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| **NBRC Therapist Combined Detailed Content Outline Comparison with Proposed Curriculum (Program #** **)** | **List Course Number(s)** |
| **I. PATIENT DATA** | |
| **A. Evaluate Data in the Patient Record** | |
| 1. Patient history , for example,    * history of present illness (HPI) • orders • medication reconciliation • progress notes    * DNR status / advance directives • social, family, and medical history |  |
| 2. Physical examination relative to the cardiopulmonary system |  |
| 1. Lines, drains, and airways, for example,    * chest tube • artificial airway •vascular lines |  |
| 1. Laboratory results, for example,    * CBC • electrolytes • coagulation studies    * sputum culture and sensitivities • cardiac biomarkers |  |
| 5. Blood gas analysis and/or hemoximetry (CO-oximetry) results |  |
| 6. Pulmonary function testing results, for example  •spirometry •lung volumes •DLCO |  |
| 7. 6-minute walk test results |  |
| 1. Imaging study results, for example,    * chest radiograph • CT scan • ultrasonography and/or echocardiography • PET scan • ventilation / perfusion scan |  |
| 1. Maternal and perinatal / neonatal history, for example,    * APGAR scores • gestational age • L / S ratio |  |
| 10. Sleep study results. for example,  •apnea-hypopnea index (AHI) |  |
| 11. Trends in monitoring results | |
| a. fluid balance |  |
| b. vital signs |  |
| c. intracranial pressure |  |
| d. ventilator liberation parameters |  |
| e. pulmonary mechanics |  |
| f. noninvasive, for example,   * pulse oximetry • capnography • transcutaneous |  |

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| **NBRC Therapist Combined Detailed Content Outline Comparison with Proposed Curriculum (Program #** **)** | | **List Course Number(s)** |
| g. cardiac evaluation/monitoring results, for  •ECG •hemodynamic parameters | |  |
| 12. Determination of patient’s pathophysiological state |  | |
| **B. Perform Clinical Assessment** | | |
| 1. Interviewing a patient to assess | | |
| a. level of consciousness and orientation, emotional state, and ability to cooperate | |  |
| b. level of pain | |  |
| c. shortness of breath, sputum production, and exercise tolerance | |  |
| d. smoking history | |  |
| e. environmental exposures | |  |
| f. activities of daily living | |  |
| g. learning needs, for example,   * literacy • social/culture • preferred learning style | |  |
| 2. Performing inspection to assess | | |
| a. general appearance | |  |
| b. characteristics of the airway, for example,   * patency • Mallampati classification • tracheal shift | |  |
| c. cough, sputum amount and character | |  |
| d. status of a neonate, for example   * Apgar score • gestational age | |  |
| e. skin integrity, for example,   * pressure ulcers •stoma site | |  |
| 3. Palpating to assess | | |
| a. pulse, rhythm, intensity | |  |
| b. accessory muscle activity | |  |

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| c. asymmetrical chest movements, tactile fremitus, crepitus, tenderness, tactile rhonchi, and/or tracheal deviation |  |
| 4. Performing diagnostic chest percussion |  |
| 5. Auscultating to assess | |
| a. breath sounds |  |
| b. heart sounds and rhythm |  |
| c. blood pressure |  |
| 6. Reviewing a chest radiograph to assess | |
| a. quality of imaging, for example,   * patient positioning • penetration •lung inflation |  |
| b. presence and position of airways, lines, and drains |  |
| c. presence of foreign bodies |  |
| d. heart size and position |  |
| e. presence of, or change in, | |
| 1. cardiopulmonary abnormalities for example,    * pneumothorax • pleural effusion •pulmonary edema    * consolidation • pulmonary edema •pulmonary artery size |  |
| (ii) diaphragm, mediastinum, and/or trachea |  |
| **C. Perform Procedures to Gather Clinical Information** | |
| 1. 12-lead ECG |  |
| 1. Noninvasive monitoring, for example,    * pulse oximetry • capnography • transcutaneous |  |
| 3. Peak flow |  |
| 4. Mechanics of spontaneous ventilation linked to tidal volume, minute volume, and maximal inspiratory pressure, and vital capacity |  |
| 5. Blood gas sample collection |  |

