



CRT Examination Matrix

Content Area	Cognitive Level			Number of Items
	Analysis			
	Recall	Application	Analysis	
I. CLINICAL DATA	7	14	4	25
A. Review patient records; recommend diagnostic procedures	2	3	0	5
B. Collect and evaluate clinical information	3	7	0	10
C. Perform procedures; interpret results	2	3	0	5
D. Assess and develop therapeutic plan; recommend modifications	0	1	4	5
II. EQUIPMENT	14	22	0	36
A. Select and obtain; assure cleanliness	5	8	0	13
B. Assemble and check; correct malfunctions; perform quality control	9	14	0	23
III. THERAPEUTIC PROCEDURES	15	36	28	79
A. Educate patients; maintain records and communication; infection control	2	3	0	5
B. Maintain airway; remove bronchopulmonary secretions	2	3	0	5
C. Achieve adequate ventilation and oxygenation	2	5	9	16
D. Assess patient response	2	6	2	10
E. Recommend and modify therapeutics; recommend pharmacologic agents	3	12	17	32
F. Treat cardiopulmonary collapse by protocol	2	4	0	6
G. Assist physician; conduct pulmonary rehabilitation and home care	2	3	0	5
Totals	36	72	32	140

I. Select, Review, Obtain and Interpret Data

SETTING: In any patient care setting, the respiratory therapist reviews existing clinical data and collects or recommends obtaining additional pertinent clinical data. The therapist interprets all data to determine the appropriateness of the prescribed respiratory care plan, and participates in the development of the respiratory care plan.

A. Review data in the patient record and recommend diagnostic procedures.

1. Review existing data in the patient record:
 - a. patient history [e.g., present illness, admission notes, respiratory care orders, progress notes]
 - b. physical examination [e.g., vital signs, physical findings]
 - c. lab data [e.g., CBC, chemistries/electrolytes, coagulation studies, Gram stain, culture and sensitivities, urinalysis]
 - d. pulmonary function and blood gas results
 - e. radiologic studies [e.g., radiographs of chest/upper airway, CT, MRI]
 - f. monitoring data
 - (1) pulmonary mechanics [e.g., maximum inspiratory pressure (MIP), vital capacity]
 - (2) respiratory monitoring [e.g., rate, tidal volume, minute volume, I:E, inspiratory and expiratory pressures; flow, volume and pressure waveforms]
 - (3) lung compliance, airway resistance, work of breathing
 - (4) dead space to tidal volume ratio (V_D/V_T)
 - (5) noninvasive monitoring [e.g., capnography, pulse oximetry, transcutaneous O_2/CO_2]
 - g. results of cardiovascular monitoring
 - (1) ECG, blood pressure, heart rate
 - (2) hemodynamic monitoring [e.g., central venous pressure, cardiac output, pulmonary capillary wedge pressure, pulmonary artery pressures, mixed venous O_2 , $C(a-\bar{v})O_2$, shunt studies (Q_s/Q_t)]
 - h. maternal and perinatal/neonatal history and data [e.g., Apgar scores, gestational age, L/S ratio, pre/post-ductal oxygenation studies]
2. Recommend the following procedures to obtain additional data:
 - a. radiograph of chest and upper airway, CT scan, bronchoscopy, ventilation/perfusion lung scan, barium swallow
 - b. Gram stain, culture and sensitivities
 - c. spirometry before and/or after bronchodilator, maximum voluntary ventilation, diffusing capacity, functional residual capacity, flow-volume loops, body plethysmography, nitrogen washout distribution test, total lung capacity, CO_2 response curve, closing volume, airway resistance, bronchoprovocation, maximum inspiratory pressure (MIP), maximum expiratory pressure (MEP)
 - d. blood gas analysis, insertion of arterial, umbilical and/or central venous, pulmonary artery monitoring lines
 - e. lung compliance, airway resistance, lung mechanics, work of breathing
 - f. ECG, echocardiography, pulse oximetry, transcutaneous O_2/CO_2 monitoring

