Medication Dosage (66H, 91B, 91C)

Conditions: Written calculation exercise, pencil. **Time:** 3 min.

"Calculate the correct volume of an oral medication to give in the situation written here. Show your calculations."

1.

The physician has ordered Benadryl Elixir, 25 mg by mouth, for a patient. The Benadryl Elixir on hand contains 10 mg per ml. How many ml of the elixir would you give the patient?

_____ml

**Readiness Competency of Nursing Personnel During Deployment
Competency-Based Exercise**

GO

NO
GO

**TASK 124 *Calculate the Flow Rate for an IV Infusion*
(66H, 66E, 91B, 91C)**

Conditions: Written calculation exercise, pencil. **Time:** 3 min.

**"Calculate the proper flow rate for the IV infusion in this problem.
Show your calculations."**

124

1.

A patient is to have 1 liter of IV fluid infused in 8 hours. The infusion set you are using administers 20 drops/ml. Calculate the drops per minute that the patient should receive.

_____ drops per minute

TASK 201 *Operate a Mobile Ultrasonic Cleaner* (66E, 91D)

Conditions: 1 mobile ultrasonic cleaner that is not filled with water, sonic cleaner, & 1 unwrapped minor tray. **Time:** 3 min.

"You have just received from the OR a grossly contaminated minor tray. Show me how you would process the instruments for sterilization using the ultrasonic cleaner."

201

1. Remove gross contamination from instruments.
2. Add water to cover tray (minimum of 6").
3. Add sonic cleaner.
4. Set items in ultrasonic cleaner tray.
5. Set timer for 3-5 minutes to start.

1.

2.

3.

4.

5.

"Show me how you would drain the ultrasonic cleaner."

6. Explain 1 method of establishing a drainage waste line (with hose or bucket).

6.

**Readiness Competency of Nursing Personnel During Deployment
Competency-Based Exercise**

"What is 1 indication for changing the water in your ultrasonic cleaner?"

7. Gross contamination in water.
Cloudy, murky water.
Ultrasonic cleaner will sit without use for a prolonged period of time.

7.

**TASK 202- Set Up & Operate a Field Sterilizer
203 (66E, 91D)**

Conditions: 1 field sterilizer that is not in standing position, 1 field sterilizer that has been set up, & 1 minor tray. Time: 12 min.

"Show me how you would stand up this field sterilizer for use."

1. Unlatch doors--one at a time--and swing into place.
2. Tighten the 2 "T" bars on the doors to anchor the door to the case.

1.

2.

"Show me how you would set up the sterilizer for use when power generators are available."

3. Close drain & establish drainage waste line (hose or bucket).
4. Connect to electrical power.
5. Remove plug from filling funnel. Fill with water. Replace plug in funnel.

3.

4.

5.

"How would you ensure that conditions of sterility will be met when the sterilizer is used?"

6. "I would perform a biological control or spore test."

6.

"The sterilizer has been turned off and allowed to cool down for cleaning. Show me how you would prepare the sterilizer for use again."

7. Turn heat switch on & see that red pilot light glows.
8. Preheat at least 10-15 min.--until 18 psi/250°F or until 29 psi/270°F.

7.

8.

GO

NO
GO

202

203

Readiness Competency of Nursing Personnel During Deployment
Competency-Based Exercise

	GO	NO GO
9. Verify that jacket pressure is achieved.	9.	
"Load the sterilizer with this tray."		
10. Open door. Load sterilizer. Close & lock door.	10.	
"Given a jacket pressure of 29 psi/270°F, you would set your timer for how many minutes?"		
11. "20 min."	11.	
"When do you start your timer?"		
12. "When the chamber pressure reaches 18 psi/250°F or 29 psi/270°F."	12.	
"Show me how you would finish the sterilization process when the timer goes off."		
13. Turn dial to fast exhaust.	13.	
14. When chamber pressure reaches 0, turn to dry & leave it there for 15 min.	14.	
15. Turn off, open door, & put tray on cool-down rack.	15.	
TASK 204 <i>Prepare Sterile Items for Storage (66E, 91D)</i>		
Conditions: 1 wrapped minor tray with "minor tray" written on tape on wrapping. Time: 3 min.		
"This tray has been returned from sterilization for sterile storage. It is hermetically sealed. What 3 pieces of information would you find written on it?"		
1. Name of tray.	1.	
2. Load control number.	2.	
3. 6 month expiration date.	3.	
"Here is a load control number. What does it mean?"		
4. Digits 1-2: Number of sterilizer used. Digits 3-5: Julian date. Digits 6-7: Sterilizer cycle number for 24 hr. period.	4.	

**Readiness Competency of Nursing Personnel During Deployment
Competency-Based Exercise**

"How would you prepare your sterile items if you had no heat sealers?"

5. Use dust covers & tape for sterile packages & change the exp. date to 30 days.

5.

TASK 205 *Perform High Level Disinfection (66E, 91D)*

Conditions: 1 soak pan with cover. **Time:** 3 min.

"High level disinfection would be appropriate for what items?"

1. Give an example of a heat-sensitive item.

1.

"Explain how you would perform high level disinfection on a cystoscope that has just been used on a case and is grossly contaminated with organic debris."

2. Clean with mild detergent to remove organic debris.
3. Label soak pan with date & time when disinfectant solution is mixed.
4. Soak in sterile covered pan with disinfectant solution.
5. Rinse thoroughly in sterile basin using sterile distilled water and sterile gloves.

2.

3.

4.

5.

TASK 206- *Set Up & Adjust a Field Operating Table (66E, 91D)*
207

Conditions: 1 field operating table removed from its packing with accessories in their container. Table in position with back up, foot down, brakes unlocked, & filler plug completely unscrewed.

Time: 15 min.

"Assemble the table and put it in the supine position with 1 arm board."

1. Lock table in place.
2. Check that drain plug is in place & base is filled with water. Put in filler plug.
3. Raise leg sections.

1.

2.

3.

GO

NO
GO

205

206

**Readiness Competency of Nursing Personnel During Deployment
Competency-Based Exercise**

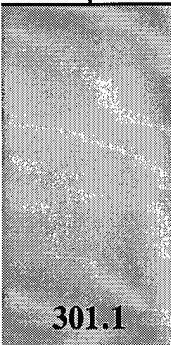
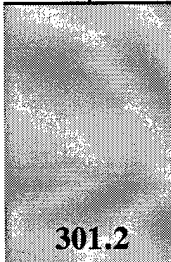
	GO	NO GO
4. Attach head section.	4.	
5. Attach 1 arm rest.	5.	
6. Put on pads (but do not secure to table).	6.	
"Adjust the table to the . . ."		207
7. Trendelenburg position.	7.	
8. Reverse Trendelenburg position.	8.	
9. Side tilt position.	9.	
10. Kraske (Jackknife) position.	10.	
11. Lithotomy position (attach only 1 leg holder).	11.	
"What is 1 general safety measure that you would take when moving the patient from the gurney onto the operating table?"		
12. "Lock the brakes on the gurney."	12.	
TASK 208 <i>Set Up an Electrosurgical Unit (66E, 91D)</i>		
Conditions: 1 electrosurgical unit with non-disposable patient grounding pad, monopolar handpiece, & monopolar foot pedal; 1 full-body mannequin. Time: 4 min.		
If the Valleylab electrosurgical unit is used, check the 'GO' column. If the Bircher electrosurgical unit is used, check the 'NOGO' column.		208
"Set up this electrosurgical unit to be used in the monopolar mode."		
1. Connect patient grounding pad, monopolar handpiece, & monopolar foot pedal.	1.	
"Show me how to adjust the coagulation & cutting settings."		
2. Demonstrate adjustment of both settings.	2.	
"Name 2 characteristics of the patient site where you would place the grounding plate."		

