



 <b>Adult Critical Care Specialist Examination Detailed Content Outline</b> <i>Multiple-choice items are linked to open cells.</i>	Items				
	Ethics	Cognitive Levels			Total
		Recall	Application	Analysis	
<b>I. RESPIRATORY CRITICAL CARE</b>		<b>5</b>	<b>18</b>	<b>35</b>	<b>58</b>
<b>A. Manage Airways</b>		<b>1</b>	<b>3</b>	<b>6</b>	<b>10</b>
1. Airway clearance techniques					
2. Difficult airway recognition and techniques					
3. Advanced techniques during intubation e.g., <ul style="list-style-type: none"> <li>• cricoid pressure</li> <li>• specialty visualization devices</li> <li>• tube changers</li> </ul>					
4. Artificial airways <ul style="list-style-type: none"> <li>a. exchanging endotracheal tubes</li> <li>b. specialty tracheostomy tubes</li> </ul>					
<b>B. Administer Specialty Gases</b>		<b>0</b>	<b>2</b>	<b>2</b>	<b>4</b>
1. Nitric oxide					
2. Helium-oxygen					
<b>C. Manage Ventilation</b>		<b>4</b>	<b>12</b>	<b>24</b>	<b>40</b>
1. Initial settings					
2. Advanced modes e.g., <ul style="list-style-type: none"> <li>• techniques to enhance ventilation</li> <li>• techniques to enhance synchrony</li> <li>• techniques to enhance oxygenation</li> </ul>					
3. Noninvasive					
4. Waveform analyses					
5. Rescue techniques <ul style="list-style-type: none"> <li>a. recruitment maneuvers</li> <li>b. inhaled vasodilators e.g., <ul style="list-style-type: none"> <li>• nitric oxide</li> <li>• prostacyclin</li> </ul> </li> <li>c. high frequency ventilation</li> <li>d. prone patient positioning</li> </ul>					
6. Strategies <ul style="list-style-type: none"> <li>a. liberation (weaning) from mechanical ventilation e.g., <ul style="list-style-type: none"> <li>• protocols</li> </ul> </li> <li>b. prevention of lung injury from mechanical ventilation</li> <li>c. management of ARDS</li> <li>d. treatment of patients with traumatic injuries e.g., <ul style="list-style-type: none"> <li>• chest</li> <li>• cervical spine</li> <li>• long bone fractures</li> <li>• burns</li> <li>• head</li> <li>• abdomen</li> </ul> </li> </ul>					
7. Differential / independent lung ventilation					
8. Intrahospital transport of unstable and high-risk patients					
9. Optimizing patient-ventilator interaction					

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<b>D. Deliver Pharmacologic Agents</b>		0	1	3	4
1. Aerosolized agents other than bronchodilators e.g., <ul style="list-style-type: none"> <li>• narcotics</li> <li>• vasodilators</li> <li>• antimicrobials</li> </ul>					
2. Airway instillations other than for ACLS e.g., <ul style="list-style-type: none"> <li>• epinephrine</li> <li>• cold saline</li> <li>• lidocaine</li> <li>• topical thrombin</li> </ul>					
<b>II. GENERAL CRITICAL CARE</b>		7	27	58	92
<b>A. Assess Patient Status and Changes in Status</b>		0	5	22	27
1. Difficult airway issues e.g., <ul style="list-style-type: none"> <li>• patency</li> <li>• protection</li> <li>• Mallampatti classification</li> <li>• thyromental distance</li> </ul>					
2. Chest imaging e.g., <ul style="list-style-type: none"> <li>• radiograph</li> <li>• ultrasound</li> <li>• CT</li> <li>• MRI</li> <li>• PET</li> <li>• V/Q</li> </ul>					
3. Indices of respiratory physiology and mechanics e.g., <ul style="list-style-type: none"> <li>• oxygenation</li> <li>• carbon dioxide clearance</li> <li>• work of breathing</li> </ul>					
4. Neurologic e.g., <ul style="list-style-type: none"> <li>• EEG</li> <li>• level of consciousness</li> <li>• respiratory function</li> <li>• brain death criteria</li> <li>• neuromuscular function</li> <li>• seizures</li> <li>• stroke</li> </ul>					
5. Cardiovascular e.g., <ul style="list-style-type: none"> <li>• physical assessment</li> <li>• coronary artery disease</li> <li>• diagnostic testing</li> <li>• pulmonary hypertension</li> <li>• arrhythmias</li> <li>• systemic hypertension</li> <li>• CHF</li> </ul>					
6. Hemodynamics e.g., <ul style="list-style-type: none"> <li>• pre-load</li> <li>• contractility</li> <li>• after-load</li> <li>• rate control</li> </ul>					
7. Differentiation among types of shock e.g., <ul style="list-style-type: none"> <li>• anaphylactic</li> <li>• hypovolemic</li> <li>• cardiogenic</li> <li>• neurogenic</li> <li>• septic</li> </ul>					
8. Recognition of respiratory failure mechanisms					
a. ARDS					
b. aspiration					
c. atelectasis					
d. drug induced					

