




 <b>Adult Critical Care Specialty Examination Detailed Content Outline</b> <i>Multiple-choice items are linked to open cells.</i>	Items				Total
	Ethics	Cognitive Levels			
		Recall	Application	Analysis	
<b>I. RESPIRATORY CRITICAL CARE</b>		<b>3</b>	<b>17</b>	<b>39</b>	<b>59</b>
<b>A. Manage Airways</b>		<b>1</b>	<b>4</b>	<b>5</b>	<b>10</b>
1. Airway clearance techniques					
2. Difficult airway recognition and techniques					
3. Advanced techniques during intubation, for example, <ul style="list-style-type: none"> <li>• cricoid pressure</li> <li>• tube changers</li> <li>• specialty visualization devices</li> </ul>					
4. Artificial airways <ol style="list-style-type: none"> <li>a. specialty endotracheal tubes, for example, <ul style="list-style-type: none"> <li>• subglottic suction</li> <li>• double lumen</li> <li>• wire-reinforced</li> </ul> </li> <li>b. exchanging endotracheal tubes</li> <li>c. specialty tracheostomy tubes</li> </ol>					
<b>B. Administer Specialty Gases</b>		<b>1</b>	<b>1</b>	<b>1</b>	<b>3</b>
1. Nitric oxide, for example, <ul style="list-style-type: none"> <li>• initiation</li> <li>• withdrawal</li> </ul>					
2. Helium-oxygen, for example, <ul style="list-style-type: none"> <li>• indications</li> </ul>					
<b>C. Manage Ventilation/Oxygenation</b>		<b>0</b>	<b>8</b>	<b>28</b>	<b>36</b>
1. Initial settings					
2. Advanced modes, for example, <ul style="list-style-type: none"> <li>• techniques to enhance ventilation</li> <li>• techniques to enhance oxygenation</li> <li>• techniques to enhance synchrony</li> </ul>					
3. Noninvasive, for example, <ul style="list-style-type: none"> <li>• high flow nasal cannula</li> <li>• mask CPAP</li> <li>• NPPV</li> </ul>					
4. Waveform analyses					
5. Rescue techniques <ol style="list-style-type: none"> <li>a. recruitment maneuvers</li> <li>b. inhaled vasodilators, for example, <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> <li>e. extracorporeal life support, for example, <ul style="list-style-type: none"> <li>• ECMO</li> </ul> </li> </ol>					


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		Recall	Application	Analysis	
6. Strategies					
a. liberation (weaning) from mechanical ventilation					
b. prevention of lung injury from mechanical ventilation					
c. management of ARDS					
d. treatment of patients with traumatic injuries, for example, <ul style="list-style-type: none"> <li>• head</li> <li>• cervical spine</li> <li>• chest</li> <li>• abdomen</li> <li>• long bone fractures</li> <li>• burn/inhalation</li> </ul>					
e. exercise and rehabilitation while receiving ventilatory support					
f. PEEP management, for example, <ul style="list-style-type: none"> <li>• mild hypoxemia</li> <li>• severe hypoxemia</li> </ul>					
7. Differential / independent lung ventilation, for example, <ul style="list-style-type: none"> <li>• indications</li> <li>• techniques</li> </ul>					
8. Intra-hospital transport of unstable and high-risk patients					
9. Optimizing patient-ventilator interaction					
<b>D. Deliver Pharmacologic Agents</b>		<b>1</b>	<b>4</b>	<b>5</b>	<b>10</b>
1. Aerosolized agents other than bronchodilators, for example, <ul style="list-style-type: none"> <li>• vasodilators</li> <li>• antimicrobials</li> </ul>					
2. Airway instillations other than for ACLS, for example, <ul style="list-style-type: none"> <li>• epinephrine</li> <li>• lidocaine</li> <li>• cold saline</li> <li>• topical thrombin</li> </ul>					
3. Optimization of aerosol delivery, for example, <ul style="list-style-type: none"> <li>• during mechanical ventilation</li> <li>• NPPV</li> <li>• high flow nasal cannula</li> </ul>					
<b>II. GENERAL CRITICAL CARE</b>		<b>6</b>	<b>31</b>	<b>54</b>	<b>91</b>
<b>A. Assess Patient Status and Changes in Status</b>		<b>0</b>	<b>7</b>	<b>24</b>	<b>31</b>
1. Difficult airway issues, for example, <ul style="list-style-type: none"> <li>• patency</li> <li>• Mallampati classification</li> <li>• protection</li> <li>• thyromental distance</li> </ul>					
2. Chest imaging, for example, <ul style="list-style-type: none"> <li>• radiograph</li> <li>• CT</li> <li>• echocardiograph</li> <li>• ultrasound</li> <li>• ventilation/perfusion scan</li> </ul>					