<i>Readiness Competency of Nursing Personnel During Deployment</i>			GO	NO GO
Competency-Based Exercise				
Patient site . . .				
is close to the surgical site.	3.			
is well vascularized.				
has no excessive hair.	4.			
has no bony prominences.				
"Apply the non-disposable grounding plate to the patient."				
5. Apply plate after spreading small amount of gel evenly; lift or roll patient to apply plate--do not push plate under patient.	5.			
TASK 209-210				
<i>Set Up & Operate an Intermittent Suction-Aspirator System (66E, 91D)</i>				
Conditions: 1 intermittent suction-aspirator system; all connecting tubing, filter, collection jars, & 1 large basin on table. Time: 5 min.				
"Set up this suction-aspirator for use during a surgical procedure."				
1. Attach tubing to overflow valve & insert into holder.	1.			
2. Attach filter.	2.			
3. Attach tubing to collection jars.	3.			
4. Attach sterile suction tubing.	4.			
"Operate the suction-aspirator system on continuous suction/high vacuum mode at 100 mm Hg."				
5. Turn master power switch on & select vacuum/recharge power mode.	5.			
6. Select continuous suction & high vacuum settings.	6.			
7. Adjust vacuum regulator setting @ 100 mm Hg & suction water out of the basin.	7.			
TASK 211-212				
<i>Set Up & Operate a Pulse Lavage Irrigator (66E, 91D)</i>				
Conditions: 1 pulse lavage irrigator, IV tubing attached to 1 liter IV bag of any type fluid, irrigator handpiece, 1 large basin, & 1 assembled suction-aspirator system. Time: 8 min.				

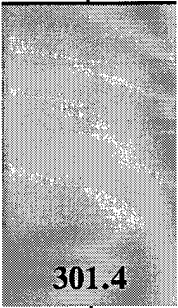
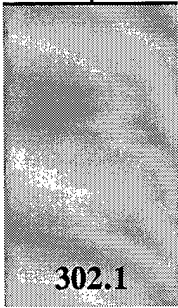
**Readiness Competency of Nursing Personnel During Deployment
Competency-Based Exercise**

		GO	NO GO
"Set up this pulse lavage irrigator for use during a surgical procedure."		211	
1. Insert tubing in pump roller & turn unit on.	1.		
2. Insert tubing through pinch clamp & retainer clips.	2.		
3. Attach suction line to suction apparatus.	3.		
4. Attach irrigation control filter.	4.		
5. Attach handpiece.	5.		
"Suction water out of this basin by activating only the suction."		212	
6. Place finger over suction control hole to suction fluid from basin.	6.		
"Now suction and irrigate at the same time."			
7. Cover both suction & irrigation control holes to suction & irrigate at the same time.	7.		
"As a circulator, what do you monitor when the pulse lavage irrigator is being used during a case?"			
8. "I monitor the suction and the irrigation fluid levels."	8.		
TASK 213 <i>Set Up a Blood Recovery and Delivery System (66F, 91D)</i>		213	
Conditions: 1 Blood Recovery and Delivery System set up with 5 deficiencies. Time: 10 min.			
"Here is a Blood Recovery and Delivery System that has been set up with 5 deficiencies. Each of the deficiencies would prevent the safe and effective use of this equipment. Identify and correct the deficiencies."			
1. Identify that sterile collection liner is not well secured.	1.		
2.	2.		
3. Identify that centrifuge bowl is not securely seated.	3.		
4.	4.		

**Readiness Competency of Nursing Personnel During Deployment
Competency-Based Exercise**

Readiness Competency of Nursing Personnel During Deployment Competency-Based Exercise		GO	NO GO
5. Identify that pump cover is not securely closed.	5.		
6.	6.		
7. Identify that red and blue tubings are reversed in position.	7.		
8.	8.		
9. Identify that the bag which should contain an anticoagulant is not marked as having an anticoagulant added.	9.		
10.	10.		
TASK 301.1	<i>Assemble a fully functional 885A Field Anesthesia System utilizing an adult rebreathing system (66F)</i>	 301.1	
Conditions: 2 "D" oxygen cylinders, 1 "H" oxygen cylinder, 2 CO ₂ absorption canisters, & an 885A Anesthesia Apparatus in its carrying case. Time: 15 min.			
"Assemble a fully functional anesthesia system utilizing an adult rebreathing system."			
1. Deploy the control head into a full upright and locked position.	1.		
2. Attach the oxygen monitor.	2.		
3. Assemble & attach adult rebreathing circuit.	3.		
4. Secure 2 "D" oxygen cylinders to holder.	4.		
5. Establish the waste gas evacuation hose.	5.		
6. Establish oxygen flow to adult rebreathing circuit.	6.		
TASK 301.2	<i>Fill, drain, & activate the vaporizer (66F)</i>	 301.2	
Conditions: An 885A assembled adult rebreathing circuit. Time: 2 min.			
"Describe how to fill, drain, and activate the vaporizer."			

**Readiness Competency of Nursing Personnel During Deployment
Competency-Based Exercise**

			GO	NO GO
	1. Describe "on" & "off" control settings.	1.		
	2. Describe the filling procedure	2.		
	3. Describe the draining procedure.	3.		
TASK 301.3	<i>Convert the adult rebreathing system to a pediatric partial rebreathing circuit (66F)</i>			
Conditions: An 885A assembled adult rebreathing circuit.				
Time: 3 min.				
"Assemble the pediatric partial rebreathing circuit. Replace the adult rebreathing circuit and reconfigure the 885A Anesthesia Apparatus to administer anesthesia with the pediatric partial rebreathing circuit."				
	1. Assemble the pediatric partial rebreathing circuit.	1.		
	2. Establish gas flow to the circuit.	2.		
	3. Establish the waste gas evacuation hose.	3.		
TASK 301.4	<i>Establish a second oxygen source from the "H" oxygen cylinder to the 885A Anesthesia Apparatus (66F)</i>			
Conditions: An 885A Anesthesia Apparatus and 1 "H" oxygen cylinder.				
Time: 5 min.				
"Use this "H" oxygen cylinder and components of the 885A Anesthesia Apparatus to establish a second oxygen source."				
	1. Locate regulator, large tank adaptor, & long tubing.	1.		
	2. Attach regulator to cylinder.	2.		
	3. Establish O ₂ flow	3.		
TASK 302.1	<i>Perform a pre-use check-out of the 885A Anesthesia Apparatus (66F)</i>			
Conditions: A properly assembled 885A Anesthesia Apparatus.				
Time: 3 min.				
"Perform a pre-use check-out of the 885A Apparatus. Include calibration of the O₂ monitor in your check-out."				

Readiness Competency of Nursing Personnel During Deployment
Competency-Based Exercise

		GO	NO GO
1. Verify oxygen flow through oxygen flow meter (metabolic).	1.		
2. Verify oxygen flow through vaporizer oxygen flow meter.	2.		
3. Check inhalation and exhalation check valves.	3.		
4. Check for system leaks.	4.		
5. Demonstrate oxygen monitor calibration.	5.		

TASK 302.2 *Describe the procedure for changing tanks during use of the 885A Field Anesthesia Apparatus (66F)*

Conditions: An 885A Anesthesia Apparatus. **Time:** 1 min.

"You are providing anesthesia. Your gas source is a "H" oxygen cylinder. The tank is now empty. Explain what you would do."

1. Describe changing from large to small tank source.

TASK 302.3 *Identify the deficiencies in an 885A Anesthesia Apparatus & propose corrective actions (66F)*

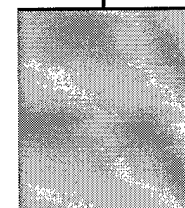
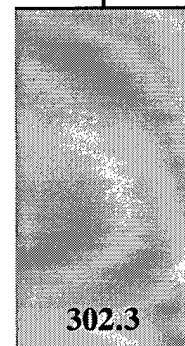
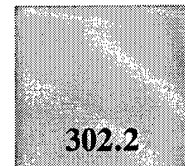
Conditions: An 885A Anesthesia Apparatus with 4 deficiencies.
Time: 5 min.

"You have been provided with an 885A Anesthesia Apparatus that has 4 deficiencies. Each of the deficiencies would prevent the safe and effective use of the equipment. Identify the deficiencies."

1. Loose cannister.
2. Large leak in breathing circuit.
3. Missing exhalation check valve leaflet.
4. Protective closure device has not been removed from the inspiratory outlet.

TASK 302.4 *Describe utilization of the vaporizer (66F)*

Conditions: A properly assembled 885A Anesthesia Apparatus, 1 flow calculator. **Time:** 2 min.