B. Collect and evaluate clinical information.

1. Assess patient's overall cardiopulmonary status by *inspection* to determine:
 - a. general appearance, muscle wasting, venous distention, peripheral edema, diaphoresis, digital clubbing, cyanosis, capillary refill
 - b. chest configuration, evidence of diaphragmatic movement, breathing pattern, accessory muscle activity, asymmetrical chest movement, intercostal and/or sternal retractions, nasal flaring, character of cough, amount and character of sputum
 - c. transillumination of chest, Apgar score, gestational age
2. Assess patient's overall cardiopulmonary status by *palpation* to determine:
 - a. heart rate, rhythm, force
 - b. asymmetrical chest movements, tactile fremitus, crepitus, tenderness, secretions in the airway, tracheal deviation, endotracheal tube placement
3. Assess patient's overall cardiopulmonary status by *percussion* to determine diaphragmatic excursion and areas of altered resonance.
4. Assess patient's overall cardiopulmonary status by *auscultation* to determine presence of:
 - a. breath sounds [e.g., normal, bilateral, increased, decreased, absent, unequal, rhonchi or crackles (rales), wheezing, stridor, friction rub]
 - b. heart sounds, dysrhythmias, murmurs, bruits
 - c. blood pressure

	Application		
	Recall		Analysis
I. Select, Review, Obtain and Interpret Data	7	14	4
A. Review data in the patient record and recommend diagnostic procedures.	2*	3	0
1. Review existing data in the patient record:			
a. patient history [e.g., present illness, admission notes, respiratory care orders, progress notes]		X**	X
b. physical examination [e.g., vital signs, physical findings]		X	X
c. lab data [e.g., CBC, chemistries/electrolytes, coagulation studies, Gram stain, culture and sensitivities, urinalysis]			X
d. pulmonary function and blood gas results			X
e. radiologic studies [e.g., radiographs of chest/upper airway, CT, MRI]			X
f. monitoring data			
(1) pulmonary mechanics [e.g., maximum inspiratory pressure (MIP), vital capacity]			X
(2) respiratory monitoring [e.g., rate, tidal volume, minute volume, I:E, inspiratory and expiratory pressures; flow, volume and pressure waveforms]			X
(3) lung compliance, airway resistance, work of breathing			X
(4) dead space to tidal volume ratio (V_D/V_T)			X
(5) noninvasive monitoring [e.g., capnography, pulse oximetry, transcutaneous O_2/CO_2]			X
g. results of cardiovascular monitoring			
(1) ECG, blood pressure, heart rate			X
(2) hemodynamic monitoring [e.g., central venous pressure, cardiac output, pulmonary capillary wedge pressure, pulmonary artery pressures, mixed venous O_2 , $C(a-\bar{v})O_2$, shunt studies (Q_s/Q_t)]			X
h. maternal and perinatal/neonatal history and data [e.g., Apgar scores, gestational age, L/S ratio, pre/post-ductal oxygenation studies]		X	X
2. Recommend the following procedures to obtain additional data:			
a. radiograph of chest and upper airway, CT scan, bronchoscopy, ventilation/perfusion lung scan, barium swallow			X
b. Gram stain, culture and sensitivities			X
c. spirometry before and/or after bronchodilator, maximum voluntary ventilation, diffusing capacity, functional residual capacity, flow-volume loops, body plethysmography, nitrogen washout distribution test, total lung capacity, CO_2 response curve, closing volume, airway resistance, bronchoprovocation, maximum inspiratory pressure (MIP), maximum expiratory pressure (MEP)			X
d. blood gas analysis, insertion of arterial, umbilical and/or central venous, pulmonary artery monitoring lines			X
e. lung compliance, airway resistance, lung mechanics, work of breathing			X
f. ECG, echocardiography, pulse oximetry, transcutaneous O_2/CO_2 monitoring			X
B. Collect and evaluate clinical information.	3	7	0
1. Assess patient's overall cardiopulmonary status by <i>inspection</i> to determine:			
a. general appearance, muscle wasting, venous distention, peripheral edema, diaphoresis, digital clubbing, cyanosis, capillary refill			X
b. chest configuration, evidence of diaphragmatic movement, breathing pattern, accessory muscle activity, asymmetrical chest movement, intercostal and/or sternal retractions, nasal flaring, character of cough, amount and character of sputum			X
c. transillumination of chest, Apgar score, gestational age			X
2. Assess patient's overall cardiopulmonary status by <i>palpation</i> to determine:			
a. heart rate, rhythm, force			X
b. asymmetrical chest movements, tactile fremitus, crepitus, tenderness, secretions in the airway, tracheal deviation, endotracheal tube placement			X
3. Assess patient's overall cardiopulmonary status by <i>percussion</i> to determine diaphragmatic excursion and areas of altered resonance.			X
4. Assess patient's overall cardiopulmonary status by <i>auscultation</i> to determine presence of:			
a. breath sounds [e.g., normal, bilateral, increased, decreased, absent, unequal, rhonchi or crackles (rales), wheezing, stridor, friction rub]			X
b. heart sounds, dysrhythmias, murmurs, bruits			X
c. blood pressure			X