 <p style="text-align: center;"><b>Adult Critical Care Specialty Examination Detailed Content Outline</b></p> <p style="text-align: center;"><i>Multiple-choice items are linked to open cells.</i></p>	Items				
	Ethics	Cognitive Levels			Total
		Recall	Application	Analysis	
3. Indices of respiratory physiology and mechanics, for example, <ul style="list-style-type: none"> <li>• oxygenation</li> <li>• ventilation</li> <li>• capnography</li> <li>• capnometry</li> <li>• work of breathing</li> </ul>					
4. Neurologic, for example, <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, for example, <ul style="list-style-type: none"> <li>• physical assessment</li> <li>• coronary artery disease</li> <li>• diagnostic testing</li> <li>• pulmonary hypertension</li> <li>• dysrhythmias</li> <li>• systemic hypertension</li> <li>• CHF</li> </ul>					
6. Hemodynamics, for example, <ul style="list-style-type: none"> <li>• preload</li> <li>• afterload</li> <li>• contractility</li> <li>• rate control</li> <li>• cardiac output</li> <li>• oxygen delivery</li> </ul>					
7. Differentiation among types of shock, for example, <ul style="list-style-type: none"> <li>• anaphylactic</li> <li>• cardiogenic</li> <li>• septic</li> <li>• hypovolemic</li> <li>• neurogenic</li> </ul>					
8. Recognition of respiratory failure mechanisms					
a. ARDS					
b. aspiration					
c. atelectasis					
d. drug-induced					
e. hypoventilation syndromes					
f. neuromuscular					
g. obstructive lung disease					
h. pneumonia					
i. post-surgical					
j. pulmonary contusion					
k. pulmonary edema, for example, <ul style="list-style-type: none"> <li>• cardiogenic</li> <li>• noncardiogenic</li> </ul>					
l. pulmonary embolism					
m. restrictive lung disease					
n. sleep apnea					

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	Ethics	Cognitive Levels			
		Recall	Application	Analysis	
o. transfusion-related lung injury					
p. upper airway obstruction					
9. Renal function, for example, <ul style="list-style-type: none"> <li>• fluid status</li> <li>• acute kidney injury</li> <li>• acid-base balance</li> <li>• urine output</li> </ul>					
10. Metabolic, for example, <ul style="list-style-type: none"> <li>• respiratory quotient</li> <li>• acid-base balance</li> <li>• nutrition/feeding</li> <li>• endocrine disorders</li> </ul>					
11. Gastrointestinal, for example, <ul style="list-style-type: none"> <li>• abdominal compartment syndrome</li> <li>• ileus</li> <li>• feeding tube placement</li> <li>• GI bleeding / endoscopy</li> </ul>					
12. Coagulation, for example, <ul style="list-style-type: none"> <li>• indices</li> <li>• platelet count</li> <li>• risk for deep vein thrombosis</li> </ul>					
13. Musculoskeletal, for example, <ul style="list-style-type: none"> <li>• spinal cord injury</li> <li>• rhabdomyolysis</li> <li>• ICU myopathy</li> <li>• muscle atrophy</li> </ul>					
14. Therapeutic hypothermia, for example, <ul style="list-style-type: none"> <li>• targeted temperature management</li> <li>• methods</li> <li>• indications and contraindications</li> <li>• complications</li> </ul>					
<b>B. Anticipate Care Based on Laboratory Results</b>		<b>1</b>	<b>2</b>	<b>5</b>	<b>8</b>
1. Albumin					
2. CBC, for example, <ul style="list-style-type: none"> <li>• transfusion trigger</li> <li>• transfusion refusal</li> </ul>					
3. Cardiac markers, for example, <ul style="list-style-type: none"> <li>• troponin</li> <li>• BNP</li> </ul>					
4. Non-cardiac biomarkers, for example, <ul style="list-style-type: none"> <li>• d-dimer</li> <li>• lactate</li> <li>• procalcitonin</li> </ul>					
5. Electrolytes, magnesium, calcium, and phosphate					
6. Acid-base status, anion gap, ketones, and lactate level					
7. Coagulation studies, for example, <ul style="list-style-type: none"> <li>• platelets</li> <li>• PTT</li> <li>• PT</li> <li>• INR</li> </ul>					
8. Culture and sensitivities, for example, <ul style="list-style-type: none"> <li>• blood</li> <li>• stool</li> <li>• sputum</li> <li>• urine</li> </ul>					