**Readiness Competency of Nursing Personnel During Deployment
Competency-Based Exercise**

		GO	NO GO
"To provide 2% isoflurane in a 4 L/min. flow of oxygen, what flow of oxygen should flow through the vaporizer oxygen flow meter at a temperature of 26 degrees C ?"			
	1. "120 cc/min."	1.	
TASK 303 <i>Set Up a Ventilator to the 885A Anesthesia Apparatus (66F)</i> Conditions: An 885A Anesthesia Apparatus, Omeda ventilator, oxygen source, and electrical source. Time: 2 min. "Establish an oxygen source, a power source, and waste gas evacuation to the ventilator."			
	1. Establish a 50 psi oxygen source.	1.	
	2. Establish an electrical power source.	2.	
	3. Establish the waste gas evacuation hose.	3.	
TASK 304 <i>Connect a Ventilator to an 885A Field Anesthesia Apparatus (66F)</i> Conditions: An assembled 885A Anesthesia Apparatus & ventilator. Time: 5 min. "Install the ventilator-bag diverter valve, connect the anesthesia ventilator to the 885A Apparatus, & ventilate a test lung with the system."			
	1. Install ventilator-bag diverter valve.	1.	
	2. Connect ventilator delivery hose & breathing bag to diverter valve.	2.	
	3. Connect low pressure sensor to breathing circuit.	3.	
TASK 305.1 <i>Assemble a fully functional Universal PAC Draw-Over Anesthesia System using a non-rebreathing adult circuit (66F)</i> Conditions: A complete Universal PAC Draw-Over Anesthesia Apparatus in its carrying case & a low pressure oxygen source. Time: 5 min.			

**Readiness Competency of Nursing Personnel During Deployment
Competency-Based Exercise**

		GO	NO GO
"Here is a complete Universal PAC Draw-Over Anesthesia Apparatus in the stored configuration & a low pressure oxygen source with a L/M control valve. Assemble a fully functional anesthesia system utilizing an adult non-rebreathing system."			
	1. Assemble an adult non-rebreathing circuit.	1.	
	2. Position the oxygen monitor.	2.	
	3. Attach low pressure oxygen source to supplemental fitting.	3.	
	4. Establish the waste gas evacuation hose.	4.	
TASK 305.2	<i>Configure the Universal PAC vaporizer for isoflurane use (66F)</i>		
Conditions: An assembled Draw-Over Anesthesia Apparatus. Time: 5 min.			
"Here is a properly assembled Universal PAC Draw-Over Anesthesia Apparatus. Configure the universal vaporizer for isoflurane use."			
	1. Secure the isoflurane agent concentration dial.	1.	
"Describe the configuration for enflurane and halothane use."			
	2. Describe use of the vaporizer with enflurane.	2.	
	3. Describe use of the vaporizer with halothane.	3.	
"Describe the filling and draining procedures."			
	4. Describe the filling procedure.	4.	
	5. Describe the draining procedure.	5.	
TASK 306.1	<i>Perform a pre-use check-out of the Universal PAC Draw-Over Anesthesia Apparatus (66F)</i>		
Conditions: An assembled Universal PAC Apparatus. Time: 5 min.			
"Perform a pre-use check-out of the Draw-Over Apparatus."			
	1. Demonstrate flow drawn through the vaporizer.	1.	

<i>Readiness Competency of Nursing Personnel During Deployment</i>		GO	NO GO
Competency-Based Exercise			
	2. Verify the ability to generate positive pressure in the system.	2.	
	3. Check for proper function of one-way valves.	3.	
	4. Demonstrate oxygen monitor calibration.	4.	
TASK 306.2	<i>Utilize a universal PAC vaporizer (66F)</i>		
Conditions: An assembled Universal PAC Draw-Over Anesthesia Apparatus. Time: 3 min.			
"How is the amount of liquid agent in the universal PAC Vaporizer monitored?"			
	1. Describe how the amount of agent is monitored in the vaporizer.	1.	
"Demonstrate the delivery of 1% and then 3% isoflurane."			
	2. Demonstrate selection of 1% delivery of agent.	2.	
	3. Demonstrate selection of 3% delivery of agent.	3.	
"If the oxygen supplemental flow is 2 L/min. & the patient's minute volume of ventilation is doubled, what happens to the percentage of inspired oxygen?"			
	4. Describe how the delivered percentage of oxygen is a function of the oxygen flow and the patient's minute volume.	4.	
TASK 307	<i>Operate a Blood Recovery and Delivery System (66F)</i>		
Conditions: A Blood Recovery and Delivery System assembled with all required tubing. Time: 5 min.			
	1. How many units of Heparin are added to each liter of normal saline solution that will be used as the anticoagulant solution? 30,000 units.	1.	

**Readiness Competency of Nursing Personnel During Deployment
Competency-Based Exercise**

		GO	NO GO
2. How many cc's of anticoagulant solution should be used to prime the sterile collection reservoir? 100 cc.	2.		
3. What is the upper limit of suction in mm Hg that can be applied to the vacuum inlet at the rear of the reservoir? 400 mm Hg.	3.		
4. What is the volume of blood that should be collected before beginning processing? 600-900 ml.	4.		
5. To initiate processing of a volume of blood from the reservoir in the automatic mode, which button is depressed? Start/Auto button.	5.		
6. How much blood do you need in the reinfusion bag to begin reinfusion? 2 inches of blood in the reinfusion bag.	6.		
7. How do you discontinue all processing? Press STOP button.	7.		
8. How do you begin processing again? Press Pause/Resume button.	8.		
9. How do you concentrate the processed blood when you receive the Reservoir Empty message? Press the Final Cycle button.	9.		
10. What do you do when the Blood Recovery and Delivery System encounters a system interruption?" Use the HELP button to identify possible cause of the interruption. Eliminate cause. Press Pause/Return button to continue operation.	10.		

Thank You !

APPENDIX D

READINESS COMPETENCY OF NURSING PERSONNEL DURING DEPLOYMENT

WRITTEN EXERCISE

DATE _____

ID _ _ _ _ _

Circle the number next to the best answer for each question.

Please answer all of the questions.

- C03** The Chief Nurse briefs the nursing staff on their obligations if captured by the enemy. Which of the following statements is not correct?
1. Medical personnel must visit fellow POWs to ensure their health and well-being.
 2. Medical personnel are not required to care for their captors, except in serious emergency.
 3. Medical personnel do not have, as individuals, a duty to escape or to aid others in escaping.
 4. Medical personnel may be forced to carry out work other than that concerned with their medical duties.
- C09** Which of the following is the most correct statement regarding the disposition of weapons of wounded soldiers?
1. Weapons are kept secured and are tracked along with the patient.
 2. Weapons are kept in the nearest storage room adjacent to the wards.
 3. Weapons are taken from the patient and are transferred to authorized personnel who are not a part of the medical unit.
 4. Weapons are kept at the patient's bedside, but the ammunition is kept secured.

C10 Perimeter protection is the topic of a briefing. Which of the following statements is not correct?

1. Medical units are usually located within the area of the supported tactical unit, and the supported unit S3 has the staff responsibility for rear area protection.
2. Military police support for medical facilities is provided on an area basis as part of their area security mission.
3. A military guard, if attached to a medical unit, may use its weapons only in a purely defensive manner.
4. The use of machine guns, hand grenades, or mines around a medical unit would not jeopardize its entitlement to privileged status under the Geneva Conventions.

C11 The hospital is under attack. COL Drake is the Assistant Chief Nurse and the senior officer in charge. Without causing the loss of the Geneva Conventions' protections that are provided to her staff and patients, COL Drake may take all of the following actions except that of

1. ordering personnel to dig in and take cover.
2. ordering personnel to set up offensive posture.
3. notifying the base cluster commander of the attack.
4. protecting the sick and wounded with small arms.

C12 The Combat Support Hospital needs perimeter protection. Which of the following statements regarding the use of medics for guard duty is correct?

1. Medics may pull guard duty and retain their protection under the Geneva Conventions as long as they abide by specific rules.
2. Medics may not pull guard duty because this is an outright violation of the Geneva Conventions.
3. Medics may pull guard duty, but they must not carry any weapons because this violates the Geneva Conventions.
4. Medics may not pull guard duty because the Geneva Conventions considers them essential personnel in the field hospital.