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| **NBRC Therapist Combined Detailed Content Outline Comparison with Proposed Curriculum (Program #** **)** | **List Course Number(s)** |
| 6. Blood gas analysis and/or hemoximetry (CO-oximetry) |  |
| 7. Oxygen titration with exercise |  |
| 1. Cardiopulmonary calculations, for example,    * P(A-a)O2 • VD / VT • P / F • OI |  |
| 9. Hemodynamic monitoring |  |
| 10. Pulmonary compliance and airways resistance |  |
| 11. Plateau pressure |  |
| 12. Auto-PEEP determination |  |
| 13. Spontaneous breathing trial (SBT) |  |
| 14. Apnea monitoring |  |
| 15. Apnea test (brain death determination) |  |
| 16. Overnight pulse oximetry |  |
| 17. CPAP / NPPV titration during sleep |  |
| 1. Cuff management, for example,    * tracheal •laryngeal |  |
| 19. Sputum induction |  |
| 20. Cardiopulmonary stress testing |  |
| 21. 6-minute walk test |  |
| 22. Spirometry outside or inside a pulmonary function laboratory |  |
| 23. DLCO inside a pulmonary function laboratory |  |
| 24. Lung volumes inside a pulmonary function laboratory |  |
| 25. Tests of respiratory muscle strength- MIP and MEP |  |
| 26. Therapeutic bronchoscopy |  |

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| **NBRC Therapist Combined Detailed Content Outline Comparison with Proposed Curriculum (Program #** **)** | **List Course Number(s)** |
| **D. Evaluate Procedure Results** | |
| 1. 12-lead ECG |  |
| 1. Noninvasive monitoring, for example,    * pulse oximetry • capnography • transcutaneous |  |
| 3. Peak flow |  |
| 4. Mechanics of spontaneous ventilation linked to tidal volume, minute volume, maximal inspiratory pressure, and vital capacity |  |
| 5. Blood gas analysis and/or hemoximetry (CO-oximetry) |  |
| 6. Oxygen titration with exercise |  |
| 1. Cardiopulmonary calculations, for example,    * P(A-a)O2 • VD / VT • P / F • OI |  |
| 8. Hemodynamic monitoring |  |
| 9. Pulmonary compliance and airways resistance |  |
| 10. Plateau pressure |  |
| 11. Auto-PEEP |  |
| 12. Spontaneous breathing trial (SBT) |  |
| 13. Apnea monitoring |  |
| 14. Apnea test (brain death determination) |  |
| 15. Overnight pulse oximetry |  |
| 16. CPAP / NPPV titration during sleep |  |
| 1. Cuff status, for example,    * laryngeal •tracheal |  |
| 18. Cardiopulmonary stress testing |  |
| 19. 6-minute walk stress testing |  |
| 20. Spirometry outside or inside a pulmonary function laboratory |  |

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| **NBRC Therapist Combined Detailed Content Outline Comparison with Proposed Curriculum (Program #** **)** | **List Course Number(s)** |
| 22. DLCO inside a pulmonary function laboratory |  |
| 23.Tests of respiratory muscle strength-MIP and MEP |  |
| **E. Recommend Diagnostic Procedures** | |
| 1. Testing for tuberculosis |  |
| 1. Laboratory tests, for example,    * electrolytes • CBC •coagulation studies •sputum culture and sensitives •cardiac biomarkers |  |
| 3. Imaging studies |  |
| 4. Bronchoscopy |  |
| a. diagnostic |  |
| b. therapeutic |  |
| 5. Bronchoalveolar lavage (BAL) |  |
| 6. Pulmonary function testing |  |
| 1. Noninvasive monitoring, for example,    * pulse oximetry • capnography • transcutaneous |  |
| 8. Blood gas and/or hemoximetry (CO-oximetry) |  |
| 9. ECG |  |
| 1. Exhaled gas analysis, for example,    * CO2 • CO • FENO |  |
| 11. Hemodynamic monitoring |  |
| 12. Sleep studies |  |
| 13. Thoracentesis |  |
| **II. TROUBLESHOOTING AND QUALITY CONTROL OF DEVICES, AND INFECTION CONTROL** | |
| **A. Assemble and Troubleshoot Equipment** | |
| 1. Medical gas delivery interfaces, for example,    * mask •cannula •heated high-flow nasal cannula |  |

