



Broward Community College

Course Outline

STATUS: Active

COMMON COURSE NUMBER: NUR 2940C

COURSE TITLE: Respiratory Cross-Training for Nurses

CLOCK HOURS: 228

CONTACT HOURS BREAKDOWN:

Lecture/Discussion 60.0

Lab 48

Other 120(Clinical)

Contact Hours/Week 14.5

CATALOG COURSE DESCRIPTION:

This course will provide nurses with essential principles of respiratory care to function in their new roles as a multiskilled healthcare professional.

Prerequisite: CAE 0216, CAE0062 or Instructor Approval

Corequisite: None

General Education Requirements - Associate of Arts Degree, meets Area(s): none

General Education Requirements - Associate in Science Degree, meets Area(s): none

UNIT TITLES:

1. Oxygen Delivery Devices
2. Routine Respiratory Care
3. I.P.P.B. Therapy
4. Chest Physio-Therapy
5. USN/Sputum Induction
6. Respiratory Care Protocols
7. Aerosolized Pentamidine Administration
8. Advanced Airway Care
9. Bedside Pulmonary Mechanics
10. Introduction to Ventilators

LAST REVIEW Academic Year 2004-2005 NEXT REVIEW Academic Year 2009-2010

Interim Revision Dates:

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Unit 1. Oxygen Delivery Devices

General Outcomes:

The student will demonstrate safe handling of oxygen equipment; demonstrate a clinical knowledge of the psychomotor ability to administer oxygen via the different oxygen delivery devices and demonstrate a working knowledge of oxygen analyzers.

Specific Learning Objectives:

Upon successful completion of this unit, the students should be able to:

- 1.1 Demonstrate how to properly change the regulator on an oxygen E-cylinder, stating the PSIG in the tank and calculating the duration of gas flow at various settings.
- 1.2 Demonstrate a working knowledge of air and oxygen flow meters.
- 1.3 Demonstrate how to correctly fill a portable liquid oxygen cylinder, determining the volume of oxygen in the cylinder and estimating the duration of gas flow at various settings.
- 1.4 Demonstrate a working knowledge of setting up and maintaining humidification devices.
- 1.5 Demonstrate a clinical knowledge of administering oxygen via the following devices: nasal cannula, nasal catheter, venti-mask, simple mask, partial and non-rebreather mask; face tent; tracheostomy mask; transtracheal catheter.
- 1.6 Demonstrate ability to deliver oxygen via resuscitator bag and mask, stating the factors which influence delivered FiO_2 via that device.
- 1.7 State the approximate FiO_2 delivered via the various oxygen delivery devices at various settings.
- 1.8 State how a venti-mask works and identify the venturi device.
- 1.9 State the dependent factors affecting FiO_2 when delivering oxygen via nasal cannula and how those factors effect FiO_2 .
- 1.10 Determine the most appropriate oxygen delivery device for a given set of clinical circumstances.
- 1.11 Demonstrate correct use of oxygen analyzers including calibration, operation and troubleshooting.

Unit 2. Routine Respiratory Care

General Outcomes:

The student will demonstrate proper patient teaching and administration of medications via Twin Jet nebulizer; demonstrate proper patient teaching and administration of medications via metered dose inhaler (MDI) and demonstrate proper patient teaching and administration of incentive spirometry.

Specific Learning Objectives:

Upon successful completion of this unit, the students should to

- 2.1 Identify the clinical indicators for and the goals and objectives of administering medications via Twin Jet nebulizer.
- 2.2 Compare four (4) common bronchodilators.
- 2.3 Discuss the use of inhaled mucolytics, anti-inflammatories, antibiotics and antiprotozoans.
- 2.4 State the normal dosages and possible side effects of medications commonly used in Twin Jet nebulizer treatments.
- 2.5 Contrast wheezing with rales & ronchi.
- 2.6 Demonstrate how to properly administer a Twin Jet treatment for maximum effectiveness.
- 2.7 Determine if MDI administration is indicated in place of Twin Jet nebulizer.
- 2.8 Instruct the patient in proper use of the MDI with spacer device.
- 2.9 State the different medications available via MDI, their normal dosage ranges and possible side effects.
- 2.10 State the different medications available via MDI, their normal dosage ranges and possible side effects.
- 2.11 Determine how full (or empty) an MDI canister is.
- 2.12 Identify the clinical indications for and the goals and objectives of incentive Spirometry.
- 2.13 Demonstrate correct use of the Voldyne incentive spirometry device for maximum effectiveness.
- 2.14 Set the patient's inspiratory capacity goal.
- 2.15 Demonstrate three coughing techniques used to improve expectoration.
- 2.16 Properly assess the patient before, during and immediately after performing all therapies.

Unit 3. Understanding I.P.P.B. Therapy

General Outcomes:

The student will demonstrate safe and effective technique in the performance of I.P.P.B. therapy.

