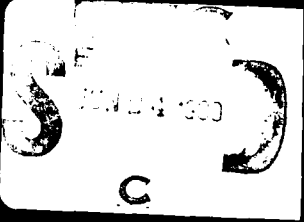
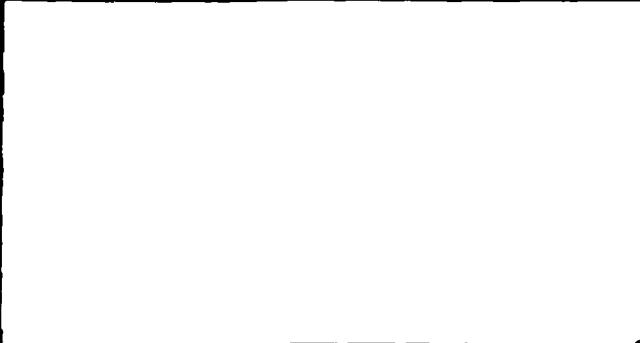




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Competency: RESPIRATORY THERAPY ASSISTANT (RTA)

Unit I: Basic Patient Care

①

⑥ A System Approach to Navy Medical Education and Training.

APPENDIX 37.

COMPETENCY CURRICULA FOR  
RESPIRATORY THERAPY ASSISTANT  
AND  
RESPIRATORY THERAPY TECHNICIAN.

⑨ Final rept.

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APPLICATION OF A SYSTEM APPROACH  
U.S. NAVY MEDICAL DEPARTMENT  
EDUCATION AND TRAINING PROGRAMS  
FINAL REPORT

AUGUST 31, 1974

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Prepared under Contract to  
OFFICE OF NAVAL RESEARCH  
U.S. DEPARTMENT OF THE NAVY

Quida C. Upchurch, Capt., NC, USN  
Program Manager  
Education and Training R&D  
Bureau of Medicine and Surgery (Code 71G)

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) The study objective consisted of a determination of what the health care personnel in the Navy's Medical Department, Bureau of Medicine and Surgery actually do in their occupations; improving the personnel process (education and training); and building a viable career pathway for all health care personnel. Clearly the first task was to develop a system of job analyses applicable to all system wide health care manpower tasks. A means of postulating simplified occupational clusters covering some 50			

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currently designated Navy enlisted occupations, 20 Naval Enlisted Classification Codes (NEC's) were computerized. A set of 16 groupings that cover all designated occupations was developed so as to enhance the effectiveness of professionals and sub-professionals alike.

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## FOREWORD

The project, "Application of a System Approach to the Navy Medical Department Education and Training Programs," was initiated in May of 1969 as a realistic, comprehensive response to certain objectives set forth in ADO 43-03X, and to memoranda from both the Secretary of Defense and the Assistant Secretary of Defense, Manpower and Reserve Affairs. The Secretary's concern was stated in his memorandum of 29 June 1965, "Innovation in Defense Training and Education." More specific concerns were stated in the Assistant Secretary's memorandum of 14 June 1968, "Application of a System Approach in the Development and Management of Training Courses." In this he called for "vigorous and imaginative effort," and an approach "characterized by an organized training program with precise goals and defined operational interrelation among instructional system components." He also noted, "Job analyses with task descriptions expressed in behavioristic terms are basic and essential to the development of precise training goals and learning objectives."

### The Project

System survey and analysis was conducted relative to all factors affecting education and training programs. Subsequently, a job-analysis sub-system was defined and developed incorporating a series of task inventories ". . . expressed in behavioristic terms . . ." These inventories enabled the gathering of job activity data from enlisted job incumbents, and data relating to task sharing and delegation from officers of the Medical, Nurse and Dental Corps. A data management sub-system was devised to process incumbent data, then carry out needed analyses. The development of initial competency curricula based upon job analysis was implemented to a level of methodology determination. These methods and curriculum materials constituted a third (instructional) sub-system.

Thus, as originally proposed, a system capability has been developed in fulfillment of expressed needs. The system, however, remains untested and unevaluated. ADO 43-03X called for feasibility test and cost-effectiveness determination. The project was designed to so comply. Test and evaluation through the process of implementation has not proved feasible in the Navy Medical Department within the duration of the project. As designed and developed the system does have ". . . precise goals and defined operational interrelation among instructional system components." The latter has been achieved in terms of a recommended career structure affording productive, rewarding manpower utilization which bridges manpower training and health care delivery functions.

## Data Management Sub-System

Job analysis, involving the application of comprehensive task inventories to thousands of job incumbents, generates many millions of discrete bits of response data. They can be processed and manipulated only by high speed computer capability using rigorously designed specialty programs. In addition to numerical data base handling, there is the problem of rapidly and accurately manipulating a task statement data base exceeding ten thousand carefully phrased behavioral statements. Through the use of special programs, task inventories are prepared, printouts for special purposes are created following a job analysis application, access and retrieval of both data and tasks are efficiently and accurately carried out, and special data analyses conducted. The collective programs, techniques and procedures comprising this sub-system are referred to as the Navy Occupational Data Analysis Language (NODAL).

## Job Analysis Sub-System

Some twenty task inventory booklets (and associated) response booklets) were the instruments used to obtain job incumbent response data for more than fifty occupations. An inventory booklet contains instructions, formatted questions concerning respondent information ("bio-data"), response dimension definitions, and a list of tasks which may vary in number from a few hundred to more than a thousand per occupational field.

By applying NODAL and its associated indexing techniques, it is possible to assemble modified or completely different inventories than those used in this research. Present inventories were applied about three years ago. While they have been rendered in operational format, they should not be reapplied until their task content is updated.

Response booklets were designed in OPSCAN mode for ease of recording and processing responses.

Overall job analysis objectives and a plan of administration were established prior to inventory preparation, including the setting of provisional sample target sizes. Since overall data attrition was forecast to approximate twenty percent, final sample and sub-sample sizes were adjusted accordingly. Stratified random sampling techniques were used. Variables selected (such as rating, NEC, environment) determined stratifications, together with sub-population sizes. About fifteen percent of large sub-populations were sought while a majority of all members of small sub-populations were sought.

Administration procedures were established with great care for every step of the data collecting process, and were coordinated with sampling and data analysis plans. Once set, the procedures were formalized as a protocol and followed rigorously.

## Instructional Sub-System

Partial "competency curricula" have been composed as an integral sub-system bridging what is required as performance on the job with what is, accordingly, necessary instruction in the training process. Further, curriculum materials were developed to meet essential requirements for implementing the system so that the system could be tested and evaluated for cost effectiveness. However, due to the fact that test and evaluation was not feasible in the Navy Medical Department within the duration of the project, it was not possible to complete the development of the system through the test and evaluation phase. The inability to complete this phase also interrupted the planned process for fully developing the curricula; therefore, instead of completed curricula ready for use in the system, the curricula were partially developed to establish the necessary sub-system methodology. The competency curricula are based on tasks currently performed by job incumbents in 1971. (The currency of a given curriculum depends upon periodic analysis of incumbents' jobs, and its quality control resides in the evaluation of the performance competency of the program's graduates.)

A competency curriculum provides a planned course of instruction or training program made up of sequenced competency units which are, in turn, comprised of sequenced modules. These modules, emphasizing performance objectives, are the foundation of the curriculum.

A complete module would be comprised of seven parts: a cluster of related tasks; a performance objective; a list of knowledges and skills implied by the objective; a list of instructional strategies for presenting the knowledges and skills to the learner; an inventory of training aids for supporting the instructional strategies; a list of examination modes; and a statement of the required training time. In this project, curriculum materials have been developed to various levels of adequacy, and usually comprise only the first three parts; the latter four need to be prepared by the user.