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		Recall	Application	Analysis	
9. Sputum Gram stain					
10. Hemoximetry (CO-oximetry), for example, <ul style="list-style-type: none"> <li>• carboxyhemoglobin</li> <li>• methemoglobin</li> </ul>					
11. Endocrine assessment, for example, <ul style="list-style-type: none"> <li>• cortisol</li> <li>• glucose</li> <li>• thyroid function</li> </ul>					
12. BUN and creatinine					
13. Liver function, for example, <ul style="list-style-type: none"> <li>• bilirubin</li> <li>• ammonia</li> <li>• AST</li> <li>• ALT</li> </ul>					
14. Fluid analyses, for example, <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/or Reports of Imaging</b>		<b>1</b>	<b>2</b>	<b>5</b>	<b>8</b>
1. Plain radiographs, for example, <ul style="list-style-type: none"> <li>• chest</li> <li>• spine</li> <li>• abdominal</li> </ul>					
2. CT, for example, <ul style="list-style-type: none"> <li>• brain</li> <li>• chest</li> <li>• abdomen</li> </ul>					
3. MRI					
4. Ultrasound, for example, <ul style="list-style-type: none"> <li>• lung</li> <li>• pleural</li> <li>• abdominal</li> <li>• vascular</li> <li>• echocardiography</li> </ul>					
5. Nuclear scans, for example, <ul style="list-style-type: none"> <li>• ventilation/perfusion</li> <li>• cerebral blood flow</li> </ul>					
6. Angiography, for example, <ul style="list-style-type: none"> <li>• pulmonary</li> <li>• coronary</li> <li>• bronchial</li> <li>• gastrointestinal</li> <li>• cerebral</li> </ul>					
<b>D. Anticipate Effects of Pharmacologic Agents</b>		<b>1</b>	<b>4</b>	<b>7</b>	<b>12</b>
1. Sedatives / hypnotics, for example, <ul style="list-style-type: none"> <li>• continuous or intermittent</li> <li>• dexmedetomidine</li> <li>• propofol</li> <li>• benzodiazepine</li> </ul>					
2. Analgesia, for example, <ul style="list-style-type: none"> <li>• continuous or intermittent</li> <li>• regional or systemic</li> <li>• opioids</li> <li>• ketamine</li> </ul>					

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3. Neuromuscular blocking agents, for example, <ul style="list-style-type: none"> <li>• vecuronium</li> <li>• cisatracurium</li> <li>• succinylcholine</li> <li>• rocuronium</li> </ul>					
4. Reversal agents, for example, <ul style="list-style-type: none"> <li>• naloxone</li> <li>• flumazenil</li> <li>• sugammadex</li> <li>• neostigmine</li> <li>• edrophonium</li> </ul>					
5. Vasoactive and inotropic agents					
6. Drugs that may induce methemoglobinemia, for example, <ul style="list-style-type: none"> <li>• lidocaine</li> <li>• dapsone</li> <li>• nitric oxide</li> <li>• nitroprusside</li> <li>• benzocaine</li> </ul>					
7. Prophylaxis for <ol style="list-style-type: none"> <li>deep vein thrombosis</li> <li>stress ulcers</li> <li>delirium</li> </ol>					
8. Diuretics					
9. Drug interactions					
10. Influence of co-morbid conditions on drug metabolism and excretion, for example, <ul style="list-style-type: none"> <li>• renal failure</li> <li>• hepatic failure</li> </ul>					
<b>E. Anticipate Care Based on Nutritional Status</b>		<b>1</b>	<b>1</b>	<b>2</b>	<b>4</b>
1. Complications of malnutrition, for example, <ul style="list-style-type: none"> <li>• protein wasting</li> <li>• hypoglycemia</li> <li>• respiratory muscle catabolism</li> </ul>					
2. Complications of nutritional support, for example, <ul style="list-style-type: none"> <li>• aspiration</li> <li>• central line infection</li> <li>• refeeding syndrome</li> <li>• malplacement of feeding tube</li> </ul>					
3. Route of feeding, for example, <ul style="list-style-type: none"> <li>• enteral</li> <li>• parenteral</li> </ul>					
4. Morbid obesity					
5. Metabolic study, for example, <ul style="list-style-type: none"> <li>• caloric requirements</li> <li>• exhaled gas analysis</li> </ul>					
<b>F. Prevent Ventilator-Associated Events</b>		<b>1</b>	<b>4</b>	<b>1</b>	<b>6</b>
1. Oral care					
2. Bed position					