C13 Orders have come down for the Mobile Army Surgical Hospital to camouflage itself. With respect to the Geneva Conventions, Chief Nurse Washington informs her staff that

1. camouflage does not automatically deprive a medical unit of protection.
2. camouflage will compromise the automatic protection afforded to medical units.
3. the tactical commander is not authorized to issue such orders.
4. the Geneva Conventions have not addressed this issue.

E01 When considering air evacuation of orthopedic traction patients, you remember that free hanging weights

1. are to be kept in place to maintain traction ordered by physicians.
2. are absolutely contraindicated and should be replaced with Collins traction.
3. are not necessary due to the specially designed pneumatic air splints.
4. are best used if they are kept from being free hanging.

E03 CPT Lopez gives DEPMEDS nursing personnel inservice education on clinical parameters of evacuation requirements. A _____ or a(n) _____ is the only absolute indication for altitude restriction.

1. hemoglobin of 10 percent; hematocrit of 30
2. compartment syndrome; fat embolism
3. decompression sickness; air embolism
4. climacteric syndrome; thromboembolism

E05 Patients with a pneumothorax (any degree) who are air evacuated are at risk at high altitude because of gas expansion. Such a patient must have a chest tube with a _____ valve (one-way flutter valve) in place before a flight.

1. Luer
2. Malecot
3. Cooley
4. Heimlich

E06 The DD Form 1380 is used to record data similar to that recorded on the inpatient treatment record cover sheet. It is used by personnel of Battalion Aid Stations, clearing stations and nonfixed troop or health clinics overseas, on maneuvers, or attached to commands moving between stations. The name of this form is

1. the U.S. Patient Manifest Card.
2. the U.S. Patient Manifest Tag.
3. the U.S. Field Medical Card.
4. the U.S. Geneva Status Card.

E08 During aeromedical evacuation, the patient has a _____ intratheater or a _____ intertheater supply of medication provided by the transferring medical treatment facility.

1. 3-day; 5-day
2. 4-day; 5-day
3. 5-day; 6-day
4. 5-day; 10-day

E11 MAJ Clearwater briefs the critical care ward staff on the air evacuation precedence status of the severely burned trauma patient. Such a patient is classified as

1. routine.
2. priority.
3. urgent.
4. immediate.

I03 One of the benefits of having a water distribution system like the one that DEPMEDS has is to control infection and communicable diseases in the hospital. The water cannot be considered potable until certified by

1. the hospital commander.
2. food sanitation personnel.
3. dietary personnel.
4. a preventive medicine specialist.

I04 Sufficient potable water is essential for the operation of a DEPMEDS hospital. DEPMEDS come with a water distribution system with a combination of hoses, fittings, and valves that provide maximum flexibility in setting up the system. Which of the following statements is correct?

1. Purified water is subject to recontamination by careless handling or unclean equipment.
2. Since all of the components of the system are sterilized and checked, the water is readily potable.
3. Hospital personnel should check every 8 hours to ensure that water is potable.
4. The bulk delivery of potable water is made by personnel in the corps of engineers, and they make regular purity checks.

I05 Handwashing is the single most important measure to prevent the spread of infection. When water is limited, select the most practical substance for use in clean technique procedures.

1. Betadine solution
2. Isopropyl alcohol
3. Hibistat germicidal hand rinse (chlorhexidine gluconate)
4. Benzyl peroxide

I09 A pre-deployment briefing covered the subject of the patients' latrines. Which of the following statements is not correct?

1. Ambulatory patients generally use the same types of latrines as the staff.
2. Bedside latrines commonly are provided for non-ambulatory patients.
3. Where possible, staff and patient latrines should be separate.
4. Latrines must be a specified distance from dining facilities and water sources.

I10 Until pick-up, DEPMEDS general waste, medical waste from wards, and dirty linens should be stored

1. in the back of the tent, double bagged and tagged.
2. adjacent to the patient's bedside, double bagged and labeled.
3. in a laundry room, double bagged and tagged.
4. in a designated secured area under direct physical control.

I11 SPC Braxton is cutting the hair of a recent casualty who sustained scalp lacerations. He will use the same scissors on other casualties but will disinfect them between use on each patient. If the chemicals prescribed by AR 40-5 are not available, he can disinfect the barbering equipment by

1. boiling it in water for 30 seconds.
2. immersing it for one minute in a solution consisting of six individual iodine water purification tablets dissolved in one quart of water (a disinfecting solution of approximately 48 mg/l of iodine).
3. immersing it for one minute in a solution prepared by dissolving one 0.5 gram ampule of calcium hypochlorite in a quart canteen of water and using 5 canteen capfuls of this stock solution in one quart of water to make a disinfecting solution of approximately 50 mg/l of chlorine.
4. any one of the above.

L01 LT Kahue knows that classes of supply terminology provides a common language for communicating administrative plans and orders. Controlled substances, nonexpendable and expendable medical items, and all drugs are part of the _____ classification category.

1. Class I
2. Class III
3. Class VI
4. Class VIII

L06 There are certain items of medical property (blankets, splints, litters) which should not be separated from a patient being transferred. To prevent rapid depletion of the supplies and equipment of the transferring facility, the

1. receiving facility asks the medical logistics battalion to send the same number of items to the transferring facility.
2. receiving facility sends a property manifest slip to the transferring facility to authorize replacement items.
3. medical logistics battalion processes a record of the patient evacuation tags to send replacement supply items to the transferring facility.
4. receiving facility turns over to the transferring facility the same number of the same items of medical property.

L10 Nursing staff members are discussing ward-based logistic procedures. LT Jones says that each ward/section is equipped with _____ days of supply with the medical resupply section carrying _____ more days of supplies for the whole hospital.

1. 3; 7
2. 2; 3
3. 2; 5
4. 5; 5

L11 To maintain desirable ward-based stock levels for expendable supplies on the intermediate care ward, SGT Nicolai should establish a(n)

1. 8-hour stock level, planning to resupply first from his unit's stocks in the milvan.
2. 8-hour stock level, planning to resupply first from the medical resupply section.
3. 12-hour stock level, planning to resupply first from his unit's milvan.
4. 24-hour stock level, planning to resupply first from his unit's milvan.

L12 Some patients in the DEPMEDS hospital intermediate care ward will require pain medication per physicians' directives. Narcotic storage for the DEPMEDS hospital currently is

1. a ward-based single lock system; the lockable drawer is located in the nursing desk.
2. a ward-based double lock system; the lockable drawer is located in the nursing desk.
3. a pharmacy-based double lock system; a large compartmentalized safe in the pharmacy is organized by ward location.
4. a pharmacy-based single lock system; a large compartmentalized safe in the pharmacy is organized by ward location.

L13 DEPMEDS deployed nursing personnel are discussing the availability of blood in field-based medical units. LT Cocher notes that _____, _____, and _____ have limited supplies of low titer Group O packed red blood cells.

1. combat medics; combat lifesavers; forward surgical teams
2. combat lifesavers; battalion aid stations; mobile Army surgical hospitals
3. combat medics; battalion aid stations; divisional medical companies
4. forward surgical teams; mobile Army surgical hospitals; divisional medical companies

S04 CPT Chung continues orientation of 91Bs in the DEPMEDS EMT area. He notes that the DEPMEDS blood bank medical materiel set (MMS)

1. does not exist. There is a general laboratory MMS, but there is not a DEPMEDS blood bank MMS.
2. is capable of storing and distributing blood, but is not designed to collect or process blood.
3. is capable of storing and distributing blood, and is designed to collect and process limited amounts of only low titer Group O packed red blood cells.
4. is capable of collecting, processing, storing, and distributing blood. It is designed to operate in conjunction with the general laboratory MMS to provide a full range of laboratory support.

S05 The DEPMEDS operating room medical materiel set (MMS) provides the equipment essential for setting up a _____ OR.

1. one-table
2. two-table
3. three-table
4. four-table

S06 DEPMEDS have the X-ray radiographic medical materiel set (MMS). It comes with a radiographic, high capacity X-ray apparatus that provides a full range of services minus

1. chest X-ray.
2. pelvis X-ray.
3. C-spine X-ray.
4. fluoroscopic images.