The performance objective, which is the most crucial part of the module, is the basis for determining curriculum content. It is composed of five essential elements: the stimulus which initiates the behavior; the behavior; the conditions under which the behavior takes place; the criteria for evaluating the behavior; and the consequence or results of the behavior. A sixth element, namely next action, is not essential; however, it is intended to provide linkage for the next behavior.

Knowledges and skills listed in the module are those needed by the learner for meeting the requirements of the performance objective.

Instructional strategies, training aids, examination modes and training time have been specified only for the Basic Hospital Corps Curriculum. The strategies, aids and modes were selected on the basis of those considered to be most supportive in presenting the knowledges and skills so as to provide optimum learning effectiveness and training efficiency. The strategies extend from the classroom lecture as traditionally presented by a teacher to the more sophisticated mediated program for self-instruction. The training aids, like strategies, extend from the traditional references and handout material in the form of a student syllabus to mediated programs for self-instruction supported by anatomical models. Examination modes extend from the traditional paper and pencil tests to proficiency evaluation of program graduates on the job, commonly known as feedback. Feedback is essential for determining learning effectiveness and for quality control of a training program. The kind of instructional strategies, training aids and examination modes utilized for training are limited only by such factors as staff capability and training budget.

The training time specified in the Basic Hospital Corps Curriculum is estimated, based upon essential knowledge and skills and program sequence.

The competency curriculum module, when complete, provides all of the requirements for training a learner to perform the tasks set forth in the module. A module may be used independently or related modules may be re-sequenced into modified competency units to provide training for a specific job segment.

Since the curricula are based upon tasks performed by job incumbents in 1971, current analysis of jobs needs to be accomplished using task inventories that have been updated to reflect changes in performed tasks. Subsequent to job analysis, a revision of the curricula should be accomplished to reflect task changes. When the foregoing are accomplished, then faculty and other staff members may be indoctrinated to the competency curricula and to their relationship to the education and training system.

In addition to the primary use for the systematic training of job incumbents, these curricula may be used to plan for new training programs, develop new curricula, and revise existing curricula; develop or modify performance standards; develop or modify proficiency examinations; define billets; credentialize training programs; counsel on careers; select students; and identify and select faculty.

## The System

Three sub-systems, as described, comprise the proposed system for Education and Training Programs in the Navy Medical Department. This exploratory and advanced developmental research has established an overall methodology for improved education and training incorporating every possible means of providing bases for demonstrating feasibility and cost effectiveness. There remains only job analysis sub-system up-dating, instructional sub-system completion, and full system test and evaluation.

## Acknowledgements

The authors wish to acknowledge the invaluable participation of the several thousands of Naval personnel who served as respondents in inventory application. The many military and civilian personnel who contributed to developmental efforts are cited by name in the Final Report.

The authors also wish to acknowledge former colleagues for singularly important contributions, namely, Elias H. Porter, Ph.D., Carole K. Kauffman, R.N., M.P.H., Mary Kay Munday, B.S.N., R.N., Gail Zarren, M.S.W., and Renee Schick, B.A.

Identity and acknowledgement of the project Advisory Group during the project's final year is recorded in the Final Report.

Lastly, the project could not have been commenced nor carried out without the vision, guidance and outstanding direction of Ouida C. Upchurch, Capt., NC, USN, Project Manager.

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 AND  
RESPIRATORY THERAPY TECHNICIAN

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RESPIRATORY THERAPY TECHNICIAN
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RESPIRATORY THERAPY

ASSISTANT

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Competency: RESPIRATORY THERAPY ASSISTANT (RTA)

COMPETENCY UNIT I: BASIC PATIENT CARE

This unit includes the following modules:

<u>Number</u>	<u>Title</u>	<u>Page</u>
1	Patient Observation . . . . .	2
2	Charting/Reporting on Patient . . . . .	3
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Competency: RESPIRATORY THERAPY ASSISTANT (RTA)

Unit I: Basic Patient Care

MODULE 1: PATIENT OBSERVATION

- TASKS
- a. Observe patient for respiration and pallor
  - b. Observe effects of treatment on patient

PERFORMANCE OBJECTIVE

- (Stimulus) Preceding and following administration of any mode of respiratory therapy
- (Behavior) The RTA will observe and describe the patient's respiration (e.g., hyperventilation/hypoventilation), skin color (e.g., pallid/cyanotic/flushed) and pulse (e.g., strength, regularity)
- (Conditions) Without technical supervision
- (Criteria) In accordance with established respiratory therapy department guidelines
- (Consequence) Accurate report of any change in patient's respiratory status for evaluation by medical staff
- (Next Action) Initiate corrective measures if needed; immediately notify nurse, therapist or attending physician; record observations on patient's chart

KNOWLEDGES AND SKILLS

- Respiratory anatomy and physiology
- Recognition of normal and abnormal breathing patterns
- Recognition of normal and abnormal skin tones
- Recognition of normal and abnormal pulse

Competency: RESPIRATORY THERAPY ASSISTANT (RTA)

Unit I: Basic Patient Care

MODULE 2: CHARTING/REPORTING ON PATIENT

- TASKS
- a. Record information on patient's chart
  - b. Give report on changes/special care/treatment/tests

PERFORMANCE OBJECTIVE

- (Stimulus) Routinely upon change of shifts and/or supervisor, upon completion of treatment and when requested by physician
- (Behavior) The RTA will give an accurate and detailed written or verbal report on the patient and record information on patient's chart
- (Conditions) Without technical assistance; using patient chart, daily flow sheet and personal observation as information sources for the report
- (Criteria) Accurate and detailed report on patient
- (Consequence) This action will provide information for consideration in development of a patient care plan

KNOWLEDGES AND SKILLS

- Procedures for recording information in patient chart
- How to chart flow sheets
- Symptomology and pathophysiology involved in patient's condition
- Medical terminology and abbreviations

Competency: RESPIRATORY THERAPY ASSISTANT (RTA)

Unit I: Basic Patient Care

MODULE 3: ISOLATION AND ASEPTIC TECHNIQUE

- TASKS
- a. Gown for sterile procedure
  - b. Isolate against potential contamination via complete isolation, reverse isolation or respiratory isolation

PERFORMANCE OBJECTIVE

- (Stimulus) Upon being requested or responsible  
(Behavior) The RTA will gown for sterile procedure and initiate isolation techniques  
(Conditions) With technical assistance  
(Criteria) Maintaining aseptic technique; performed according to set procedures published in the manual of operating room technique and nursing manual  
(Consequence) A sterile environment free of contaminants  
(Next Action) Perform procedure

KNOWLEDGES AND SKILLS

- Operating room technique  
Isolation techniques, e.g., complete, reverse, respiratory  
Aseptic technique  
Procedures to gown for sterile procedure  
Determination of appropriate isolation technique

Competency: RESPIRATORY THERAPY ASSISTANT (RTA)

Unit I: Basic Patient Care

MODULE 4: TRANSPORTATION OF PATIENT REQUIRING VENTILATORY ASSISTANCE

- TASKS
- a. Determine respiratory equipment necessary to transport patient
  - b. Transport patient while assisting ventilation

PERFORMANCE OBJECTIVE

- (Stimulus) When instructed to move a patient requiring ventilatory assistance
- (Behavior) The RTA will determine which devices are necessary, will apply them to the patient and will monitor their function
- (Conditions) Without supervision
- (Criteria) Assure that equipment is functioning properly; establish satisfactory ventilation during transport
- (Consequence) Patient receives adequate ventilation and oxygenation during transport
- (Next Action) Stabilize patient's ventilation when destination is reached