* The number in each column is the number of items in that content area and cognitive level contained in each examination. For example, in category I.A., one item will be asked at the recall level, one item at the application level and three items at the analysis level. The items could be asked relative to any tasks listed (1-2) under category I.A.

** Note: An "x" denotes the examination does NOT contain items for the given task at the cognitive level indicated in the respective column (Recall, Application, Analysis).

	Application		
	Recall		
5. Interview patient to determine:			
a. level of consciousness, orientation to time, place and person, emotional state, ability to cooperate			X
b. presence of dyspnea and/or orthopnea, work of breathing, sputum production, exercise tolerance and activities of daily living			X
c. physical environment, social support systems, nutritional status			X
6. Assess patient's learning needs [e.g., age and language appropriateness, education level, prior disease and medication knowledge]			X
7. Review chest radiograph to determine:			
a. position of endotracheal or tracheostomy tube, evidence of endotracheal or tracheostomy tube cuff hyperinflation			X
b. presence of, or changes in, pneumothorax or subcutaneous emphysema, other extra-pulmonary air, consolidation and/or atelectasis, pulmonary infiltrates			X
c. position of chest tube(s), nasogastric and/or feeding tube, pulmonary artery catheter (Swan-Ganz), pacemaker, CVP, and other catheters		X	X
d. presence and position of foreign bodies			X
e. position of, or changes in, hemidiaphragms, hyperinflation, pleural fluid, pulmonary edema, mediastinal shift, patency and size of major airways			X
8. Review lateral neck radiograph to determine:			
a. presence of epiglottitis and subglottic edema			X
b. presence or position of foreign bodies			X
c. airway narrowing			X
9. Perform bedside procedures to determine:			
a. ECG, pulse oximetry, transcutaneous O ₂ /CO ₂ monitoring, capnography, mass spectrometry			X
b. tidal volume, minute volume, I:E			X
c. blood gas analysis, P(A-a)O ₂ , alveolar ventilation, V _D /V _T , Q _s /Q _t , mixed venous sampling			X
d. peak flow, maximum inspiratory pressure (MIP), maximum expiratory pressure (MEP), forced vital capacity, timed forced expiratory volumes [e.g., FEV ₁], lung compliance, lung mechanics			X
e. apnea monitoring, sleep studies, respiratory impedance plethysmography			X
f. tracheal tube cuff pressure, volume			X
10. Interpret results of bedside procedures to determine:			
a. ECG, pulse oximetry, transcutaneous O ₂ /CO ₂ monitoring, capnography, mass spectrometry			X
b. tidal volume, minute volume, I:E			X
c. blood gas analysis, P(A-a)O ₂ , alveolar ventilation, V _D /V _T , Q _s /Q _t , mixed venous sampling			X
d. peak flow, maximum inspiratory pressure (MIP), maximum expiratory pressure (MEP), forced vital capacity, timed forced expiratory volumes [e.g., FEV ₁], lung compliance, lung mechanics			X
e. apnea monitoring, sleep studies, respiratory impedance plethysmography			X
f. tracheal tube cuff pressure, volume			X
C. Perform procedures and interpret results.	2	3	0
1. Perform and/or measure the following:			
a. ECG, pulse oximetry, transcutaneous O ₂ /CO ₂ monitoring			X
b. spirometry before and/or after bronchodilator, maximum voluntary ventilation, diffusing capacity, functional residual capacity, flow-volume loops, body plethysmography, nitrogen washout distribution test, total lung capacity, CO ₂ response curve, closing volume, airway resistance			X
c. arterial sampling and blood gas analysis, co-oximetry, P(A-a)O ₂			X
d. ventilator flow, volume, and pressure waveforms, lung compliance			X
2. Interpret results of the following:			
a. spirometry before and/or after bronchodilator, maximum voluntary ventilation, diffusing capacity, functional residual capacity, flow-volume loops, body plethysmography, nitrogen washout distribution test, total lung capacity, CO ₂ response curve, closing volume, airway resistance, bronchoprovocation			X
b. ECG, pulse oximetry, transcutaneous O ₂ /CO ₂ monitoring			X
c. arterial sampling and blood gas analysis, co-oximetry, P(A-a)O ₂			X
d. ventilator flow, volume, and pressure waveforms, lung compliance			X
D. Determine the appropriateness and participate in the development of the respiratory care plan, and recommend modifications.	0	1	4
1. Determine the appropriateness of the prescribed respiratory care plan and recommend modifications where indicated:			
a. analyze available data to determine pathophysiological state	X		
b. review planned therapy to establish therapeutic plan	X		