S08 The Chief Dietician briefs the staff on the foods available to patients in the field environment. She notes that patient rations (regular, liquid, and modified diets) are provided through the

1. Standard MA Ration consisting of Standard A Ration plus Medical A Ration unique food items.
2. Standard MB Ration consisting of Standard B Ration plus Medical B Ration unique food items.
3. Standard MT Ration consisting of Standard T Ration plus Medical T Ration unique food items.
4. Standard MR Ration consisting of Standard R Ration plus Medical R Ration unique food items.

S09 CPT Sills is going over the hospital site preparation layout. She notes that the feces, urine, or vomitus is correctly disposed of in patient latrines located no closer than _____ meters to the hospital.

1. 10
2. 17
3. 27
4. 100

S10 LT Newton briefed DEPMEDS personnel on the type of laundry service available to the hospital while deployed in the field. Which of the following statements most correctly reflects the status of laundry service?

1. DEPMEDS hospitals have organic laundry units authorized to launder hospital linens, scrubs, and pajamas.
2. DEPMEDS hospitals have organic laundry units authorized to launder personal clothing, linens, and scrubs.
3. DEPMEDS hospitals must send personal clothing, linens, scrubs, and pajamas out to the supporting corps unit.
4. DEPMEDS hospitals are on the rotating pick-up route for laundering services IAW theater policy.

APPENDIX E

DESCRIPTION OF SKILL STATIONS

Following is a list of equipment and supplies required for testing clinical skills included in the competency based exercise.

Task 1.01: Operate a Cardiac Monitor-Recorder

Task 1.02: Obtain a 12-Lead EKG

Field table (1).

Hewlett-Packard Cardiac Monitor-Recorder, NSN 6515-01-291-1198, or

Hewlett-Packard Defibrillator/Monitor-Recorder System, NSN 6515-01-291-1199 (1).

Recorder paper (1 roll).

5-lead electrode set (1).

Metal plate limb electrodes (4) with holding straps (4).

Suction cup electrode (1).

Electrode gel (1 tube).

Alcohol pads (1 box).

Hospital bed (1).

Mannequin that has 4 extremities (1).

Task 1.03: Operate a Field Portable Oropharyngeal Suction Apparatus

Field table (1).

Field Oropharyngeal Suction Apparatus, Model 308M, by Impact,

NSN 6515-01-304-6497 (1).

Suction tubing (1).

Suction catheter (1).

Small container of tap water (1).

Gloves (1 pair).

Task 1.04: Operate a Surgical Suction Apparatus

Gomco Model 6053 Surgical Suction Apparatus, NSN 6515-01-259-4307

(2-bottle water-seal system with 1 spare drainage bottle) (1).

Connecting tubing for suction apparatus (1 set).

Rubber-padded large clamps (2).

Sterile water (1 bottle).

Task 1.05: Operate a Field Oxygen Delivery System

Task 1.06: Operate a Ventilator

Field table (1).
"H" oxygen cylinder in secured position (1).
Uni-Vent Model 750 Ventilator by Impact, NSN 6530-01-327-0686.
Required ventilator circuits (1 set).
Oxygen connecting tubing (1).
50 psi pressure regulator for ventilator (1).
Test lung (1).
Cylinder regulator with flowmeter for oxygen delivery system (1).
Christmas tree adapter (1).
Wrench (1).
Nasal cannula with oxygen connecting tubing (1).

Task 1.07: Operate a Mobile Ultrasonic Cleaner

Table (1).
Mobile ultrasonic cleaner, NSN 6530-01-254-4135 (1).
Sonic cleaner (1 bottle).
Minor tray with instruments (1).
Disposable gloves (1 pair).

Task 1.08: Operate a Field Sterilizer

Field sterilizer that is not in standing position, NSN 6530-00-926-2151 (1).
Field sterilizer that has been set up (1).
Minor tray ready for sterilization (1).

Task 1.09: Operate a Field Operating Table

Field operating table, NSN 6530-00-142-9239 (1).
Accessory box containing the table's accessories (1).

Task 1.10: Operate an Electrosurgical Apparatus

Valleylab electrosurgical apparatus, NSN 6515-01-309-6647, or
Birtcher electrosurgical apparatus, NSN 6515-01-269-6056 (1).
Non-disposable patient return electrode (1).
Disposable patient return electrode (1).
Monopolar handpiece (1).
Monopolar foot pedal (1).
Electrode gel (1 tube).
Full-body mannequin (1).
Field operating table, NSN 6530-00-142-9239 (1).

Task 1.11: Operate an Intermittent Suction-Aspirator System

Task 1.12: Operate a Pulsed Irrigation and Suction System

Table (2).

Intermittent suction-aspirator system, NSN 6515-01-267-2726 or
NSN 6515-01-267-2727 (1).

Connecting tubing (1 set).

Filter (1).

Overflow valve (1).

Collection jars (1 set).

Stryker OrthoLav Pulsed Irrigation and Suction System, NSN 6530-01-237-6088 (1).

1-liter IV bag of any solution (1).

IV connecting tubing (1 set).

Stryker disposable large handpiece and tubing set, NSN 6530-01-184-1239 (1).

Disposable straight multiple orifice tip, NSN 6530-01-184-1240 (1).

Large basin with stand (1).

Task 1.13: Set Up a Blood Recovery and Delivery System

Task 1.14: Operate a Blood Recovery and Delivery System

Haemonetics Cell Saver 4 Autologous Blood Recovery System,
NSN 6516-01-240-6883 (1).

Haemonetics Basic Collection Pack, NSN 6515-01-185-2406 (1).

Haemonetics Basic High Speed Cell Saver Pack, NSN 6515-01-169-7785 (1).

Sterile Normal Saline solution, 1 or 3 liter bags (1-2 bags for saline wash lines).

Sterile Normal Saline solution, 1 liter bag (1 bag for heparinized saline solution).

Assembled intermittent suction-aspirator system, NSN 6515-01-267-2726 & 6515-01-267-2727 (1).

Task 1.15: Operate an 885A Field Anesthesia Apparatus

885A Anesthesia Apparatus in its carrying case, NSN 6515-01-185-8446 (2).

"E" oxygen regulator with green oxygen connector (1).

"D" oxygen cylinders (2).

Carbon dioxide absorption canisters (4).

Pediatric partial rebreathing circuit (1).

Flow calculator (1).

Ohmeda positive end expiratory pressure valve (PEEP valve) (1).

Ohmeda 5120 oxygen monitor, NSN 6515-01-279-6450 (1).

Ohmeda 7000 anesthesia ventilator, NSN 6515-01-116-7903 (1).

"H" oxygen cylinder (1).

Task 1.16: Operate a Universal PAC Draw-Over Anesthesia Apparatus

Table (1).

Complete Universal PAC Draw-Over Anesthesia Apparatus in its carrying case and a low pressure oxygen source with a L/M control valve (1).

Task 2.01: Measure CVP Using a Water Manometer System

Hospital bed (1).

Mannequin with upper extremities (1).

IV pole (1).

1-liter IV bag of any solution (1).

IV connecting tubing (1).

Central Venous Pressure Monitor, Pharmaseal Cat. No. 4338A, unassembled (1).

Small basin (e.g., 1 emesis basin).

Task 2.02: Measure a Patient's Oral Temperature

Task 2.03: Measure a Patient's Blood Pressure

Field table (1) and chairs (2).

1 oral and 1 rectal thermometer, each in a container labeled "Clean Thermometers."

Container labeled "Dirty Thermometers" (1).

Extra thermometer on table for the student to read (1).

Sterile alcohol pads (1 box).

Professional aneroid sphygmomanometer (1).

Professional dual training stethoscope (1).

Task 2.04: Prepare an IV Additive

Task 2.05: Calculate an Oral Medication Dosage

Task 2.06: Calculate the Flow Rate for an IV Infusion

Field table (1) and chair (1).

Piggy-back IV bag (1).

5 cc syringe and needle in sterile wrapper (1).

Medication vial (1).

Blank label (1).

Sterile alcohol pads (1 box).

Written calculation exercises (3).

Pencil (1).

Task 2.07: Prepare Sterile Items for Storage

Table (1).

Wrapped tray labeled as "minor tray" and hermetically sealed (1).

Task 2.08: Perform High Level Disinfection

Table (1).