KNOWLEDGES AND SKILLS

Methods of moving/positioning patients for respiratory therapy

Function and operation of portable equipment to assist in ventilation, e.g., Ambu bag

Function and operation of portable equipment used in oxygen administration

Competency: RESPIRATORY THERAPY ASSISTANT (RTA)

COMPETENCY UNIT II: CARDIOPULMONARY RESUSCITATION

This unit includes the following modules:

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2	Closed Chest Cardiac Massage . . . . .	8

Competency: RESPIRATORY THERAPY ASSISTANT (RTA)

Unit II: Cardiopulmonary Resuscitation

MODULE 1: MANUAL HYPERINFLATION OF THE LUNGS

- TASKS
- a. Position patient's head and neck for effective approach
  - b. Assemble/disassemble resuscitation equipment
  - c. Listen for chest sounds
  - d. Ventilate patient using bag mask

PERFORMANCE OBJECTIVE

- (Stimulus) Upon need for ventilatory assistance, e.g., respiratory or cardiac arrest, mechanical lung ventilator failure
- (Behavior) The RTA will connect the oxygen to a resuscitation bag, apply bag to mask, endotracheal or tracheostomy tube, initiate augmented ventilation and observe for proper chest excursion
- (Conditions) With or without physician's direction or concurrence; using resuscitation bag, oxygen tubing, flowmeter
- (Criteria) In accordance with protocol in respiratory therapy procedure manual
- (Consequence) Maintenance of ventilatory normality
- (Next Action) Seek assistance from supervisor or other personnel

KNOWLEDGES AND SKILLS

- Function and operation of manual resuscitators
- Anatomy of upper airway
- Recognition of need for manual hyperinflation of lungs
- Procedures and techniques for performing manual hyperinflation of the lungs

Competency: RESPIRATORY THERAPY ASSISTANT (RTA)

Unit II: Cardiopulmonary Resuscitation

MODULE 2: CLOSED CHEST CARDIAC MASSAGE

- TASKS
- a. Check arterial pulses for cardiac activity
  - b. Position patient on hard surface
  - c. Observe pupillary size
  - d. Check for absence of respiration
  - e. Prepare patient for closed chest cardiac massage
  - f. Perform closed chest cardiac massage

PERFORMANCE OBJECTIVE

- (Stimulus) Having a patient in cardiac or respiratory arrest
- (Behavior) The RTA will perform closed chest cardiac massage
- (Conditions) Without technical supervision
- (Criteria) Accurate positioning of hands, correct depression of sternum and correct rate of massage
- (Consequence) Re-established circulation
- (Next Action) Continue until relieved or instructed by physician to discontinue massage

KNOWLEDGES AND SKILLS

- Anatomy and physiology of the sternum, ribs and heart
- Patient positioning for closed chest cardiac massage
- Recognition of normal and abnormal vital signs
- Principles and techniques of closed chest cardiac massage

Competency: RESPIRATORY THERAPY ASSISTANT (RTA)

COMPETENCY UNIT III: RESPIRATORY THERAPY TREATMENT PROCEDURES

This unit includes the following modules:

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Competency: RESPIRATORY THERAPY ASSISTANT (RTA)

Unit III: Respiratory Therapy Treatment Procedures

MODULE 1: SAFETY MAINTENANCE PROCEDURES FOR GAS CYLINDERS

TASKS

- a. Check for system leaks
- b. Check for regulator malfunction
- c. Maintain adequate storage area
- d. Maintain adequate temperature in storage area
- e. Properly restrain cylinder
- f. Properly cap cylinders
- g. Transport gas cylinders

PERFORMANCE OBJECTIVE

(Stimulus) Routinely or when instructed  
(Behavior) The RTA will check, store and transport bottled gas cylinders  
(Conditions) Without technical assistance or supervision; using proper reference material, e.g., NFPA and ICC standards  
(Criteria) Performed in accordance with set institutional regulations, national and local fire regulations, and protocol in respiratory therapy procedure manual  
(Consequence) Safe storage and transportation of bottled gas resulting in lowered risk of patient and personnel injury or incident

KNOWLEDGES AND SKILLS

Types and sizes of bottled gas containers  
Mechanical dexterity  
NFPA, ICC and other written safety guidelines  
Principles and procedures for checking for leaks, regulator malfunction, etc.  
Procedures for restraining and capping cylinders  
Storage requirements  
Procedures for transporting cylinders  
Recognition/identification of pertinent information stamped on cylinders



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Competency: RESPIRATORY THERAPY ASSISTANT (RTA)

Unit III: Respiratory Therapy Treatment Procedures

MODULE 2: OXYGEN HUMIDITY ROUNDS

- TASKS
- a. Check for proper functioning of equipment
  - b. Chart oxygen usage
  - c. Change/replace contaminated or nonfunctioning equipment
  - d. Maintain patient/equipment usage records

PERFORMANCE OBJECTIVE

- (Stimulus) Routinely or when instructed  
(Behavior) The RTA will check all patients receiving oxygen humidity therapy, record oxygen usage, maintain functioning of equipment, change or replace contaminated or nonfunctioning equipment, maintain water/solution levels in the humidifier/nebulizer, and maintain correct up-to-date records regarding patient/equipment usage
- (Conditions) Without technical assistance or supervision; using the appropriate equipment, charts and records
- (Criteria) Accurately recording usage; maintaining equipment in working order
- (Consequence) This action will assure that the patient is receiving the correct therapy; that the equipment is functioning correctly and that patient oxygen usage is recorded

KNOWLEDGES AND SKILLS

Function, operation and maintenance of equipment, e.g., humidifiers, nebulizers, oxygen masks, oxygen tents  
Related safety procedures  
Proper transport procedures for sterile and contaminated equipment  
Charting techniques

Competency: RESPIRATORY THERAPY ASSISTANT (RTA)

Unit III: Respiratory Therapy Treatment Procedures

MODULE 3: PREPARATION OF MEDICATIONS FOR ADMINISTRATION

- TASKS
- a. Prepare dilutions of medications
  - b. Mix medications
  - c. Titrate medications
  - d. Label medications, i.e., strength, volume, preparation date

PERFORMANCE OBJECTIVE

- (Stimulus) Upon physician's order  
(Behavior) The RTA will prepare medications for administration by titration, mixing or dilution and label them as to strength, volume and preparation date  
(Conditions) With technical supervision; using the PDR, if necessary, syringes and/or beakers  
(Criteria) Upon technical review, is judged correctly performed with regard to sterile technique, written respiratory procedures, and physician's prescription  
(Consequence) Medication accurately prepared for administration  
(Next Action) Administer medication

KNOWLEDGES AND SKILLS

Medications commonly used in respiratory therapy  
Classifications of medications commonly used in respiratory therapy  
Methods of dilution, titration and mixing of medications  
Lethal and/or harmful dosages  
Aseptic technique  
Indications and contraindications for administration of each medication  
Side effects of medications  
Conversion factors for pediatric dosages

Competency: RESPIRATORY THERAPY ASSISTANT (RTA)

Unit III: Respiratory Therapy Treatment Procedures

MODULE 4: ADMINISTRATION OF INTERMITTENT POSITIVE PRESSURE  
BREATHING TREATMENT

- TASKS
- a. Position patient for IPPB treatment
  - b. Give IPPB treatment
  - c. Coordinate IPPB treatments