	Application		
	Recall		
c. determine appropriateness of prescribed therapy and goals for identified pathophysiological state	X		
d. recommend changes in therapeutic plan if indicated (based on data)	X		
e. perform respiratory care quality assurance	X		X
f. implement quality improvement program	X		X
g. review interdisciplinary patient and family care plan.	X		X
2. Participate in development of respiratory care plan [e.g., case management, develop and apply protocols, disease management education]	X		X

II. Select, Assemble and Check Equipment for Proper Function, Operation and Cleanliness

SETTING: In any patient care setting, the respiratory therapist selects, assembles, and assures cleanliness of all equipment used in providing respiratory care. The therapist checks all equipment and corrects malfunctions.

14 22 0

A. Select, obtain, and assure equipment cleanliness.

5 8 0

1. Select and obtain equipment appropriate to the respiratory care plan:			
a. oxygen administration devices			
(1) nasal cannula, mask, reservoir mask (partial rebreathing, nonrebreathing), face tents, transtracheal oxygen catheter, oxygen conserving cannulas			X
(2) air-entrainment devices, tracheostomy collar and T-piece, oxygen hoods and tents			X
(3) CPAP devices			X
b. humidifiers [e.g., bubble, passover, cascade, wick, heat moisture exchanger].			X
c. aerosol generators [e.g., pneumatic nebulizer, ultrasonic nebulizer].			X
d. resuscitation devices [e.g., manual resuscitator (bag-valve), pneumatic (demand-valve), mouth-to-valve mask resuscitator]			X
e. ventilators			
(1) pneumatic, electric, microprocessor, fluidic			X
(2) noninvasive positive pressure			X
f. artificial airways			
(1) oro- and nasopharyngeal airways			X
(2) oral, nasal and double-lumen endotracheal tubes			X
(3) tracheostomy tubes and buttons			X
(4) intubation equipment [e.g., laryngoscope and blades, exhaled CO ₂ detection devices]			X
g. suctioning devices [e.g., suction catheters, specimen collectors, oropharyngeal suction devices].			X
h. gas delivery, metering and clinical analyzing devices			
(1) regulators, reducing valves, connectors and flowmeters, air/oxygen blenders, pulse-dose systems			X
(2) oxygen concentrators, air compressors, liquid oxygen systems			X
(3) gas cylinders, bulk systems and manifolds			X
(4) capnograph, blood gas analyzer and sampling devices, co-oximeter, transcutaneous O ₂ /CO ₂ monitor, pulse oximeter			X
(5) CO, He, O ₂ and specialty gas analyzers			X
i. patient breathing circuits			
(1) IPPB, continuous mechanical ventilation			X
(2) CPAP, PEEP valve assembly			X
j. aerosol (mist) tents			X
k. incentive breathing devices			X
l. percussors and vibrators			X
m. manometers and gauges			
(1) manometers – water, mercury and aneroid, inspiratory/expiratory pressure meters, cuff pressure manometers			X
(2) pressure transducers			X
n. respirometers [e.g., flow-sensing devices (pneumotachometer), volume displacement]			X
o. electrocardiography devices [e.g., ECG oscilloscope monitors, ECG machines (12-lead), Holter monitors]			X
p. vacuum systems [e.g., pumps, regulators, collection bottles, pleural drainage devices]			X
q. metered dose inhalers (MDI), MDI spacers			X
r. Small Particle Aerosol Generators (SPAG)			X
s. bronchoscopes			X
2. Assure selected equipment cleanliness [e.g., select or determine appropriate agent and technique for disinfection and/or sterilization, perform procedures for disinfection and/or sterilization, monitor effectiveness of sterilization procedures]			X