Soak pan with cover (1).

Disinfection solution (1 bottle).

Heat sensitive item (1).

Sterile towels (1 package).

Sterile gloves (1 pair).

Sterile distilled water (1 bottle).

Task 3.01: Triage Casualties

Chairs (2).

Written triage scenario with descriptions of the first 4 casualties to be triaged.

Picture of the hospital layout.

Task 3.02: Intubate a Patient

Hospital bed (1).

Intubation mannequin (1).

Laryngoscope (1) with 1 straight and 1 curved blade and 1 stylet.

6, 7 and 8 mm ET tube (1 of each).

10 cc syringe in sterile wrapper (1).

Intubation lubricant (1 can).

J tube (1).

Adhesive tape, 1/2" (1 roll).

Stethoscope (1).

Bag-valve mask (1).

Task 3.03: Perform a Needle Chest Decompression

Hospital bed (1).

Mannequin that has chest landmarks visible (1).

14 and 18 gauge angiocaths or needles in sterile wrappers (1 of each).

20 cc syringe in sterile wrapper (1).

Alcohol pads (1 box).

Adhesive tape, 1/2" (1 roll).

Condom or sterile glove (1).

Task 3.04: Treat a Hemorrhaging Patient

Hospital bed (1).
Mannequin with wound marked on lower forearm, just below elbow joint (1).
Dressing, first aid, field, individual troop, camouflaged, NSN 6510-00-159-4883 (2).
Bandage, muslin, compressed, camouflaged, NSN 6510-00-201-1755 (2).
Tongue blades (3).

Task 3.05: Administer Blood to a Patient

Hospital bed (1).
IV pole (1).
Blood pack filled with red liquid and labeled with patient information (1).
1 liter of IV normal saline (1).
1 liter of any IV solution except normal saline (1).
1 large basin in which to set the blood pack and IV bag between use (1).
Blood transfusion recipient set (Y set) (1).
SF 518 completed with patient information (1).

Task 3.06: Set Up Buck's Unilateral Leg Traction

Hospital bed (1).
Mannequin with lower extremities (1).
IV pole for hospital bed.
Soft padding (1 roll).
36" x 2" strip of moleskin with adhesive on one side.
4" elastic bandage (1).
36" piece of traction cord (1).
3" x 3" x 3/4" board (1).
18" strip of stockinette (1).
Adhesive tape (1 roll).

Task 3.07: Manage Peritoneal Dialysis

Hospital bed (1).
Mannequin (1).
IV pole (1).
1- or 2-liter IV bag of any solution with the label "Peritoneal Dialysate" on the bag (1).
IV connecting tubing (1 set).
Simulation of a peritoneal catheter (e.g., 1 empty IV bag tucked under trousers of mannequin with opening of IV bag coming out of trousers).
Sterile gloves (1 pair).
Mask (1).
Sterile gown (1).

APPENDIX F

GLOSSARY

The following terms are defined as used in this technical report. Terms are presented in the following categories: general and training. Definitions of the following general terms are based on selected Army publications and consultations with the expert panel members.

General

Active component (AC). "That portion of the US Army in which organizations are comprised of personnel on full-time duty in active military service of the United States" (FM 25-101, p. Glossary-1).

Battle focus. "The process of deriving peacetime training requirements from wartime missions" (FM 25-101, p. Glossary-1).

Battle Focused Functions (BFFs). Actions performed by nursing personnel in support of patient care or unit management in a field environment. Some BFFs require nursing personnel to interface with the command and control, medical evacuation, or medical supply systems when providing patient care in a field environment. Other BFFs require nursing personnel to apply infection control or sustainment principles to patient care in a field environment. Following are five categories of BFFs that are based on knowledge of these systems and principles:

Command and Control Functions. Actions which require nursing personnel to interface with the command and control system when providing patient care in a field environment. The command and control system is defined as a system designed for "the exercise of command that is the process through which the activities of military forces are directed, coordinated, and controlled to accomplish the mission. This process encompasses the personnel, equipment, communications, facilities, and procedures necessary to gather and analyze information, to plan for what is to be done, and to supervise the execution of operations" (FM 8-10-3, p. Glossary-8).

Medical Evacuation Functions. Actions which require nursing personnel to interface with the medical evacuation system when providing patient care in a field environment. The medical evacuation system is defined as a modern, complex transportation system designed to provide "the timely, efficient movement and en route care by medical personnel of the wounded, injured, or ill persons from the battlefield and other locations to MTFs. . . . Evacuation begins when medical personnel receive the injured or ill soldier and continues as far rearward as the patient's medical condition warrants or the military situation requires" (FM 8-10-6, p. 1-2).

Medical Supply Functions. Actions which require nursing personnel to interface with the medical supply system when providing patient care in a field environment. The medical supply system is defined as the aspect of the combat health logistics system dealing with the procurement, distribution, and storage of medical matériel, including medical-peculiar repair parts (Class VIII supplies) (FM 8-10).

Infection Control Functions. Actions performed to prevent and control infections associated with (a) battle injuries and (b) disease and nonbattle injuries (DNBI) in a field environment. These actions require nursing personnel to apply infection control principles to the practice of nursing in a field environment for the purpose of minimizing infection and its associated disability, morbidity, and mortality.

Sustainment Functions. Actions performed in support of patients, oneself, or other staff to ensure ongoing patient care services in a field environment, to include patient care in aid stations, medical companies, dispensaries, clinics, and hospitals in all levels of care. These actions require nursing personnel to apply sustainment principles to their work in a field environment.

Clinical Skills. Tasks performed when carrying out patient care activities. To perform a clinical skill, nursing personnel must understand the principles underlying skill performance and must have had experience in practical application of the principles to patient care situations.

Basic Skills. Skills performed in the field without automated equipment or specialized support services commonly available in fixed MTFs.

Equipment Skills. Skills performed using field medical equipment, which generally are operated differently from equipment used to perform the same or similar skills in fixed facilities.

Expanded Role Skills. Skills performed by nursing personnel in aspects of their role that are expanded from the fixed facility to the field environment.

Competence. An intellectual and/or motor capability derived from a specified role and setting and stated in terms of performance of tasks that represent a domain of behavior.

Deployable Medical Systems (DEPMEDS). The hospitalization standardized shelter systems, environmental control units, power generators, and DMSB-approved MES and MMS designed for facilities capable of being located in a desired or required area of operations during a contingency, war, or national emergency. This Tri-Service standardization effort was due to a DOD directive to modernize the theater hospital system. Note that the BAS and medical company (clearing station) are not DEPMEDS treatment facilities (TC 8-13).

Field environment. A setting in which patient care activities are performed outside of a fixed healthcare facility. Examples of a field environment are the battlefield, aid stations, and DEPMEDS treatment facilities.

Fixed healthcare facility. An immobile facility established for the purpose of providing in-patient and/or out-patient medical treatment.

Medical treatment facility (MTF). "Any facility established for the purpose of providing medical treatment. This includes aid stations, clearing stations, dispensaries, clinics, and hospitals " (FM 8-10-3, p. Glossary-19).

Nursing personnel. As used in this manual, nursing personnel refers to the following categories of personnel in the active and reserve components of the AMEDD: (a) personnel who function in the field as medical-surgical nurses - 66H; (b) operating room nurses - 66E; (b) nurse anesthetists - 66F; (d) practical nurses - 91C; (e) medical specialists - 91B; and (f) operating room specialists - 91D.

Readiness. The initial abilities of nursing personnel to perform their patient care role when placed in a field environment. This includes the ability of nursing personnel to deploy and employ without unacceptable delays. Readiness is one component of military capability (JCS Pub 1-02).

Readiness competency. The abilities of nursing personnel to perform tasks critical to their patient care role in a deployed or field status. Readiness competency is measured on a continuum which ranges from the novice to the expert level.

Reserve components (RC). "Individuals and units assigned to the Army National Guard or the US Army Reserve who are not in active service but are subject to call to active duty" (FM 25-101, p. Glossary-8).

Skill. A complex action that can be carried out successfully as a result of previous instruction and practice; a developed aptitude or ability.

Training

The training terminology used in this report is based on TRADOC Reg 350-70, *Training Development Management, Processes, and Products*, 24 Sep 95. Definitions for the following training-related terms have been taken verbatim from the Glossary of TRADOC Reg 350-70.