PERFORMANCE OBJECTIVE

- (Stimulus) Upon receipt of physician's prescription  
(Behavior) The RTA will explain the nature of the therapy to the patient, cross-check prescription, adjust controls of ventilator to meet the patient's requirements and administer IPPB treatment  
(Conditions) With technical supervision; using appropriate pressure-cycled unit and tubing  
(Criteria) Performed in accordance with set procedures in the respiratory therapy procedure manual  
(Consequence) Accurate and therapeutic treatment of the patient with effective results  
(Next Action) Chart effects of treatment and patient response in patient record

KNOWLEDGES AND SKILLS

- Disease pathology and types of surgery performed on patient
- Respiratory anatomy and physiology
- Gas laws, e.g., Boyle's, Charles'
- Aseptic technique
- Use and operation of positive-pressure ventilator
- Patient positioning for IPPB treatment
- Medications used in IPPB treatment
- Normal and hazardous dosages of medications
- Ventilator physics and mechanics
- Principles and techniques of IPPB treatment
- Interpretation of patient's chart and physician's prescription

Competency: RESPIRATORY THERAPY ASSISTANT (RTA)

Unit III: Respiratory Therapy Treatment Procedures

MODULE 5: CHEST PHYSIOTHERAPY

- TASKS
- a. Perform chest vibration and cupping treatment, i.e., chest physiotherapy
  - b. Place patient in postural drainage position
  - c. Teach patient and a family member how to do home therapy, e.g., cystic fibrosis patient or emphysema patient
  - d. Teach pulmonary home care

PERFORMANCE OBJECTIVE

- (Stimulus) Upon physician's orders  
(Behavior) The RTA will perform chest physiotherapy and postural drainage and instruct patient and/or family in home care techniques  
(Conditions) With technical assistance; using radiographs and chest physiotherapy sheets as reference materials  
(Criteria) Performed in accordance with written respiratory therapy service procedures modified to meet patient's specific needs  
(Consequence) An organized program of chest therapy to maintain adequate, unassisted pulmonary ventilation  
(Next Action) Observe patient for effectiveness of therapy and/or observe out-patient therapy for accuracy of plan

KNOWLEDGES AND SKILLS

Pulmonary segmental anatomy  
Chest physiotherapy procedures  
Postural drainage procedures  
Coordination of plan of therapy  
Hazards and precautions of chest physiotherapy  
Positioning patient for chest physiotherapy and postural drainage  
Recognition of patient distress

Competency: RESPIRATORY THERAPY ASSISTANT (RTA)

Unit III: Respiratory Therapy Treatment Procedures

MODULE 6: RESPIRATORY EXERCISES

- TASKS
- a. Teach breathing exercises
  - b. Teach patient to cough and deep breathe

PERFORMANCE OBJECTIVE

- (Stimulus) Upon physician's orders  
(Behavior) The RTA will teach the patient breathing exercises and how to cough and deep breathe  
(Conditions) Without equipment or instruments  
(Criteria) Performed according to standard procedures, modified when necessary to meet the patient's needs  
(Consequence) This action will result in expectoration of secretions, easier breathing for the patient and/or strengthening of the diaphragm for more effective breathing  
(Next Action) Observe patient for any adverse reaction

KNOWLEDGES AND SKILLS

Breathing exercises  
Coughing and deep breathing techniques  
Type of thoracic surgery performed on patient  
Respiratory anatomy and physiology

Competency: RESPIRATORY THERAPY ASSISTANT (RTA)

Unit III: Respiratory Therapy Treatment Procedures

MODULE 7: AEROSOL/HUMIDITY THERAPY

TASKS a. Administer humidity therapy

PERFORMANCE OBJECTIVE

(Stimulus) Upon receipt of physician's prescription  
(Behavior) The RTA will administer high humidity and/or aerosol therapy  
(Conditions) With technical supervision; using ultrasonic/all-purpose nebulizers, heated or unheated; bubble humidifier; room vaporizer; connecting tubing; mode of delivery (e.g., aerosol mask, tracheostomy mask) and source gas (oxygen, air, etc.)  
(Criteria) Performed in accordance with procedures published in respiratory therapy manuals  
(Consequence) Administration of humidity/aerosol with or without oxygen to patient  
(Next Action) Log patient information in patient record and record procedure in equipment log

KNOWLEDGES AND SKILLS

Absolute and relative humidity  
Medical gases  
Anatomy and physiology of the respiratory system  
Function and operation of equipment used to generate/deliver high humidity and medical gases, e.g., ultrasonic therapy unit, ultrasonic nebulizer, all-purpose nebulizers, bubbler humidifier, room vaporizer, and large volume pneumatic nebulizers  
Function of modes of delivery, e.g., aerosol mask, tracheostomy mask, face tent, venturi mask, aerosol T-adapter

Competency: RESPIRATORY THERAPY ASSISTANT (RTA)

Unit III: Respiratory Therapy Treatment Procedures

MODULE 8: MEDICAL GAS ADMINISTRATION

- TASKS
- a. Identify type of gas by color code
  - b. Measure cylinder contents
  - c. Attach regulating devices to cylinder
  - d. Attach terminal delivery modality to regulating device
  - e. Initiate medical gas therapy
  - f. Regulate oxygen or other medical gas flow
  - g. Monitor ill-effects of gas administration
  - h. Troubleshoot malfunctioning equipment

PERFORMANCE OBJECTIVE

- (Stimulus) Upon physician's orders  
(Behavior) The RTA will explain to the patient the nature of the treatment, prepare the equipment and administer the specified gas therapy, e.g., air, oxygen-nitrogen, oxygen-carbon dioxide, helium-oxygen
- (Conditions) With technical supervision; using associated equipment, e.g., non-rebreathing masks, nasal cannulae, nasal catheters, gas cylinders, regulators
- (Criteria) According to written protocol in respiratory therapy procedures manual and according to physician's instructions
- (Consequence) Administration of specified treatment and/or medical gas to patient
- (Next Action) Observe and monitor respiration and pulse for adverse reactions

KNOWLEDGES AND SKILLS

Gas laws  
Gas therapy administration procedures  
Characteristics of medical gases  
Associated hazards and safety procedures  
(NFPA and CPA)  
Indexing procedures (safety), e.g., color coding, pin and diameter indexing  
Use of gas volume conversion factors  
Function and operation of associated equipment, e.g., masks, nasal cannulae, nasal catheters, non-rebreathing masks  
Procedures for handling medical gas cylinders

Competency: RESPIRATORY THERAPY ASSISTANT (RTA)

COMPETENCY UNIT IV: OBTAINING SPECIMENS

This unit includes the following module:

<u>Number</u>	<u>Title</u>	<u>Page</u>
1	Obtaining and Preparing Specimen for Laboratory . . . . .	19

Competency: RESPIRATORY THERAPY ASSISTANT (RTA)

Unit IV: Obtaining Specimens

MODULE 1: OBTAINING AND PREPARING SPECIMEN FOR LABORATORY

- TASKS
- a. Obtain a sputum specimen for laboratory testing by ultrasonic sputum induction
  - b. Obtain a sputum specimen for laboratory testing by tracheal aspiration
  - c. Take swab cultures from respiratory therapy equipment
  - d. Prepare, label and send culture specimens to lab
  - e. Culture specimens for control of cross-contamination