	Application		
	Recall		
B. Assemble and check for proper equipment function, identify and take action to correct equipment malfunctions, and perform quality control.	9	14	0
1. Assemble, check for proper function, and identify malfunctions of equipment:			
a. oxygen administration devices			
(1) nasal cannula, mask, reservoir mask (partial rebreathing, nonrebreathing), face tents, transtracheal oxygen catheter, oxygen conserving cannulas			X
(2) air-entrainment devices, tracheostomy collar and T-piece, oxygen hoods and tents			X
(3) CPAP devices			X
b. humidifiers [e.g., bubble, passover, cascade, wick, heat moisture exchanger]			X
c. aerosol generators [e.g., pneumatic nebulizer, ultrasonic nebulizer]			X
d. resuscitation devices [e.g., manual resuscitator (bag-valve), pneumatic (demand-valve), mouth-to-valve mask resuscitator]			X
e. ventilators			
(1) pneumatic, electric, microprocessor, fluidic			X
(2) noninvasive positive pressure			X
f. artificial airways			
(1) oro- and nasopharyngeal airways			X
(2) oral, nasal and double-lumen endotracheal tubes			X
(3) tracheostomy tubes and buttons			X
(4) intubation equipment [e.g., laryngoscope and blades, exhaled CO ₂ detection devices]			X
g. suctioning devices [e.g., suction catheters, specimen collectors, oropharyngeal suction devices]			X
h. gas delivery, metering and clinical analyzing devices			
(1) regulators, reducing valves, connectors and flowmeters, air/oxygen blenders, pulse-dose systems			X
(2) oxygen concentrators, air compressors, liquid oxygen systems			X
(3) gas cylinders, bulk systems and manifolds			X
(4) capnograph, blood gas analyzer and sampling devices, co-oximeter, transcutaneous O ₂ /CO ₂ monitor, pulse oximeter			X
(5) CO, He, O ₂ and specialty gas analyzers			X
i. patient breathing circuits			
(1) IPPB, continuous mechanical ventilation			X
(2) CPAP, PEEP valve assembly			X
j. aerosol (mist) tents			X
k. incentive breathing devices			X
l. percussors and vibrators			X
m. manometers – water, mercury and aneroid, inspiratory/expiratory pressure meters, cuff pressure manometers			X
n. respirometers [e.g., flow-sensing devices (pneumotachometer), volume displacement]			X
o. electrocardiography devices [e.g., ECG oscilloscope monitors, ECG machines (12-lead), Holter monitors]			X
p. vacuum systems [e.g., pumps, regulators, collection bottles, pleural drainage devices]			X
q. metered dose inhalers (MDI), MDI spacers			X
r. Small Particle Aerosol Generators (SPAG)			X
2. Take action to correct malfunctions of equipment:			
a. oxygen administration devices			
(1) nasal cannula, mask, reservoir mask (partial rebreathing, nonrebreathing), face tents, transtracheal oxygen catheter, oxygen conserving cannulas			X
(2) air-entrainment devices, tracheostomy collar and T-piece, oxygen hoods and tents			X
(3) CPAP devices			X
b. humidifiers [e.g., bubble, passover, cascade, wick, heat moisture exchanger]			X
c. aerosol generators [e.g., pneumatic nebulizer, ultrasonic nebulizer]			X
d. resuscitation devices [e.g., manual resuscitator (bag-valve), pneumatic (demand-valve), mouth-to-valve mask resuscitator]			X
e. ventilators			
(1) pneumatic, electric, microprocessor, fluidic			X
(2) noninvasive positive pressure			X
f. artificial airways			
(1) oro- and nasopharyngeal airways			X
(2) oral, nasal and double-lumen endotracheal tubes			X
(3) tracheostomy tubes and buttons			X
(4) intubation equipment [e.g., laryngoscope and blades, exhaled CO ₂ detection devices]			X