Doctrinal literature. The fundamental principles of doctrine, together with the tactics, techniques, and procedures to implement the doctrinal principles and win on the battlefield. Army doctrinal literature is published in FMs.

Doctrine. Fundamental principles by which the military forces or elements thereof guide their actions in support of national objectives. It is authoritative but requires judgment in application.

Evaluation. Measurement of the demonstrated ability of soldiers or units to perform a task, and supporting skill and knowledge, or learning objective against the established standard.

Field Manual (FM). A DA publication that contains doctrine that prescribes how the Army and its organizations function on the battlefield in terms of missions, organizations, personnel, and equipment. The level of detail should facilitate an understanding of "what" and "how" for commanders and staffs to execute their missions and tasks. The FM may also be used to publish selected alliance doctrinal publications that are not readily integrated into other doctrinal literature.

Performance checklist. The breakdown of an objective into elements that must be correctly performed to determine whether each student satisfactorily meets the performance standards described in the learning objective.

Performance test. An evaluation of the actual performance of the task or learning objective using the conditions under which it will be performed and the absolute standards for acceptable performance.

Professional development course. A course designed to prepare commissioned officers, warrant officers, or noncommissioned officers to effectively perform the duties required in assignments of progressively greater responsibility.

Proficiency. Ability to perform a specific behavior (task, learning objective) to the established performance standard in order to demonstrate mastery of the behavior.

Self-study. Individual study by which a soldier learns or reinforces previous learning, on his/her own.

Soldier training publication (STP). Publications that contain critical tasks and other training information used to train soldiers and serve to standardize individual training for the whole Army; provide information and guidance in conducting individual training in the unit; and aid the soldier, officer, noncommissioned officer (NCO), and commander in training critical tasks. They consist of Soldier's Manuals, Trainer's Guides, Military Qualification Standards Manuals, and Officer Foundations Standards System manuals.

Soldier's manual (SM). A manual which lists critical task summaries for a specific MOS and skill level (SL); provides conditions, standards, and performance measures for each critical task; and is the base document for MOS-specific individual task training and evaluation.

Subject matter expert (SME). An individual who has a thorough knowledge of a job (duties and tasks). This knowledge qualifies the individual to assist in the training development process (i.e., consultation, review, analysis, etc.). Normally, a SME will instruct in his area of expertise.

Task. A clearly defined and measurable activity accomplished by individuals and organizations. It is the lowest behavioral level in a job or unit that is performed for its own sake. It must be specific; usually has a definite beginning and ending; may support or be supported by other tasks; has only one action and, therefore, is described using only one verb; generally is performed in a relatively short time (however, there may be no time limit or there may be a specific time limit); and it must be observable and measurable. The task title must contain an action verb and object and may contain a qualifier.

Collective task. Derived from unit missions. Requires group participation for its accomplishment (e.g., operate an M105 Howitzer). It may also be a mission requirement, such as secure a bridgehead, that can be broken down into supporting individual tasks. It describes the exact performance a unit must perform in the field under actual operational conditions.

Critical individual task. An individual task which is critical.

Critical task. A collective or individual task a unit or individual must perform to accomplish their mission and duties and to survive in war or military operations other than war (MOOTW). Critical tasks must be trained.

Individual task. The lowest behavioral level in a job or duty that is performed for its own sake. It should support a collective task; it usually supports another individual task.

Technical manual (TM). A publication which describes equipment, weapons, or weapons systems with instructions for effective use. It may include sections for instructions covering initial preparation for use and operational maintenance and overhaul.

Training.

Annual training. The minimal period of annual active duty training a member performs to satisfy the annual training requirements associated with a Reserve Component assignment. It may be performed during one consecutive period or in increments of one or more days, depending upon mission requirements.

Collective training. Training, either in institutions or units, that prepares cohesive teams and units to accomplish their missions on the battlefield and in operations other than war.

Individual training. Training which prepares the soldier to perform specified duties or tasks related to assigned duty position or subsequent duty positions and skill level.

Refresher training / Sustainment training. Used to reinforce previous training and/or sustain/regain previously acquired skills and knowledge. The training -

- is related to course-specific training objectives, performed under prescribed conditions, and must meet prescribed performance standards.
- May take place in a course during or outside of Program of Instruction (POI) time.
- Usually takes place in the unit to sustain or retrain a previously required proficiency level; may be trained to prepare an individual for institutional training, i.e., meet prerequisite training requirements.

Unit training. Training (individual, collective, and joint or combined) which takes place outside the Army's institutional base.

Training program. An assembly or series of courses or other training requirements organized to fulfill a broad overall training goal.

Training resources. Those human, physical, financial, and time resources used to conduct and support training.

APPENDIX G

BIBLIOGRAPHY

Following is a list of references cited in the technical report as well as other key references used in the research.

Academy of Health Sciences, U.S. Army. (n.d.). Executive desk reference: A systematic approach to analysis and training. Fort Sam Houston, TX: Author.

Academy of Health Sciences, U.S. Army. (1983). Student notebook: Orientation to the systems approach to training (S.A.T.) course. Fort Sam Houston, TX: Author.

Academy of Health Sciences, U.S. Army. (1990). Medical information system/AMEDD lessons learned (MISALL) (No. 90-1). Fort Sam Houston, TX: Author.

Academy of Health Sciences, U.S. Army. (1990). Medical information system/AMEDD lessons learned (MISALL) (No. 90-3). Fort Sam Houston, TX: Author.

Academy of Health Sciences, U.S. Army. (1990). Staff and faculty development division: Faculty development course general reference. Fort Sam Houston, TX: Author.

Alspach, G. (1992). Concern and confusion over competence. Critical Care Nurse, 12(4), 9-11.

AR 220-1. (1993). Unit status reporting. Washington, DC: HQDA.

Ashworth, P., & Morrison, P. (1991). Problems of competence-based nurse education. Nurse Education Today, 11, 256-260.

Atkinson, K. P. (1990). The ethnographic imagination: Textual constructions of reality. New York: Routledge.

Benner, P. (1982). Issues in competency-based testing. Nursing Outlook, 30, 303-309.

Benner, P., & Wrubel, J. (1982). Skilled clinical knowledge: The value of perceptual awareness. Nurse Educator, 12, 11, 13-17.

Bourque, L. B., & Clark, V. A. (1992). Processing data: The survey example (Sage University Paper series on Quantitative Applications in the Social Sciences, series no. 07-085). Newbury Park, CA: Sage.

Brink, P. J. (1991). Issues of reliability and validity. In J. M. Morse (Ed.), Qualitative nursing research: A contemporary dialogue (rev. ed., pp. 164-186). Newbury Park, CA: Sage.

Browner, W. S., Black, D., Newman, T. B., & Hulley, S. B. (1988). Estimating sample size and power. In S. B. Hulley & S. R. Cummings (Eds.), Designing clinical research: An epidemiologic approach (pp. 139-150). Baltimore: Williams & Wilkins.

Burns, N., & Grove, S. K. (1993). The practice of nursing research: Conduct, critique, & utilization (2nd ed.). Philadelphia: W. B. Saunders.

Chickering, A., & Claxton, C. (1981). What is competence? In R. S. Nickse & L. McClure (Eds.), Competency-based education beyond minimum competency testing (pp. 5-41). New York: Teachers College, Columbia University.

Defense Medical Standardization Board. (1990). DEPMEDS policies/guidelines treatment briefs. Frederick, MD: Author.

Deployable medical systems task list. (1993). Unpublished task list, Defense Medical Standardization Board, Joint Services Nursing Advisory Group, Frederick, MD.

DMSB. (1994). DEPMEDS administrative procedures and clinical and support guidelines (3rd ed. draft). Fort Detrick, MD: Author.

Doyle, K. A. (1992). Nurse corps training importance survey report (Report No. 002). Washington, DC: Bureau of Naval Personnel Navy Occupational Development and Analysis Center. (DTIC No. AD-A255 776)

Ebel, R. L. (1979). Essentials of educational measurement (3rd ed.). Englewood Cliffs, NJ: Prentice-Hall.