PERFORMANCE OBJECTIVE

- (Stimulus) Routinely or when requested  
(Behavior) The RTA will obtain sputum specimens for testing and swab cultures from respiratory therapy equipment, prepare and send to lab and/or culture specimens for cross-contamination control  
(Conditions) With technical supervision; using swabs, sputum cups, suctioning traps, syringes, ultrasonic nebulizers, tracheal aspirators  
(Criteria) Performed in accordance with standard procedures of the respiratory therapy service  
(Consequence) Correctly prepared and labeled specimens sent to lab for testing or cultured for cross-contamination control  
(Next Action) Log results of tests and notify requesting physician of results

KNOWLEDGES AND SKILLS

Principles and procedures for obtaining specimens by ultrasonic sputum induction, tracheal aspiration and swabbing techniques  
Preparation and labeling of culture specimens  
Culturing procedures for specimens for cross-contamination control  
Aseptic technique  
Abnormal and normal appearance of specimen  
Interpretation of culture results

Competency: RESPIRATORY THERAPY ASSISTANT (RTA)

COMPETENCY UNIT V: STERILIZATION PROCEDURES

This unit includes the following modules:

<u>Number</u>	<u>Title</u>	<u>Page</u>
1	Preparing Equipment for Autoclave. . . . .	21
2	Cold Sterilization . . . . .	22
3	Testing Autoclave Effectiveness. . . . .	23

Competency: RESPIRATORY THERAPY ASSISTANT (RTA)

Unit V: Sterilization Procedures

MODULE 1: PREPARING EQUIPMENT FOR AUTOCLAVE

- TASKS
- a. Select/set up instruments for small packs
  - b. Wash prepared glassware for lab use including special preparation, e.g., acidwash, silicone coat
  - c. Package (wrap/date/label) sterile supplies
  - d. Prepare rubber goods for sterilization
  - e. Make up sterile trays

PERFORMANCE OBJECTIVE

- (Stimulus) When assigned or responsible  
(Behavior) The RTA will make up instrument packs and trays; prepare, select, and package glassware, rubber goods and other equipment for sterilization and label all articles with special tape and date of sterilization  
(Conditions) With technical supervision; using gas or steam autoclave and instrument washer sterilizer  
(Criteria) Performed in accordance with written procedures for preparing, packaging and sterilizing equipment  
(Consequence) An organized system of maintaining sterile supplies  
(Next Action) Store sterile goods in their proper place

KNOWLEDGES AND SKILLS

Preparation of equipment to be sterilized  
Preparation requirements for various methods of sterilization  
Methods of wrapping equipment for sterilization  
Contents of sterile trays

Competency: RESPIRATORY THERAPY ASSISTANT (RTA)

Unit V: Sterilization Procedures

MODULE 2: COLD STERILIZATION

- TASKS
- a. Prepare sterilizing solution
  - b. Wash and rinse prepared equipment
  - c. Perform cold sterilization of equipment

PERFORMANCE OBJECTIVE

- (Stimulus) Routinely or when assigned  
(Behavior) The RTA will disassemble equipment, wash in detergent, rinse, immerse equipment in sterilizing solution, rinse thoroughly, dry, reassemble and package equipment  
(Conditions) Using appropriate equipment, detergent, sterilizing solution  
(Criteria) In accordance with the standard written procedures of the respiratory therapy department  
(Consequence) Sterile supplies ready for use or storage  
(Next Action) Store sterile supplies in appropriate place

KNOWLEDGES AND SKILLS

Procedures for disassembling/reassembling equipment  
Packing procedures  
Cold sterilization procedures and techniques  
Preparation of sterilizing solution

Competency: RESPIRATORY THERAPY ASSISTANT (RTA)

Unit V: Sterilization Procedures

MODULE 3: TESTING AUTOCLAVE EFFECTIVENESS

TASKS                    a. Test autoclave effectiveness with culture strips

PERFORMANCE OBJECTIVE

(Stimulus)            When responsible for autoclave  
(Behavior)            The RTA will put culture strips into the autoclave to test effectiveness, and record or report results of test  
(Conditions)          Without technical supervision; using culture strips  
(Criteria)            Performed according to the type of autoclave (gas, steam) and in accordance with manufacturer's maintenance requirements and hospital instructions  
(Consequence)        This will ensure effective and accurate sterility

KNOWLEDGES AND SKILLS

Use and operation of autoclaves (gas, steam)  
Use of culture strips  
Method of testing autoclave effectiveness

Competency: RESPIRATORY THERAPY ASSISTANT (RTA)

COMPETENCY UNIT VI: EQUIPMENT MAINTENANCE AND SUPPLY

This unit includes the following modules:

<u>Number</u>	<u>Title</u>	<u>Page</u>
1	Equipment Maintenance . . . . .	25
2	Maintaining Lab/Pharmacy Equipment and Supplies . . . . .	26

Competency: RESPIRATORY THERAPY ASSISTANT (RTA)

Unit VI: Equipment Maintenance and Supply

MODULE 1: EQUIPMENT MAINTENANCE

- TASKS
- a. Troubleshoot equipment for malfunctions, leaks, etc.
  - b. Calibrate instruments and large equipment
  - c. Modify existing equipment design to meet particular institutional needs
  - d. Perform periodic examination of instruments and equipment

PERFORMANCE OBJECTIVE

- (Stimulus) Routinely or upon equipment breakdown  
(Behavior) The RTA will repair and/or adjust instruments so as to allow the most efficient use and application of respiratory therapy systems  
(Conditions) With technical supervision and/or advice; employing appropriate tools and calibration devices, all known standards (flowraters, electronic gear, etc.)  
(Criteria) In accordance with standard procedures in respiratory therapy manual  
(Consequence) Guaranteed availability of equipment at optimum level of designed performance  
(Next Action) Preparation of equipment for patient application or storage

KNOWLEDGES AND SKILLS

Gas laws and principles of gas flows  
Operation of electrical machinery, (motors, meters, etc.)  
Use of tools and associated workshop materials  
Equipment specifications and functions  
Interpretation of simple blueprints  
Mechanical ability and dexterity  
Operation and troubleshooting procedures for commercial types of respiratory therapy devices  
Calibration of instruments and large equipment  
Equipment modification procedures

Competency: RESPIRATORY THERAPY ASSISTANT (RTA)

Unit VI: Equipment Maintenance and Supply

MODULE 2: MAINTAINING LAB/PHARMACY EQUIPMENT AND SUPPLIES

- TASKS
- a. Maintain adequate supplies of necessary equipment
  - b. Store instruments properly, e.g., secure equipment such as needles, syringes, etc.
  - c. Maintain sufficient stock of medications
  - d. Store medications properly, e.g., refrigerate if necessary

PERFORMANCE OBJECTIVE

- (Stimulus) Routinely or as directed  
(Behavior) The RTA will maintain an adequate stock of lab/pharmacy equipment and supplies, ordering necessary equipment or supplies as needed, and will properly store equipment/supplies requiring special attention, e.g., refrigeration  
(Conditions) With indirect supervision  
(Criteria) Performed in accordance with written hospital respiratory therapy procedures  
(Consequence) Adequate stock of lab and pharmacy equipment and supplies is maintained  
(Next Action) Record actions taken, supplies used and ordered

KNOWLEDGES AND SKILLS

- Aseptic handling of equipment
- Danger of expired or contaminated drugs
- Principles and techniques of storing instruments without contamination
- Inventory techniques and controls

RESPIRATORY THERAPY

TECHNICIAN

26a

Competency: RESPIRATORY THERAPY TECHNICIAN (RTT)

COMPETENCY UNIT I: PATIENT CARE INSTRUCTION

This unit includes the following modules:

<u>Number</u>	<u>Title</u>	<u>Page</u>
1	Patient Instruction in Use of Therapeutic Equipment . . . . .	28
2	Patient Instruction in Self-Medication . . . . .	29
3	Therapy Response . . . . .	30