	Items				Total
	Ethics	Cognitive Levels			
		Recall	Application	Analysis	
e. hypoventilation syndromes					
f. neuromuscular					
g. obstructive lung disease					
h. pneumonia					
i. post-operative					
j. pulmonary contusion					
k. pulmonary edema e.g., • cardiogenic • noncardiogenic					
l. pulmonary embolism					
m. restrictive lung disease					
n. sleep apnea					
o. transfusion-related lung injury					
p. upper airway obstruction					
9. Renal function e.g., • fluid status • acid-base balance					
10. Metabolic e.g., • respiratory quotient • acid-base balance • nutrition/feeding • endocrine disorders					
11. Gastrointestinal e.g., • abdominal distension • ileus • feeding tube placement • GI bleeding / endoscopy					
12. Coagulation e.g., • indices • risk for deep vein thrombosis • platelet count					
13. Musculoskeletal e.g., • spinal cord injury • rhabdomyolysis • ICU myopathy					
<b>B. Anticipate Care Based on Laboratory Results</b>		<b>1</b>	<b>3</b>	<b>6</b>	<b>10</b>
1. CBC					
2. Cardiac markers e.g., • troponin • BNP					
3. Electrolytes, magnesium, calcium, and phosphate					
4. Acid-base status and lactate level					
5. Coagulation studies					
6. Culture and sensitivities e.g., • blood • sputum • stool • urine					
7. Sputum Gram stain					
8. Hemoximetry (co-oximetry) e.g., • carboxyhemoglobin • methemoglobin					

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9. BUN and creatinine					
10. Fluid analyses e.g., <ul style="list-style-type: none"> <li>• pleural</li> <li>• urine</li> <li>• CSF</li> <li>• peritoneal</li> </ul>					
<b>C. Anticipate Care Based on Imaging and Reports of Imaging</b>		<b>1</b>	<b>2</b>	<b>4</b>	<b>7</b>
1. Plain radiographs e.g., <ul style="list-style-type: none"> <li>• chest</li> <li>• spine</li> <li>• abdominal</li> </ul>					
2. CT e.g., <ul style="list-style-type: none"> <li>• brain</li> <li>• chest</li> <li>• abdomen</li> </ul>					
3. MRI					
4. Ultrasound e.g., <ul style="list-style-type: none"> <li>• pleural</li> <li>• vascular</li> <li>• echocardiography</li> </ul>					
5. Nuclear scans e.g., <ul style="list-style-type: none"> <li>• <math>\dot{V}/\dot{Q}</math> lung</li> <li>• cerebral blood flow</li> </ul>					
6. Angiography e.g., <ul style="list-style-type: none"> <li>• pulmonary</li> <li>• coronary</li> <li>• bronchial</li> <li>• gastrointestinal</li> </ul>					
<b>D. Anticipate Effects of Pharmacologic Agents</b>		<b>1</b>	<b>3</b>	<b>7</b>	<b>11</b>
1. Sedatives / hypnotics					
2. Analgesia e.g., <ul style="list-style-type: none"> <li>• regional</li> <li>• systemic</li> </ul>					
3. Neuromuscular blocking agents e.g., <ul style="list-style-type: none"> <li>• vecuronium</li> <li>• succinylcholine</li> <li>• cisatracurium</li> </ul>					
4. Reversal agents e.g., <ul style="list-style-type: none"> <li>• naloxone</li> <li>• flumazenil</li> <li>• neostigmine</li> <li>• edrophonium</li> </ul>					
5. Vasoactive and inotropic agents					
6. Drugs that induce methemoglobinemia e.g., <ul style="list-style-type: none"> <li>• lidocaine</li> <li>• dapsone</li> <li>• nitric oxide</li> <li>• nitroprusside</li> <li>• benzocaine (Hurricane) spray</li> </ul>					
7. Prophylaxis for					
a. deep vein thrombosis					
b. stress ulcers					
c. delirium					