Ellis, R. (Ed.) (1988). Professional competence and quality assurance in the caring professions. New York: Croom Helm.

Feeney, J., & Benson-Landau, M. (1987). Competency-based evaluation: Not just for new nurses. Dimensions of Critical Care Nursing, 6(6), 368-372, 375-376.

Forgues, M. (1994). Skills for the skills examiner. Journal of Emergency Medical Services, 19(2), 125-130.

FM 8-10. (1991). Health service support in a theater of operations. Washington, DC: HQDA.

FM 8-10-3, final draft. (1995). Division medical operations center: Tactics, techniques, and procedures. Washington, DC: HQDA.

FM 8-10-6. (1991). Medical evacuation in a theater of operations: Tactics, techniques, and procedures. Washington, DC: HQDA.

FM 8-10-14. (1994). Employment of the combat support hospital: Tactics, techniques, and procedures. Washington, DC: HQDA.

FM 25-100. (1988). Training the force. Washington, DC: HQDA.

FM 25-101. (1990). Battle focused training. Washington, DC: HQDA.

FM 100-16. (1995). Army operational support. Washington, DC: HQDA.

Giro, E. A. (1993). Assessment of competence in clinical practice--a review of the literature. Nurse Education Today, 13, 83-90.

Glaser, B. (1978). Theoretical sensitivity. Mill Valley, CA: Sociology Press.

Hammersley, M., & Atkinson, P. (1989). Ethnography: Principles in practice. New York: Routledge.

Headquarters, U.S. Army Forces Command. (1994). Reserve component training in America's Army (Interim FORSCOM/ARNG Regulation 350-2). Fort McPherson, GA: Author.

Hudak, J. (1993). Nursing mobilization readiness study. Unpublished manuscript.

Hulley, S. B., & Cummings, S. R. (Eds.). (1988). Designing clinical research: An epidemiologic approach. Baltimore: Williams & Wilkins.

Inman, L., & Haugen, C. (1991). Six criteria to evaluate skill competency documentation. Dimensions of Critical Care Nursing, 10(4), 238-245.

Jackson, B. (1987). Fieldwork. Chicago: University of Illinois Press.

JCS Pub 1-02. (1989). Department of defense dictionary of military and associated terms. Washington, DC: United States Joint Military Terminology Group.

Johannigman, J. A., & Putnam, A. T. (1994). Clinical evaluation of the Impact Uni-Vent 750. Military Medicine, 159(5), 403-408.

King, S. E. (1979). Assessment of competence: Technical problems and publications. In G. Grant, P. Elbow, T. Ewens, Z. Gamson, W. Kohli, W. Neumann, V. Olesen, & D. Riesman (Eds.), On competence: A critical analysis of competence-based reforms in higher education. San Francisco: Jossey-Bass.

Klemp, G. O., Jr. (1979). Identifying, measuring, and integrating competence. In P. S. Pottinger & J. Goldsmith (Eds.), New directions for experiential learning: No. 3. Defining and measuring competence (pp. 41-52). San Francisco: Jossey-Bass.

Littell, R. C., Freund, R. J., & Spector, P. C. (1991). SAS system for linear models (3rd ed.). Cary, NC: SAS Institute.

Lynn, M. R. (1986). Determination and quantification of content validity. Nursing Research, 35, 382-385.

McCall, Susan C. (1993). Lessons learned by Army nurses in combat: A historical review. Carlisle, PA: U.S. Army War College.

Misener, T. R., Bell, M. R., Mechanic, H., & Biskey, V. P. (1986). Mobilization readiness of retired Army nurse corps officers (Report No. HR86-002). Fort Sam Houston, TX: Health Care Studies & Clinical Investigation Activity.

Mishler, E. G. (1986). Research interviewing: Context and narrative. Cambridge, MA: Harvard University Press.

Morse, J. M. (1991). Approaches to qualitative-quantitative methodological triangulation. Nursing Research, 40(1), 120-123.

Morse, J. M. (1994). Emerging from the data: The cognitive processes of analysis in qualitative inquiry. In J. M. Morse (Ed.), Critical issues in qualitative research methods (pp. 23-43). Thousand Oaks, CA: Sage.

Nistler, C. J. (1992). The self-identified skills and competencies of first-line nurse managers (Report No. AFIT/CI/CIA-92-042). Wright-Patterson AFB, OH: University of Minnesota, AFIT/CI. (DTIC No. AD-A254 298)

Palmer, Gerald A. (1991). Army medical department issues from operation desert shield. Carlisle, PA: U.S. Army War College. (DTIC No. AD-A236 932)

Patton, M. Q. (1990). Qualitative evaluation and research methods. Newberry Park, CA: Sage.

Popham, W. J. (1981). Modern educational measurement. Englewood Cliffs, NJ: Prentice-Hall.

Portney, L. G., & Watkins, M. P. (1993). Foundations of clinical research: Applications to practice. Norwalk, CN: Appleton & Lange.

Pottinger, P. S. (1979). Competence assessment: Comments on current practices. In P. S. Pottinger & J. Goldsmith (Eds.), New directions for experiential learning: No. 3. Defining and measuring competence (pp. 25-39). San Francisco: Jossey-Bass.

Rea, R., Fought, S. G., & Selfridge, J. (1991). Trauma nursing core course (instructor) manual: Faculty version (2nd ed.). Chicago: Emergency Nurses Association.

Schalock, H. D. (1981). How can competencies be assessed?: Issues in role-based assessment. In R. S. Nickse & L. McClure (Eds.), Competency-based education beyond minimum competency testing (pp. 148-175). New York: Teachers College, Columbia University.

Seidel, J. V. (1988). The ethnograph (Version 3.0) [Computer software]. Corvallis, OR: Qualis Research Associates.

STP 21-I-MQS. (1990). Military qualification standards I: Manual of common tasks. Washington, D.C.: HQDA.

STP 21-II-MQS. (1991). Military qualification standards II: Manual of common tasks for lieutenants and captians. Washington, D.C.: HQDA.

STP 21-III-MQS. (1993). Military qualification standards III: Leader development manual for majors and lieutenant colonels. Washington, D.C.: HQDA.

TC 8-13. (1990). Deployable medical systems: Tactics, techniques, and procedures. Washington, DC: HQDA.

TC 25-20. (1993). A leader's guide to after-action reviews. Washington, DC: HQDA.

TRADOC Reg 350-70. (1995). Training development management, processes, and products. Fort Monroe, VA: HQ, United States Army Training and Doctrine Command.

United States Army Medical Department Center and School. (1992). Medical information system/AMEDD lessons learned (MISALL) (No. 92-1). Fort Sam Houston, TX: Author.

United States General Accounting Office. (1993). Medical readiness training: Limited participation by Army medical personnel (GAO/NSIAD-93-205). Washington, DC: Author.

United States General Accounting Office. (1992). Operation desert storm: Full Army medical capability not achieved (GAO/NSIAD-92-175). Washington, DC: Author.

Waltz, C. F., Strickland, O. L., & Lenz, E. R. (1991). Measurement in nursing research (2nd ed.). Philadelphia: F. A. Davis.

Whyte, W. F. (1984). Learning from the field. Newbury Park, CA: Sage.

APPENDIX H

DOCUMENT DISTRIBUTION LIST

Defense Technical Information Center, ATTN: DTIC-OCP, 8725 John J. Kingman Road, Suite 0944, Fort Belvoir, VA 22060-6218 (2)

Defense Logistics Information Exchange, US Army Logistics Management College, ATTN: ATSZ-DL, Fort Lee, VA 23801-6043 (1)

Director, Joint Medical Library, ATTN: DASG-AAFJML, Offices of the Surgeons General, Army/Air Force, Rm 670, 5109 Leesburg Pike, Falls Church, VA 22041-3258 (1)

Stimson Library, Academy of Health Sciences, ATTN: MCCS-HSL, Fort Sam Houston, TX 78234-6060 (2)

HQDA (DASG-CN), ATTN: COL Susan McCall, Room 623, Skyline Five, 5111 Leesburg Pike, Falls Church, VA 22041-3258 (1)

Chief, Department of Nursing Science, Academy of Health Sciences, ATTN: COL Lynne Connelly, US Army Medical Department Center & School, Fort Sam Houston, Texas 78234-6140 (1)