	Application		
	Recall		
g. suctioning devices [e.g., suction catheters, specimen collectors, oropharyngeal suction devices]			X
h. gas delivery, metering and clinical analyzing devices			
(1) regulators, reducing valves, connectors and flowmeters, air/oxygen blenders, pulse-dose systems			X
(2) oxygen concentrators, air compressors, liquid oxygen systems			X
(3) gas cylinders, bulk systems and manifolds			X
(4) capnograph, blood gas analyzer and sampling devices, co-oximeter, transcutaneous O ₂ /CO ₂ monitor, pulse oximeter			X
i. patient breathing circuits			
(1) IPPB, continuous mechanical ventilation			X
(2) CPAP, PEEP valve assembly			X
j. aerosol (mist) tents			X
k. incentive breathing devices			X
l. percussors and vibrators			X
m. manometers – water, mercury and aneroid, inspiratory/expiratory pressure meters, cuff pressure manometers			X
n. respirometers [e.g., flow-sensing devices (pneumotachometer), volume displacement]			X
o. vacuum systems [e.g., pumps, regulators, collection bottles, pleural drainage devices]			X
p. metered dose inhalers (MDI), MDI spacers			X
3. Perform quality control procedures for:			
a. blood gas analyzers and sampling devices, co-oximeters			X
b. pulmonary function equipment, ventilator volume/flow/pressure calibration			X
c. gas metering devices			X
III. Initiate, Conduct, and Modify Prescribed Therapeutic Procedures			
SETTING: In any patient care setting, the respiratory therapist communicates relevant information to members of the healthcare team, maintains patient records, initiates, conducts, and modifies prescribed therapeutic procedures to achieve the desired objectives and assists the physician with rehabilitation and homecare.	15	36	28
A. Explain planned therapy and goals to patient, maintain records and communication, and protect patient from nosocomial infection.	2	3	0
1. Explain planned therapy and goals to patient in understandable terms to achieve optimal therapeutic outcome, counsel patient and family concerning smoking cessation, disease management education			X
2. Maintain records and communication:			
a. record therapy and results using conventional terminology as required in the healthcare setting and/or by regulatory agencies [e.g., date, time, frequency of therapy, medication, and ventilatory data]			X
b. note and interpret patient's response to therapy			
(1) effects of therapy, adverse reactions, patient's subjective and attitudinal response to therapy			X
(2) verify computations and note erroneous data			X
(3) auscultatory findings, cough and sputum production and characteristics			X
(4) vital signs [e.g., heart rate, respiratory rate, blood pressure, body temperature]			X
(5) pulse oximetry, heart rhythm, capnography			X
c. communicate information regarding patient's clinical status to appropriate members of the healthcare team			X
d. communicate information relevant to coordinating patient care and discharge planning [e.g., scheduling, avoiding conflicts, sequencing of therapies]			X
e. apply computer technology to patient management [e.g., ventilator waveform analysis, electronic charting, patient care algorithms].			X
f. communicate results of therapy and alter therapy per protocol(s)			X
3. Protect patient from nosocomial infection by adherence to infection control policies and procedures [e.g., universal/standard precautions, blood and body fluid precautions]			X
B. Conduct therapeutic procedures to maintain a patent airway and remove bronchopulmonary secretions.	2	3	0
1. Maintain a patent airway including the care of artificial airways:			
a. insert oro- and nasopharyngeal airway, select endotracheal or tracheostomy tube, perform endotracheal intubation, change tracheostomy tube, maintain proper cuff inflation, position of endotracheal or tracheostomy tube			X
b. maintain adequate humidification.			X
c. extubate the patient			X
d. properly position patient			X