Competency: RESPIRATORY THERAPY TECHNICIAN (RTT)

Unit I: Patient Care Instruction

MODULE 1: PATIENT INSTRUCTION IN USE OF THERAPEUTIC EQUIPMENT

- TASKS
- a. Teach patient/family self-use of therapeutic equipment/devices
  - b. Instruct patient in IPPB self-treatment

PERFORMANCE OBJECTIVE

- (Stimulus) Upon physician's request or when responsible  
(Behavior) The RTT will instruct the patient and/or his family in aseptic technique and the use, operation and cleaning of therapeutic equipment to be used by him and will answer any questions which may arise
- (Conditions) With technical supervision; using appropriate therapeutic equipment
- (Criteria) Performed in accordance with procedures outlined in the manufacturer's written information about the equipment
- (Consequence) An effective plan of therapy for home use  
(Next Action) Have the patient perform any tasks to be done on equipment under the RTT's observation

KNOWLEDGES AND SKILLS

- Use, operation and cleaning of appropriate therapeutic equipment
- Respiratory diseases and surgery performed
- Techniques for instructing patient/family

Competency: RESPIRATORY THERAPY TECHNICIAN (RTT)

Unit I: Patient Care Instruction

MODULE 2: PATIENT INSTRUCTION IN SELF-MEDICATION

- TASKS
- a. Teach patient medication storage requirements, e.g., refrigeration, expiration date
  - b. Teach patient mode of administration for prescribed medications

PERFORMANCE OBJECTIVE

- (Stimulus) Upon physician's request  
(Behavior) The RTT will instruct the patient in aseptic technique, storage and maintenance of medication, correct dosage, proper mode of administration and the danger of using expired drugs
- (Conditions) With technical assistance; using medication(s) and, if available, printed information for patient to use as a reference
- (Criteria) Accurate and concise instruction on self-medication  
(Consequence) This action will prevent hazardous complications that could develop from misuse of medication
- (Next Action) Have the patient demonstrate any procedure that might be required in maintaining or administering a medication

KNOWLEDGES AND SKILLS

- Medications and how they are stored
- Related pharmacology, i.e., drug action, side effects, correct dosage
- Instructional techniques
- Techniques for administering medications

Competency: RESPIRATORY THERAPY TECHNICIAN (RTT)

Unit I: Patient Care Instruction

MODULE 3: THERAPY RESPONSE

- TASKS
- a. Review with patient printed instructions for examination/therapy procedure
  - b. Reinforce patient's positive response to therapy
  - c. Inform patient of progress of therapy
  - d. Inform patient about equipment used for therapy

PERFORMANCE OBJECTIVE

- (Stimulus) Upon physician's orders  
(Behavior) The RTT will explain to patient the therapy being administered and explain or describe equipment used in therapy  
(Conditions) Without technical supervision  
(Criteria) The RTT must establish good rapport and understanding with the patient  
(Consequence) This action will produce better understanding by the patient

KNOWLEDGES AND SKILLS

Understanding of patient behavior  
Therapy to be administered  
Progress of therapy  
Operation of equipment used in therapy  
Instructional techniques  
Procedures to reinforce patient's response

Competency: RESPIRATORY THERAPY TECHNICIAN (RTT)

COMPETENCY UNIT II: PATIENT TESTING

This unit includes the following modules:

<u>Number</u>	<u>Title</u>	<u>Page</u>
1	Routine Ventilatory Studies . . . . .	32
2	Hyperventilation Procedures . . . . .	33
3	Cardiac Monitoring . . . . .	34
4	Calculating Diagnostic Lab Test Results . . .	35
5	Arrange for/Follow Up Completion of Lab Tests . . . . .	36

Competency: RESPIRATORY THERAPY TECHNICIAN (RTT)

Unit II: Patient Testing

MODULE 1: ROUTINE VENTILATORY STUDIES

- TASKS
- a. Measure timed vital capacity
  - b. Measure passive vital capacity
  - c. Measure inspiratory force
  - d. Measure percent O<sub>2</sub> by sampling
  - e. Measure CO<sub>2</sub> concentration

PERFORMANCE OBJECTIVE

- (Stimulus) When requested by physician  
(Behavior) The RTT will do routine ventilatory studies on a patient  
(Conditions) With technical assistance; using associated equipment, e.g., CO<sub>2</sub> analyzer  
(Criteria) Performed in accordance with written respiratory therapy service procedures modified according to patient's condition  
(Consequence) Accurate determination of vital capacity, inspiratory force, percent O<sub>2</sub>, and CO<sub>2</sub> concentration  
(Next Action) Calculate and log study results on in-patient record or flow sheet

KNOWLEDGES AND SKILLS

Pulmonary physiology  
Principles and procedures of ventilatory studies being done  
Procedures to determine if patient is capable of undergoing study  
Procedures to determine if patient is doing the study correctly  
Use and operation of associated equipment, e.g., CO<sub>2</sub> analyzer



Competency: RESPIRATORY THERAPY TECHNICIAN (RTT)

Unit II: Patient Testing

MODULE 3: CARDIAC MONITORING

TASKS a. Monitor cardiac activity

PERFORMANCE OBJECTIVE

(Stimulus)	Upon physician's orders
(Behavior)	The RTT will attach electrodes to the patient, adjust the oscilloscope and monitor cardiac activity on the oscilloscope
(Conditions)	With limited supervision; using an oscilloscope
(Criteria)	According to standard procedures
(Consequence)	An accurate visual display of cardiac activity
(Next Action)	Carefully remove oscilloscope leads

KNOWLEDGES AND SKILLS

Basic knowledge of test theory of oscilloscope  
Use and operation of oscilloscope  
Manual dexterity  
Accuracy in setting control positions for procedure

Competency: RESPIRATORY THERAPY TECHNICIAN (RTT)

Unit II: Patient Testing

MODULE 4: CALCULATING DIAGNOSTIC LAB TEST RESULTS

TASKS                    a. Perform mathematical calculations  
                             b. Log analysis results

PERFORMANCE OBJECTIVE

(Stimulus)            Upon physician's orders  
(Behavior)            The RTT will calculate test results and predicted standards/tests, and record  
(Conditions)          With limited supervision; using approved formulae  
(Criteria)             Accurately calculated test results and standard norms  
(Consequence)        Test results and standard norms will be calculated and recorded  
(Next Action)         Report test results to requesting physician

KNOWLEDGES AND SKILLS

Principles and use of metric system  
Performing calculations  
Logging procedures  
Calculating predicted norms

Competency: RESPIRATORY THERAPY TECHNICIAN (RTT)

Unit II: Patient Testing

MODULE 5: ARRANGE FOR/FOLLOW UP COMPLETION OF LAB TESTS

TASKS            a. Arrange for/follow up completion of clinical laboratory test

PERFORMANCE OBJECTIVE

(Stimulus)        Upon completion of routine clinical lab tests  
(Behavior)        The RTT will arrange for a return patient appointment and make available previous test results for comparison by physician to determine progression or regression  
(Conditions)      Without technical supervision; using appointment book/protocol, telephone and files/records for review, routine lab procedure and protocol for test completion  
(Criteria)        Performed according to lab protocol; completed in normal approved time allotment  
(Consequence)    Patient will receive follow-up service  
(Next Action)    Fulfill a coordinated patient treatment plan

KNOWLEDGES AND SKILLS

Procedure post-completion protocol  
Appointment plans for indicated treatment plan  
Techniques for completion of lab test performed  
Organization of time for completing patient treatment plan