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| **NBRC Therapist Combined Detailed Content Outline Comparison with Proposed Curriculum (Program #** **)** | **List Course Number(s)** |
| 2. Long-term oxygen therapy |  |
| 1. Medical gas delivery, metering, and/or clinical analyzing devices, for example,    * concentrator •liquid system •flowmeter •regulator    * gas cylinder •blender •air compressor •gas analyzers |  |
| 4. CPAP/NPPV with patient interfaces |  |
| 5. Humidifiers |  |
| 6. Nebulizers |  |
| 7. Metered-dose inhalers, spacers, and valved holding chambers |  |
| 8. Dry powder inhalers (DPI) |  |
| 1. Resuscitation equipment, for example,    * self-inflating resuscitator •flow-inflating resuscitator •AED |  |
| 10. Mechanical ventilators |  |
| 11. Intubation equipment |  |
| 10. Artificial airways |  |
| 1. Suctioning equipment, for example,    * regulator • canister • tubing • catheter |  |
| 1. Blood analyzer. for example,    * hemoximetry (CO-oximetry) • point-of-care • blood gas |  |
| 15. Patient breathing circuits |  |
| 16. Hyperinflation devices |  |
| 17. Secretion clearance devices |  |
| 18. Heliox delivery device |  |
| 19. Portable spirometer |  |
| 20. Testing equipment in a pulmonary function laboratory |  |
| 21. Pleural drainage |  |

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| **NBRC Therapist Combined Detailed Content Outline Comparison with Proposed Curriculum (Program #** **)** | **List Course Number(s)** |
| 22.. Noninvasive monitoring, for example,   * pulse oximeter • capnometer • transcutaneous |  |
| 23. Bronchoscopes and light sources |  |
| 24. Hemodynamic monitoring devices | |
| a. pressure transducers |  |
| b. catheters, for example,   * arterial • pulmonary artery |  |
| **B. Ensure Infection Prevention** | |
| 1. Adhering to infection prevention policies and procedures, for example,    * Standard Precautions • isolation •donning/doffing |  |
| 2. Adhering to disinfection policies and procedures |  |
| 3. Proper handling of biohazardous materials |  |
| **C. Perform Quality Control Procedures** | |
| 1. Blood analyzers |  |
| 2. Gas analyzers |  |
| 3. Pulmonary function equipment for testing |  |
| a. spirometry results |  |
| b. lung volumes |  |
| c. diffusing capacity (DLCO) |  |
| 4. Mechanical ventilators |  |
| 5. Noninvasive monitors |  |
| **III. INITIATION AND MODIFICATION OF INTERVENTIONS** | |
| **A. Maintain a Patient Airway Including the Care of Artificial Airways** | |
| 1. Proper positioning of a patient |  |

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| **NBRC Therapist Combined Detailed Content Outline Comparison with Proposed Curriculum (Program #** **)** | **List Course Number(s)** |
| 2. Recognition of a difficult airway |  |
| 3. Establishing and managing a patient’s airway | |
| a. nasopharyngeal airway |  |
| b. oropharyngeal airway |  |
| c. esophagealtracheal tubes / supraglottic airways |  |
| d. endotracheal tube |  |
| e. tracheostomy tube |  |
| f. laryngectomy tube |  |
| g. speaking valves |  |
| h. devices that assist with intubation, for example,   * endotracheal tube exchanger •video laryngoscopy |  |
| 4. Performing tracheostomy care |  |
| 5. Exchanging artificial airways |  |
| 6. Maintaining adequate humidification |  |
| 7. Initiating protocols to prevent ventilator-associated infections |  |
| 8. Performing extubation |  |
| **B. Perform Airway Clearance and Lung Expansion Techniques** | |
| 1. Postural drainage, percussion, or vibration |  |
| 1. Suctioning, for example,    * nasotracheal • oropharyngeal |  |
| 1. Mechanical devices, for example,    * high-frequency chest wall oscillation • vibratory PEP    * intrapulmonary percussive ventilation • insufflation / exsufflation |  |
| 1. Assisted cough, for example,    * huff • abdominal thrust |  |

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| **NBRC Therapist Combined Detailed Content Outline Comparison with Proposed Curriculum (Program #** **)** | **List Course Number(s)** |
| 5. Hyperinflation therapy |  |
| 6. Inspiratory muscle training |  |
| **C. Support Oxygenation and Ventilation** | |
| 1. Initiating and adjusting oxygen therapy |  |
| 1. Minimizing hypoxemia, for example,    * patient positioning • secretion removal |  |
| 3. Initiating and adjusting mask or nasal CPAP |  |
| 4. Initiating and adjusting mechanical ventilation settings | |
| a. continuous mechanical ventilation |  |
| b. noninvasive ventilation |  |
| c. high-frequency ventilation |  |
| d. alarms |  |
| 5. Recognizing and correcting patient-ventilator dyssynchrony |  |
| 6. Utilizing ventilator graphics |  |
| 7. Performing lung recruitment maneuvers |  |
| 8. Liberating patient from mechanical ventilation |  |
| **D. Administer Medications and Specialty Gases** | |
| 1. Aerosolized preparations |  |
| a. antimicrobials |  |
| b. pulmonary vasodilators |  |
| c. brochodilators |  |
| d. mucolytics/proteolytics |  |