	Application		
	Recall		
e. identify endotracheal tube placement by available means			X
2. Remove bronchopulmonary secretions:			
a. perform postural drainage, perform percussion and/or vibration			X
b. suction endotracheal or tracheostomy tube, perform nasotracheal or orotracheal suctioning, select closed system suction catheter			X
c. administer aerosol therapy and prescribed agents [e.g., bronchodilators, corticosteroids, saline, mucolytics]			X
d. instruct and encourage bronchopulmonary hygiene techniques [e.g., coughing techniques, autogenic drainage, positive expiratory pressure device (PEP), intrapulmonary percussive ventilation (IPV), Flutter® High Frequency Chest Wall Oscillation (HFCWO)]			X
C. Conduct therapeutic procedures to achieve adequate ventilation and oxygenation.	2	5	9
1. Achieve adequate spontaneous and artificial ventilation:			
a. instruct in proper breathing techniques, instruct in inspiratory muscle training techniques, encourage deep breathing, instruct and monitor techniques of incentive spirometry			X
b. initiate and adjust IPPB therapy			X
c. select appropriate ventilator			
d. initiate and adjust continuous mechanical ventilation when no settings are specified and when settings are specified [e.g., select appropriate tidal volume, rate, and/or minute ventilation]			
e. initiate nasal/mask ventilation, initiate and adjust external negative pressure ventilation [e.g., cuirass]			
f. initiate and adjust ventilator modes [e.g., A/C, SIMV, pressure support ventilation (PSV), pressure control ventilation (PCV)]			X
g. administer prescribed bronchoactive agents [e.g., bronchodilators, corticosteroids, mucolytics]			X
h. institute and modify weaning procedures			
2. Achieve adequate arterial and tissue oxygenation:			
a. initiate and adjust CPAP, PEEP, and noninvasive positive pressure			X
b. initiate and adjust combinations of ventilatory techniques [e.g., SIMV, PEEP, PS, PCV]			X
c. position patient to minimize hypoxemia, administer oxygen (on or off ventilator), prevent procedure-associated hypoxemia [e.g., oxygenate before and after suctioning and equipment changes]			X
D. Evaluate and monitor patient's response to respiratory care.	2	6	2
1. Recommend and review chest radiograph			X
2. Interpret results of arterial, capillary, and mixed venous blood gas analysis			
3. Perform arterial puncture, capillary blood gas sampling, and venipuncture; obtain blood from arterial or pulmonary artery lines; perform transcutaneous O ₂ /CO ₂ , pulse oximetry, co-oximetry, and capnography monitoring			X
4. Observe changes in sputum production and consistency, note patient's subjective response to therapy and mechanical ventilation			X
5. Measure and record vital signs, monitor cardiac rhythm, evaluate fluid balance (intake and output)			X
6. Perform spirometry/determine vital capacity, measure lung compliance and airway resistance, interpret ventilator flow, volume and pressure waveforms, measure peak flow			X
7. Monitor mean airway pressure, adjust and check alarm systems, measure tidal volume, respiratory rate, airway pressures, I:E, and maximum inspiratory pressure (MIP)			X
8. Measure F _I O ₂ and/or liter flow			X
9. Monitor cuff pressures			X
10. Auscultate chest and interpret changes in breath sounds			X
E. Modify and recommend modifications in therapeutics and recommend pharmacologic agents.	3	12	17
1. Make necessary modifications in therapeutic procedures based on patient response:			
a. terminate treatment based on patient's response to therapy being administered			
b. modify IPPB:			
(1) adjust sensitivity, flow, volume, pressure, F _I O ₂			X
(2) adjust expiratory retard			X
(3) change patient – machine interface [e.g., mouthpiece, mask]			X
c. modify incentive breathing devices [e.g., increase or decrease incentive goals]			X
d. modify aerosol therapy:			
(1) modify patient breathing pattern			X
(2) change type of equipment, change aerosol output			X
(3) change dilution of medication, adjust temperature of the aerosol			X