Competency: RESPIRATORY THERAPY TECHNICIAN (RTT)

COMPETENCY UNIT III: PLANNING PATIENT CARE

This unit includes the following modules:

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1	Planning Patient Care . . . . .	38
2	Follow-Up Treatment . . . . .	39

Competency: RESPIRATORY THERAPY TECHNICIAN (RTT)

Unit III: Planning Patient Care

MODULE 1: PLANNING PATIENT CARE

- TASKS
- a. Review patient's current medical record, e.g., results of tests, consults, vital signs, nurses' notes
  - b. Review test/examination/consultation reports for abnormal (positive) findings
  - c. Check consultation requests to insure the correct study is to be carried out
  - d. Coordinate patient treatment plan with other departments/agencies

PERFORMANCE OBJECTIVE

- (Stimulus) When requested by physician  
(Behavior) The RTT will review patient's chart to check that he is the correct patient for the procedure, check request for proper procedure and coordinate appointments. After reviewing the patient's medical record and physician's consultation reports, the RTT will develop a treatment plan and coordinate between patient and departments  
(Criteria) Performed accurately so that the treatment plan is understood by both the patient and technician  
(Consequence) This action will prevent patients being treated who are not candidates for the procedures and allow a more organized treatment plan  
(Next Action) Write out treatment plan and place the appointment in the appointment book

KNOWLEDGES AND SKILLS

How patient medical record is organized  
Type of test or procedure requested  
How to coordinate patient treatment plan  
Abnormal and normal findings in medical record  
Understanding of medical terms  
How to organize and plan appointments or treatment plans  
Therapy and testing procedures



Competency: RESPIRATORY THERAPY TECHNICIAN (RTT)

COMPETENCY UNIT IV: BLOOD GASES

This unit includes the following modules:

<u>Number</u>	<u>Title</u>	<u>Page</u>
1	Arterial Puncture . . . . .	41
2	Direct Measurement of Blood Gases . . . . .	42
3	Calculations Based on Blood Gas Measurements . . . . .	43
4	Hematocrit Measurement . . . . .	44
5	Hemoglobin Measurement . . . . .	45

Competency: RESPIRATORY THERAPY TECHNICIAN (RTT)

Unit IV: Blood Gases

MODULE 1: ARTERIAL PUNCTURE

TASKS a. Collect blood by arterial puncture

PERFORMANCE OBJECTIVE

(Stimulus) Upon physician's orders  
(Behavior) The RTT will perform an arterial puncture and collect blood for blood gas measurements  
(Conditions) With technical supervision; using a heparinized syringe and Xylocaine  
(Criteria) Performed in accordance with written hospital respiratory therapy procedures; maintaining aseptic technique  
(Consequence) A sample of arterial blood for testing procedures  
(Next Action) Apply direct pressure at site of puncture

KNOWLEDGES AND SKILLS

Technique for drawing arterial blood  
Aseptic preparation of puncture site  
Anatomy of arteries involved  
Hazards and precautions of arterial puncture  
Determination of site of puncture  
Indications and precautions in administering Xylocaine

Competency: RESPIRATORY THERAPY TECHNICIAN (RTT)

Unit IV: Blood Gases

MODULE 2: DIRECT MEASUREMENT OF BLOOD GASES

- TASKS
- a. Do direct measurement of blood  $pCO_2$
  - b. Do direct measurement of blood  $pO_2$
  - c. Determine pH

PERFORMANCE OBJECTIVE

- (Stimulus) Upon physician's request  
(Behavior) The RTT will balance the blood gas machine, perform direct measurement of blood pH,  $pCO_2$  and  $pO_2$  and record results  
(Conditions) With technical supervision; using related equipment, e.g., blood gas machine, pH meter  
(Criteria) Performed in accordance with manufacturer's written procedures and individual respiratory therapy service procedures  
(Consequence) Accurate measurement of blood gas levels and a record of results  
(Next Action) Inform physician of results

KNOWLEDGES AND SKILLS

Function and operation of associated equipment, e.g., pH meter, blood gas machine  
Recognition of normal and abnormal results  
Blood gas chemistry--acid-base physiology  
Procedures to balance equipment and to determine accuracy of balancing  
Theory of blood gas electrodes, e.g., Clark, Servinghaus

Competency: RESPIRATORY THERAPY TECHNICIAN (RTT)

Unit IV: Blood Gases

MODULE 3: CALCULATIONS BASED ON BLOOD GAS MEASUREMENTS

- TASKS
- a. Calculate acid-base excess/deficits, e.g.,  
 $\text{HCO}_3$
  - b. Calculate total  $\text{pCO}_2$  using a nomogram
  - c. Calculate percent  $\text{O}_2$  saturation of blood

PERFORMANCE OBJECTIVE

- (Stimulus) Upon physician's request  
(Behavior) The RTT will determine and calculate acid-base excess/deficits, total  $\text{pCO}_2$  and percent of  $\text{O}_2$  saturation  
(Conditions) With technical supervision; using a nomogram and optical density measurement equipment  
(Criteria) Performed in accordance with equipment manufacturer's standard procedures and individual respiratory therapy service procedures  
(Consequence) Accurate calculation of blood gas levels to determine patient's needs  
(Next Action) Log and inform requesting physician of results

KNOWLEDGES AND SKILLS

Acid-base chemistry  
Nomogram use and function  
Principles and techniques of optical density measurement  
Recognition of abnormal and normal results  
Function and operation of optical density equipment  
Blood gas calculations

Competency: RESPIRATORY THERAPY TECHNICIAN (RTT)

Unit IV: Blood Gases

MODULF 4: HEMATOCRIT MEASUREMENT

TASKS a. Do microhematocrit (non-automated method)

PERFORMANCE OBJECTIVE

(Stimulus)	Upon physician's orders
(Behavior)	The RTT will perform a microhematocrit
(Conditions)	Using appropriate instruments for direct measurement of hematocrit in association with measurements for other gases
(Criteria)	Measurements performed in accordance with written standard procedures of the individual respiratory therapy service
(Consequence)	Accurate and concise hematocrit measurements
(Next Action)	Record results in log book and notify requesting physician

KNOWLEDGES AND SKILLS

Use and operation of automated microhematocrit instruments  
Recognition of normal and abnormal results

Competency: RESPIRATORY THERAPY TECHNICIAN (RTT)

Unit IV: Blood Gases

MODULE 5: HEMOGLOBIN MEASUREMENT

- TASKS
- a. Prepare standard for hemoglobin determination
  - b. Determine hemoglobin concentration using conventional bench method

PERFORMANCE OBJECTIVE

- (Stimulus) Upon physician's orders  
(Behavior) The RTT will measure patient's hemoglobin level  
(Conditions) With technical supervision; using the appropriate equipment  
(Criteria) Accurately performed in accordance with equipment manufacturer's written procedures and individual respiratory therapy service procedures  
(Consequence) Measurement of hemoglobin level  
(Next Action) Log results and notify physician

KNOWLEDGES AND SKILLS

- Function, operation and calibration of required equipment
- Recognition of normal and abnormal results
- Preparation of hemoglobin standard
- Principles and technique of hemoglobin measurement

Competency: RESPIRATORY THERAPY TECHNICIAN (RTT)

COMPETENCY UNIT V: INTENSIVE (ACUTE) RESPIRATORY CARE

This unit includes the following modules:

<u>Number</u>	<u>Title</u>	<u>Page</u>
1	Routine Airway Maintenance . . . . .	47
2	Emergency Airway Maintenance . . . . .	48
3	Mechanical Lung Ventilation . . . . .	49
4	Ventilatory Monitoring . . . . .	50
5	Mechanical Ventilator Weaning . . . . .	51