Specific Learning Objectives:

Upon successful completion of this unit, the students should be able to:

- 10.1 State the physiologic effects of positive pressure breathing.
- 10.2 Demonstrate a working knowledge of the effects of airway resistance and lung compliance on delivered volume in I.P.P.B. therapy.
- 10.3 Demonstrate working knowledge of the effects of airway resistance and lung compliance on delivered volume in I.P.P.B. therapy.
- 10.4 Identify the clinical indications for performing I.P.P.B. treatments.
- 10.5 Identify the goals and objectives of I.P.P.B. therapy.
- 10.6 Describe ways to determine if I.P.P.B. is therapeutic.
- 10.7 Identify absolute/relative contraindications and hazards of I.P.P.B.
- 10.8 Demonstrate proper positioning of the patient.
- 10.9 Demonstrate proper technique in administering I.P.P.B. treatment via mouthpiece, lip seal and face mask.
- 10.10 Properly assess the patient before, during and immediately after performing therapy.

Unit 4. Understanding Chest Physiotherapy

General Outcomes:

The student will demonstrate safe and effective technique in the performance of CPT treatments, including manual and mechanical techniques.

Specific Learning Objectives:

Upon successful completion of this unit, the students should be able to:

- 10.1 Correctly identify the components of the tracheobronchial tree.
- 10.2 Identify the names and locations of all lung lobes and segments.
- 10.3 Identify the clinical indications for performing CPT treatments.
- 10.4 Identify the goals and objectives of performing CPT treatments.
- 10.5 Describe ways to determine if CPT is therapeutic.
- 10.6 Identify contraindications and hazards of CPT.
- 10.7 Demonstrate proper positioning of the patients for treating the affected lung segments.
- 10.8 Demonstrate manual and mechanical percussion and vibration of the chest wall.
- 10.9 Demonstrate proper technique for performing segmental breathing, pursed lip breathing, directed cough, flutter valve and PEP mask therapy, identifying the benefits and limitations of each.
- 10.10 Properly assess the patient before, during and immediately after performing therapy.

Unit 5. Ultrasonic Nebulization / Sputum Induction

General Outcomes:

The student will demonstrate proper use of the De Vilbiss ultrasonic nebulizer (USN) and demonstrate proper technique in sputum induction for specimen collection.

Specific Learning Objectives:

Upon successful completion of this unit, the students should be able to

- 5.1 Identify the clinical indications for and the goals and objectives of administering components of medical terms.
- 5.2 Identify the contraindications and hazards of USN treatments.
- 5.3 Describe ways to determine if USN is therapeutic.
- 5.4 Demonstrate proper techniques in administering USN treatments.
- 5.5 Properly assess the patient before, during and immediately after performing the therapy.
- 5.6 Demonstrate how to properly handle a sputum collection container for specimen collection

Unit 6. Using Respiratory Care Protocols

General Outcomes:

The student will demonstrate a working knowledge of three respiratory care protocols, specifically: weaning oxygen via pulse oximetry, converting nebulizer treatments to metered dose inhaler (MDI) and adjusting respiratory care plan with the aid of medical necessity guidelines (MNG's).

Specific Learning Objectives:

Upon successful completion of this unit, the student should be able to:

- 10.1 Verbalize a knowledge of oxygen saturation in relation to oxygen content and PO₂.
- 10.2 State the normal range of oxygen saturation and factors which effect hemoglobin's affinity for oxygen.
- 10.3 Identify the limitations of pulse oximetry.
- 10.4 Demonstrate proper use of the Nellcor pulse oximeter.
- 10.5 List the types and causes of hypoxia.
- 10.6 List the signs and symptoms of hypoxia.
- 10.7 Adjust passive oxygen therapy utilizing pulse oximetry and other clinically pertinent assessment tools.

- 10.8 Differentiate the clinical advantages of delivering inhaled medications via nebulizer and MDI.
- 10.9 State the criteria required to assure effective delivery of inhaled medications via MDI.
- 10.10 State the equivalent dosages of commonly prescribe inhaled medications when delivered via nebulizer and MDI.
- 10.11 State how MNG's may be used to modify the plan of care for the respiratory comprised patient.
- 10.12 List the indications for respiratory care procedures as found on the following MNG's: Oxygen therapy, Aerosol therapy, Incentive spirometry, IPPB, CPT.
- 10.13 List the goals and objectives of the following respiratory care procedures: Oxygen therapy, Aerosol therapy, Incentive spirometry, IPPB, CPT.

Unit 7. Aerolized Pentamidine

General Outcomes:

The student will demonstrate how to safely and effectively administer aerosolized pentamidine.