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| **NBRC Therapist Combined Detailed Content Outline Comparison with Proposed Curriculum (Program #** **)** | **List Course Number(s)** |
| e. steroids |  |
| 2.. Endotracheal instillation |  |
| 1. Specialty gases, for example,    * heliox • inhaled NO |  |
| **E. Ensure Modifications are Made to the Respiratory Care Plan** | |
| 1. Treatment termination, for example,  * life-threatening adverse event |  |
| 2. Recommendations | |
| a. starting treatment based on patient response |  |
| b. treatment of pneumothorax |  |
| c. adjustment of fluid balance |  |
| d. adjustment of electrolyte therapy |  |
| e. insertion or change of artificial airway |  |
| f. liberating from mechanical ventilation |  |
| g. extubation |  |
| h. discontinuing treatment based on patient response |  |
| i. consultation from a physician specialist |  |
| 3. Recommendations for changes | |
| a. patient position |  |
| b. oxygen therapy |  |
| c. humidification |  |
| d. airway clearance |  |
| e. hyperinflation |  |

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| **NBRC Therapist Combined Detailed Content Outline Comparison with Proposed Curriculum (Program # )** | **List Course Number(s)** |
| f. mechanical ventilation |  |
| 4. Recommendations for pharmacologic interventions | |
| a. bronchodilators |  |
| b. anti-inflammatory drugs |  |
| c. mucolytics and proteolytics |  |
| d. Aerosolized antibiotics |  |
| e. Inhaled pulmonary vasodilators |  |
| f. cardiovascular |  |
| g. antimicrobials |  |
| h. sedatives and hypnotics |  |
| i. analgesics |  |
| i. narcotic antagonists |  |
| j. benzodiazepine antagonists |  |
| l. neuromuscular blocking agents |  |
| m. diuretics |  |
| n. surfactants |  |
| o. changes to drug, dosage, administration, frequency, mode, or concentration |  |
| **F. Utilize Evidence-Based Practice** | |
| 1. Classification of disease severity |  |
| 2. Recommendations for changes in a therapeutic plan when indicated |  |
| 1. Application of guidelines, for example,    * ARDSNet • NAEPP •GOLD |  |
| **G. Provide Respiratory Care in High-Risk Situations** | |

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| **NBRC Therapist Combined Detailed Content Outline Comparison with Proposed Curriculum (Program #** **)** | | **List Course Number(s)** |
| 1. Emergency | | |
| a. cardiopulmonary emergencies, excluding CPR | |  |
| b. disaster management | |  |
| c. medical emergency team (MET) / rapid response team | |  |
| 2. Interprofessional communication |  | |
| 3. Patient transport | | |
| a. land / air between hospitals | |  |
| b. within a hospital | |  |
| **H. Assist a Physician / Provider in Performing Procedures** | | |
| 1. Intubation | |  |
| 2. Bronchoscopy | |  |
| 1. Specialized bronchoscopy, for example,    * endobronchial ultrasound (EBUS) •navigational bronchoscopy (ENB) | |  |
| 4. Thoracentesis | |  |
| 5. Tracheostomy | |  |
| 6. Chest tube insertion | |  |
| 7. Insertion of arterial or venous catheters | |  |
| 8. Moderate (conscious) sedation | |  |
| 9. Cardioversion | |  |
| 10. Withdrawal of life support | |  |
| **I. Conduct Patient and Family Education** | | |
| 1. Safety and infection control | |  |

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| **NBRC Therapist Combined Detailed Content Outline Comparison with Proposed Curriculum (Program #** **)** | **List Course Number(s)** |
| 2. Home care and related equipment |  |
| 3. Lifestyle changes, for example,  •smoking cessation •exercise |  |
| 4. Pulmonary rehabilitation |  |
| 5. Disease/ condition management, for example,  •asthma •COPD •CF •tracheostomy care •ventilator dependent |  |