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		Recall	Application	Analysis	
3. Minimizing intubation time, for example, <ul style="list-style-type: none"> <li>aggressive weaning protocols</li> <li>NPPV</li> </ul>					
4. Ventilator circuit care, for example, <ul style="list-style-type: none"> <li>minimizing disruption</li> <li>optimal position</li> <li>closed suction</li> <li>heated wire/HME</li> </ul>					
5. Using specialty airways, for example, <ul style="list-style-type: none"> <li>polyurethane cuff</li> <li>subglottic suction endotracheal tube</li> </ul>					
6. Assessment of endotracheal / tracheostomy cuff integrity and pressure					
<b>G. Recognize and Manage Patients with Infections and/or Sepsis</b>		0	3	3	6
1. Recognition of clinical and laboratory signs consistent with infections and severe sepsis, for example, <ul style="list-style-type: none"> <li>catheter-associated</li> <li>culture data</li> <li>CBC</li> </ul>					
2. Management of patients with infections and sepsis, for example, <ul style="list-style-type: none"> <li>pneumonia</li> <li>catheter-associated</li> </ul>					
3. Prevention measures, for example, <ul style="list-style-type: none"> <li>standard and advanced precautions</li> <li>isolation procedures</li> <li>skin integrity</li> <li>personal protective equipment</li> <li>catheter care</li> </ul>					
<b>H. Manage End-of-Life Care</b>		0	2	2	4
1. Types of end-of-life care, for example, <ul style="list-style-type: none"> <li>palliative</li> <li>advance directive</li> <li>hospice</li> </ul>					
2. Determination of brain death					
3. Withdrawal of life support					
4. Care of organ donor					
<b>I. Prepare for Disaster and Mass Casualty Events</b>		1	1	1	3
1. Procedures for patient movement and protection					
2. Triage procedures					
3. Equipment and supply management					

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	<b>Ethics</b>	Cognitive Levels			<b>Total</b>
		<b>Recall</b>	<b>Application</b>	<b>Analysis</b>	
<b>J. Interact with Members of an Interdisciplinary Team</b>		<b>0</b>	<b>1</b>	<b>1</b>	<b>2</b>
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>		<b>0</b>	<b>2</b>	<b>1</b>	<b>3</b>
1. Arterial line insertion and monitoring					
2. Mini-BAL					
3. Esophageal probe, for example, <ul style="list-style-type: none"> <li>• transpulmonary pressure</li> <li>• NAVA monitor</li> </ul>					
<b>L. Troubleshoot Systems</b>		<b>0</b>	<b>2</b>	<b>2</b>	<b>4</b>
1. Chest tube drainage					
2. Bronchoscopy					
3. Hemodynamic monitoring, for example, <ul style="list-style-type: none"> <li>• arterial pressure</li> <li>• CVP</li> </ul>					
4. Inhaled vasodilator delivery, for example, <ul style="list-style-type: none"> <li>• nitric oxide</li> <li>• prostaglandins</li> </ul>					
<b>Totals</b>	<b>5*</b>	<b>9</b>	<b>48</b>	<b>93</b>	<b>150</b>

\*Each test form will include 5 items that engage thinking about ethics to select the best answer.

\*Each of these 5 items also will

- include content from a task that shows an open cell under the **Ethics** column.
- be written to a cognitive level permitted for the task to which the item is linked.



**Additional Specifications by Patient**

*Item content also will be classified by a patient's condition or disorder*

Condition or Disorder	Item Counts Across the Examination		
	Target	Acceptable Range for Each Test Form	
		Minimum	Maximum
GENERAL <i>No specific condition or disorder</i>	32	26	38
ARDS	15	11	19
COPD	13	10	16
CARDIAC	12	9	15
POST-SURGICAL	11	8	14
ASTHMA	11	8	14
TRAUMA	9	6	12
INFECTION/SEPSIS	8	6	10
PULM EMBOLISM (pulmonary embolism)	7	5	9
SHOCK	6	4	8
BARIATRIC	5	3	7
NEUROLOGIC/NEUROMUSCULAR	5	3	7
PULM HYPERTENSION (pulmonary hypertension)	4	2	6
GERIATRIC	3	2	4
IMMUNOCOMPROMISED	3	2	4
PSYCHIATRIC	2	1	3
MASSIVE HEMOPTYSIS	1	1	2
BURN/INHALATION (burn/inhalation injury)	1	0	2
CYSTIC FIBROSIS	1	0	1
TRANSPLANTATION	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