Specific Learning Objectives:

Upon successful completion of this unit, the students should be able to

- 7.1 Identify the clinical indications for and the goals and objectives of administering an aeorosolized pentamidine treatment.
- 7.2 State the normal dosage and potential side effects of aerosolized pentamidine.
- 7.3 State why aerosolized pentamidine must be administered in a negative pressure isolation room.
- 7.4 List the etiology, signs and symptoms of Pneumocystis Carinii pneumonia.
- 7.5 List the etiology, signs and symptoms of tuberculosis, and differentiate between TB and MDR-TB.
- 7.6 Demonstrate how to administer aerosolized pentamidine for maximum effectiveness.
- 7.7 Properly assess the patient before, during and immediately after administering aerosolized pentamidine.

Unit 8. **Advanced Airway Care**

General Outcomes:

The student will show proficiency in airway suctioning via natural and artificial airways, including aspiration for specimen collection, demonstrate proper maintenance of tracheostomy and endotracheal tubes, demonstrate proper maintenance of transtracheal oxygen delivery devices and demonstrate proficiency in assisting with endotracheal intubation and extubation.

Specific Learning Objectives:

Upon successful completion of this unit, the students should be able to

- 10.1 State the clinical indication for and the goals and objectives of tracheal aspiration.
- 10.2 List the potential complications of airway suctioning.
- 10.3 Discuss the controversy on the use of normal saline lavage for tracheal aspiration.
- 10.4 Demonstrate safe and correct airway suctioning via natural airways, tracheostomy and endotracheal tubes, including pre and post assessment skills.
- 10.5 Demonstrate proper procedure for sputum collection via tracheal aspiration.
- 10.6 Identify the clinical indications for artificial airways, including specific indications for standard and specialty tracheostomy tubes.
- 10.7 Demonstrate minimal leak technique, state safe fucc pressure ranges for cuffed artificial airways.
- 10.8 Identify ways to allow for speech in the tracheotomized patient, demonstrating proficiencies in working with each of the devices.
- 10.9 Identify the indications for and the goals and objectives of transtracheal oxygen delivery systems.
- 10.10 State the potential complications associated with transtracheal catheters.

- 10.11 Demonstrate proper patient teaching and maintenance of transtracheal oxygen catheters.
- 10.12 List the responsibilities involved with assisting a physician in performing an intubations procedure.
- 10.13 Demonstrate proper extubation techniques, including pre and post extubation assessment, care and monitoring.

Unit 9. Bedside Pulmonary Mechanics

General Outcomes:

The student will demonstrate an ability to accurately measure Peak Expiratory Flow Rates (PEFR), determining normal values, percent predicted values and the clinical significance of the result.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to

- 9.1 Identify the clinical indications for monitoring a patient's PEFR, NIF, SVC, Vt, Ve, FVC, FEV1, FVC %, stating the clinical significance of and the appropriate treatment modalities for abnormal measurements.
- 9.2 Calculate normal/predicted values of PEFR, FVC, and FEV1/FVC % for males and females of varying heights and age.
- 9.3 Demonstrate an ability to accurately measure PEFR, NIF, SVC, Vt, Ve, FVC1 and Fev1/FVC % properly instructing and coaching patients in performing the maneuvers.
- 10.1 Properly educate an asthmatic patient in maintaining a diary of their PEFR and asthma triggers.
- 9.5 Determine a patient's personal best PEFR.
- 9.6 Create a care plan for an asthmatic's use of an inhaled fast acting bronchodilator based in part on their PEFR, their degree of symptoms and their clinical history.

Unit 10. Introduction to Mechanical Ventilators

General Outcomes:

The student will classify ventilators according to standard specifications, describing how they function and the various capabilities/limitations of each, develop a cognitive knowledge of ventilatory modes and the ventilatory parameters set and monitored on mechanical ventilators.

Specific Learning Objectives:

Upon successful completion of this unit, the students should be able to:

- 10.1 Identify the clinical indications for and the goals and objectives of mechanical ventilation.
- 10.2 Classify adult OR neonatal/pediatric mechanical ventilators according to the following standard specifications; how powered, how controlled; how cycled; pressure vs flow generator; ventilatory modes available; pressure and flow characteristics; mechanism of gas delivery.
- 10.3 Describe the various ventilatory modalities available on adult OR neonatal/pediatric ventilators, including how mechanical and/or spontaneous breaths are delivered in the different modes and the advantages of each modality.
- 10.4 State the appropriate ventilatory parameters required to be set and monitored on adult OR neonatal/pediatric mechanical ventilators for each of the available modes.
- 10.5 Determine safe and appropriate alarm settings for each of the ventilatory parameters being monitored.
- 10.6 List the possible clinical and mechanical conditions which could trigger the various ventilatory alarms.
- 10.7 State the appropriate actions necessary to prevent or correct alarm conditions.
- 10.8 State what should never be done to circumvent mechanical ventilator alarm systems.