Competency: RESPIRATORY THERAPY TECHNICIAN (RTT)

Unit V: Intensive (Acute) Respiratory Care

MODULE 1: ROUTINE AIRWAY MAINTENANCE

- TASKS
- a. Change tracheostomy tube
  - b. Intubate patient's trachea/larynx
  - c. Perform tracheal aspiration
  - d. Perform tracheal or nasotracheal suctioning

PERFORMANCE OBJECTIVE

- (Stimulus) Upon physician's request or in an emergency  
(Behavior) The RTT will change a tracheostomy tube or intubate patient's trachea  
(Conditions) With medical supervision; using a tracheostomy tube of the correct size, laryngoscope, and correct size intubation tube  
(Criteria) Performed in accordance with standard accepted procedures and done under aseptic technique, if possible  
(Consequence) Patent airway established and maintained for the patient  
(Next Action) Maintain patent airway

KNOWLEDGES AND SKILLS

- Principles and use of tracheostomy tubes, intubation tubes, laryngoscopes
- Maintenance of patent airway
- Principles and techniques of changing a tracheostomy tube
- Principles and techniques of intubating a patient
- Indications and contraindications for intubation
- Signs and symptoms of airway obstruction
- Precautions and hazards of intubation, changing of tracheostomy tubes and aspiration
- Principles and techniques of sterile tracheal suctioning
- Principles and techniques of nasotracheal suctioning
- Selection of proper catheter and hazards involved
- Conversion factor for tube sizes (French to millimeters)



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Competency: RESPIRATORY THERAPY TECHNICIAN (RTT)

Unit V: Intensive (Acute) Respiratory Care

MODULE 2: EMERGENCY AIRWAY MAINTENANCE

- TASKS
- a. Assemble laryngoscope with blade
  - b. Position patient for establishment of patent airway
  - c. Hyperextend head and neck
  - d. Insert oropharyngeal airway
  - e. Insert nasopharyngeal airway
  - f. Observe for adequate ventilation
  - g. Intubate trachea
  - h. Suction trachea

PERFORMANCE OBJECTIVE

- (Stimulus) Upon STAT or emergency code call for cardiac or respiratory arrest
- (Behavior) The RTT will determine appropriate airway modality (including endotracheal intubation when necessary in the absence of an anesthesiologist) and establish and maintain a patent airway
- (Conditions) With physician and/or nurse present, when possible, otherwise without supervision; using mechanical adjuncts, e.g., laryngoscope, endotracheal tube, suction catheter
- (Criteria) In accordance with standard respiratory therapy procedures for airway management
- (Consequence) Establishment of a patent and adequate conduit for ventilatory support
- (Next Action) Maintain airway patency

KNOWLEDGES AND SKILLS

- Anatomy and physiology of upper, lower and terminal airways
- Function and use of all airway management aids
- Ability to make crisis decisions without direct supervision
- Procedures and techniques for emergency airway establishment and maintenance, e.g., positioning, insertion of oropharyngeal or nasopharyngeal airways, intubation, suctioning

Competency: RESPIRATORY THERAPY TECHNICIAN (RTT)

Unit V: Intensive (Acute) Respiratory Care

MODULE 3: MECHANICAL LUNG VENTILATION

- TASKS
- a. Ventilate patient using positive pressure ventilator
  - b. Ventilate patient using volume-cycled ventilator
  - c. Ventilate patient using time-cycled ventilator
  - d. Ventilate patient using negative pressure ventilator
  - e. Maintain mechanical lung ventilators

PERFORMANCE OBJECTIVE

- (Stimulus) Upon physician's orders and when responsible for mechanical lung ventilation
- (Behavior) The RTT will set up and apply ventilator to patient, check ventilators for malfunction, maintain and do minor repairs within unit capabilities
- (Conditions) With technical supervision; using volume-cycled, time-cycled, positive and negative pressure ventilators
- (Criteria) Performed in accordance with standard respiratory therapy procedures
- (Consequence) Maintenance of sustained mechanical ventilation support and properly functioning ventilator equipment
- (Next Action) Observe patient's respiration; monitor and record tidal volume, inflation pressure and oxygen concentration

KNOWLEDGES AND SKILLS

- Use, operation and monitoring of mechanical lung ventilators, e.g., positive and negative pressure, time-cycled, volume-cycled
- Maintenance and repair of mechanical lung ventilator
- Respiratory anatomy and physiology
- Criteria for determination of type of ventilator to be used, e.g., correlation with respiratory diseases and associated surgery
- Chest auscultation and interpretation of chest findings
- Recognition of adverse reactions
- Emergency signs and symptoms
- Use and operation of associated equipment, e.g., air shields, Bennet MA-1, Ohio 560, Bird Mark 7-8-10-14, Bennet PR-2, Emerson, Engstrom

Competency: RESPIRATORY THERAPY TECHNICIAN (RTT)

Unit V: Intensive (Acute) Respiratory Care

MODULE 4: VENTILATORY MONITORING

- TASKS
- a. Measure tidal volume
  - b. Measure minute volume ventilation
  - c. Calculate alveolo-arterial (A-a) gradient
  - d. Calculate percent  $O_2$
  - e. Measure respiratory rate
  - f. Measure patient's level of consciousness, i.e., restless, drowsy
  - g. Measure subjective impression of respiratory effort

PERFORMANCE OBJECTIVE

- (Stimulus) When requested by physician or when responsible for mechanical lung ventilation
- (Behavior) The RTT will take necessary measurements, e.g., tidal volume, minute volume vital capacity; calculate and record findings
- (Conditions) Without technical assistance; using a spirometer, oxygen analyzer and watch
- (Criteria) Performed according to standard procedures modified as necessary for individual patient
- (Consequence) Accurate monitoring of patient for determination of ventilatory needs

KNOWLEDGES AND SKILLS

- Use and function of a spirometer and oxygen analyzer
- Measurement of static lung volumes and capacities
- Related mathematical calculations, e.g., percentage  $O_2$ , alveolo-arterial gradient
- Use of ventilatory parameter flow sheets
- Recognition of abnormal and normal results

Competency: RESPIRATORY THERAPY TECHNICIAN (RTT)

Unit V: Intensive (Acute) Respiratory Care

MODULE 5: MECHANICAL VENTILATOR WEANING

- TASKS
- a. Prepare patient psychologically for weaning
  - b. Check all respiratory parameters and vital signs
  - c. Perform simple spirometric tests
  - d. Crosscheck patient's progress notes and review charts

PERFORMANCE OBJECTIVE

- (Stimulus) Upon physician's request  
(Behavior) The RTT will initiate procedures necessary to decrease patient dependence on mechanical ventilation  
(Conditions) With medical supervision and nurse consultation  
(Criteria) In accordance with weaning procedures set forth in the respiratory therapy procedure manual  
(Consequence) This will allow patient to make simple transition from unnatural, pressure-induced ventilation to self-supporting, unassisted, natural ventilation  
(Next Action) Allow patient to return to respiration normally by follow-up methods (blood gas analysis, spirometrics, etc.)

KNOWLEDGES AND SKILLS

- Recognition of contraindications to initiation of weaning process  
Expertise in weaning techniques, including I.M.V., C.P.A.P.  
Determination of inadequacy of weaning process by recognition of signs and symptoms of decompensation of patient  
Techniques to explain and psychologically prepare patient for weaning procedures

**DATE**  
**ILME**