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8. Diuretics					
9. Drug interactions					
10. Influence of co-morbid conditions					
<b>E. Anticipate Care Based on Nutritional Status</b>		<b>1</b>	<b>2</b>	<b>1</b>	<b>4</b>
1. Complications of malnutrition e.g., <ul style="list-style-type: none"> <li>• protein wasting</li> <li>• hypoglycemia</li> <li>• respiratory muscle catabolism</li> </ul>					
2. Complications of feedings e.g., <ul style="list-style-type: none"> <li>• aspiration</li> <li>• TPN line infection</li> <li>• malplacement of feeding tube</li> </ul>					
3. Route of feeding e.g., <ul style="list-style-type: none"> <li>• enteral</li> <li>• parenteral</li> </ul>					
4. Morbid obesity					
5. Metabolic study e.g., <ul style="list-style-type: none"> <li>• caloric requirements</li> <li>• exhaled gas analysis</li> <li>• over-fed</li> <li>• under-fed</li> </ul>					
<b>F. Prevent Ventilator Associated Pneumonia</b>		<b>2</b>	<b>2</b>	<b>3</b>	<b>7</b>
1. Oral care					
2. Bed position					
3. Minimizing intubation time e.g., <ul style="list-style-type: none"> <li>• aggressive weaning protocols</li> <li>• noninvasive positive pressure ventilation</li> </ul>					
4. Ventilator circuit care e.g., <ul style="list-style-type: none"> <li>• keeping closed</li> <li>• optimal position</li> <li>• closed suction</li> <li>• heated wire/HME</li> <li>• aerosol medication delivery</li> </ul>					
5. Using specialty airways e.g., <ul style="list-style-type: none"> <li>• silver coated</li> <li>• polyurethane cuff</li> <li>• subglottic suction endotracheal tube</li> </ul>					
<b>G. Recognize and Manage Patients with Infections and Sepsis</b>		<b>0</b>	<b>3</b>	<b>4</b>	<b>7</b>
1. Recognition of clinical and laboratory signs consistent with infections and sepsis e.g., <ul style="list-style-type: none"> <li>• pneumonia</li> <li>• catheter-associated</li> </ul>					
2. Management of patients with infections and sepsis e.g., <ul style="list-style-type: none"> <li>• pneumonia</li> <li>• catheter-associated</li> </ul>					
3. Prevention measures e.g., <ul style="list-style-type: none"> <li>• hand hygiene</li> <li>• skin integrity</li> <li>• catheter care</li> </ul>					

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<b>H. Manage End-of-Life Care</b>		0	1	3	4
1. Differentiation of the potential need for end-of-life care e.g., • palliative • hospice					
2. Determination of brain death					
3. Withdrawal of life support					
4. Care of organ donors					
<b>I. Prepare for Disasters</b>		1	1	1	3
1. Procedures for patient movement and protection					
2. Triage procedures					
3. Equipment and supply management					
<b>J. Interact with Members of an Interdisciplinary Team</b>		0	1	2	3
1. Suggested modifications to the care plan based on the respiratory assessment					
2. Response to modifications to the care plan from other team members					
<b>K. Perform Procedures</b>		0	1	1	2
1. Arterial line insertion and monitoring					
2. Mini-BAL					
<b>L. Troubleshoot Systems</b>		0	3	4	7
1. Chest tube drainage					
2. Bronchoscopy					
3. Hemodynamic monitoring					
4. Inhaled vasodilator delivery e.g., • nitric oxide • prostaglandins					
<b>Totals</b>	<b>5</b>	<b>12</b>	<b>45</b>	<b>93</b>	<b>150</b>

**Secondary Test Specifications**

Item content also will be classified by the condition or disorder described for each patient

Conditions or Disorders	Item Counts Across the Examination		
	Target	Acceptable Range for Each Test Form	
		Minimum	Maximum
1-GENERAL <i>No specific condition or disorder</i>	36	30	42
2-ARDS	15	11	19
3-COPD	13	10	16
4-CARDIAC	13	10	16
5-POST-SURGICAL	11	8	14
6-ASTHMA	11	8	14
7-TRAUMA	10	7	13
8-NEUROLOGIC	7	5	9
9-SHOCK	7	5	9
10-PULMONARY EMBOLIS (pulmonary embolism)	7	5	9
11-IMMUNOCOMPROMISED	6	4	8
12-PULMONARY HYPERTEN (pulmonary hypertension)	4	2	6
13-BARIATRIC	4	2	6
14-BURN/INHALATION I (burn / inhalation injury)	3	1	5
15-PSYCHIATRIC	2	1	3
16-CYSTIC FIBROSIS	1	0	1
<b>Total</b>	<b>150</b>		

**Adult Critical Care Specialist  
Admission Requirements**

1. Applicants shall be a Registered Respiratory Therapist (RRT) for at least one year prior to applying for the Adult Critical Care Specialty Examination.

**Adult Critical Care Specialist  
Examination Fees**

New Applicant	Repeat Applicant
\$300	\$250