	Application		
	Recall		
e. modify oxygen therapy:			
(1) change mode of administration, adjust flow, and F _I O ₂			X
(2) set up or change an O ₂ blender			X
(3) set up an O ₂ concentrator or liquid O ₂ system.			X
f. modify bronchial hygiene therapy [e.g., alter position of patient, alter duration of treatment and techniques, coordinate sequence of therapies, alter equipment used and PEP therapy].			X
g. modify artificial airways management:			
(1) alter endotracheal or tracheostomy tube position, change endotracheal or tracheostomy tube			X
(2) change type of humidification equipment			X
(3) initiate suctioning			X
(4) inflate and deflate the cuff.			X
h. modify suctioning:			
(1) alter frequency and duration of suctioning			X
(2) change size and type of catheter			X
(3) alter negative pressure			X
(4) instill irrigating solutions			X
i. modify mechanical ventilation:			
(1) adjust ventilator settings [e.g., ventilatory mode, tidal volume, F _I O ₂ , inspiratory plateau, PEEP and CPAP levels, pressure support and pressure control levels, noninvasive positive pressure, alarm settings]			
(2) change patient breathing circuitry, change type of ventilator.			X
(3) change mechanical dead space.			X
j. modify weaning procedures			
2. Recommend the following modifications in the respiratory care plan based on patient response:			
a. change F _I O ₂ and oxygen flow			
b. change mechanical dead space			
c. use or change artificial airway [e.g., endotracheal tube, tracheostomy]			
d. change ventilatory techniques [e.g., tidal volume, respiratory rate, ventilatory mode, inspiratory effort (sensitivity), PEEP/CPAP, mean airway pressure, pressure support, inverse ratio ventilation, noninvasive positive pressure]			
e. use muscle relaxant(s) and/or sedatives			
f. wean or change weaning procedures and extubation			
g. institute bronchopulmonary hygiene procedures [e.g., PEP, IS, IPV, CPT]			
h. modify treatments based on patient response [e.g., change duration of therapy, change position]			
i. change aerosol drug dosage or concentration			
j. insert chest tube			
3. Recommend use of pharmacologic agents [e.g., antiinfectives, antiinflammatories, bronchodilators, cardiac agents, diuretics, mucolytics/proteolytics, narcotics, sedatives, surfactants, vasoactive agents]			
F. Treat cardiopulmonary collapse according to the following protocols.	2	4	0
1. BCLS			X
2. ACLS			X
3. PALS			X
4. NRP			X
G. Assist the physician, initiate and conduct pulmonary rehabilitation and home care.	2	3	0
1. Act as an assistant to the physician performing special procedures including:			
a. bronchoscopy			X
b. thoracentesis			X
c. tracheostomy			X
d. cardioversion			X
e. intubation			X
2. Initiate and conduct pulmonary rehabilitation and home care within the prescription:			
a. explain planned therapy and goals to patient in understandable terms to achieve optimal therapeutic outcome, counsel patient and family concerning smoking cessation, disease management			X
b. assure safety and infection control.			X
c. modify respiratory care procedures for use in the home.			X
d. conduct patient education and disease management programs			X
TOTALS	36	72	32