




 Neonatal/Pediatric Specialty Examination Detailed Content Outline <i>Multiple-choice items are linked to open cells.</i>	Items				Total
	Ethics	Cognitive Level			
		Recall	Application	Analysis	
I. COMPETENCIES SHARED BETWEEN CRITICAL AND GENERAL CARE		10	32	17	59
A. Assess Patient Information		1	5	7	13
1. Patient history, for example, <ul style="list-style-type: none"> • immunizations • pre-existing conditions • environmental 					
2. Physical examination					
3. Laboratory, for example, <ul style="list-style-type: none"> • blood gas analyses • CBC • cultures 					
4. Imaging, for example, <ul style="list-style-type: none"> • chest radiograph • cardiac catheterization and angiography • echocardiography • fluoroscopy • MRI • CT 					
5. Indices of respiratory physiology and mechanics, for example, <ul style="list-style-type: none"> • oxygenation • work of breathing • sleep study results 					
6. Neurologic, for example, <ul style="list-style-type: none"> • respiratory function • level of consciousness 					
7. Cardiovascular, for example, <ul style="list-style-type: none"> • physical assessment • pulmonary hypertension • hemodynamics • congenital heart disease 					
8. Recognition of respiratory failure mechanisms					
a. primary pulmonary and airway diseases, for example, <ul style="list-style-type: none"> • atelectasis • pneumonia • asthma • croup 					
b. other, for example, <ul style="list-style-type: none"> • neuromuscular • respiratory control • flail chest • apnea of prematurity 					


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9. Renal, metabolic, endocrine, and nutrition, for example, <ul style="list-style-type: none"> • fluid status • electrolytes • inborn errors of metabolism • acid-base balance • nutrition / feeding • diabetic ketoacidosis 					
10. Gastrointestinal, for example, <ul style="list-style-type: none"> • congenital anomalies • feeding tube placement • abdominal distension • necrotizing enterocolitis 					
11. Musculoskeletal, for example, <ul style="list-style-type: none"> • spinal cord injury • myopathy • scoliosis • myelomeningocele 					
B. Evaluate Pulmonary Status		0	1	1	2
1. Gas exchange, for example, <ul style="list-style-type: none"> • SPO₂ • end-tidal CO₂ tension • blood gases 					
2. Pulmonary function, for example, <ul style="list-style-type: none"> • spirometry • MIP • peak flow 					
C. Assess and Manage Airways		1	2	0	3
1. Airway devices, for example, <ul style="list-style-type: none"> • established tracheostomy tubes • oral and nasopharyngeal 					
2. Airway clearance devices and techniques, for example, <ul style="list-style-type: none"> • high-frequency chest wall oscillation • PEP • postural drainage • IPV • cough assist 					
3. Airway challenges, for example, <ul style="list-style-type: none"> • acute upper airway obstruction • unplanned extubation / decannulation • difficult / critical airway • congenital anomalies 					
D. Select and Manage Equipment		1	6	0	7
1. Oxygen administration devices, for example, <ul style="list-style-type: none"> • heated high flow nasal cannula • patient-appropriate sizing 					
2. Aerosol delivery devices, for example, <ul style="list-style-type: none"> • intermittent • continuous 					


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3. Airway devices, for example, <ul style="list-style-type: none"> <li style="width: 50%;">• oral and nasopharyngeal <li style="width: 50%;">• tracheostomy tubes <li style="width: 50%;">• endotracheal <li style="width: 50%;">• speaking valves <li style="width: 50%;">• LMA 					
4. Transcutaneous monitoring systems					
5. Airway clearance devices, for example, <ul style="list-style-type: none"> • insufflator-exsufflator • high-frequency chest wall oscillation 					
6. Home care devices, for example, <ul style="list-style-type: none"> <li style="width: 50%;">• mechanical ventilators <li style="width: 50%;">• oxygen delivery <li style="width: 50%;">• CPAP <li style="width: 50%;">• portable oxygen concentrators <li style="width: 50%;">• humidifiers <li style="width: 50%;">• apnea monitor 					
E. Facilitate Procedures and Evaluate Efficacy		1	2	0	3
1. Bronchoscopy and associated procedures, for example, <ul style="list-style-type: none"> <li style="width: 50%;">• lavage <li style="width: 50%;">• brush <li style="width: 50%;">• biopsies 					
2. Sputum culture, for example, <ul style="list-style-type: none"> <li style="width: 50%;">• nasal swab <li style="width: 50%;">• tracheal aspirate 					
3. Blood gas sampling, for example, <ul style="list-style-type: none"> • CBG 					
F. Manage and/or Anticipate Effects of Medication Administration		1	5	4	10
1. Aerosolized agents					
2. Sedatives, hypnotics, and analgesia					
3. Neuromuscular blocking agents					
4. Reversal agents, for example, <ul style="list-style-type: none"> <li style="width: 50%;">• naloxone <li style="width: 50%;">• neostigmine 					
5. Vasoactive and inotropic agents					
6. Diuretics					
7. Systemic smooth muscle relaxants, for example, <ul style="list-style-type: none"> <li style="width: 50%;">• magnesium sulfate <li style="width: 50%;">• terbutaline 					
8. Drug interactions					
9. Influence of co-morbid conditions <ul style="list-style-type: none"> <li style="width: 50%;">• renal failure <li style="width: 50%;">• hepatic failure 					

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G. Anticipate Care Based on Laboratory Results		1	3	2	6
1. Hematologic, for example, <ul style="list-style-type: none"> CBC Hgb electrophoresis 					
2. Chemistry, for example, <ul style="list-style-type: none"> electrolytes glucose albumin sweat test 					
3. Microbiology, for example, <ul style="list-style-type: none"> nasal swab culture Gram stain 					
4. Toxicology, for example, <ul style="list-style-type: none"> drug overdose neonatal abstinence syndromes 					
5. Blood gas analyses and hemoximetry (CO-oximetry)					
H. Anticipate Care Based on Imaging and/or Reports of Imaging		0	1	2	3
1. Radiographs, for example, <ul style="list-style-type: none"> sail sign cardiac silhouette with CHD lateral views 					
2. Other, for example, <ul style="list-style-type: none"> CT ultrasound MRI 					
I. Manage Care Based on Nutritional Status		1	1	0	2
1. Complications of feedings, for example, <ul style="list-style-type: none"> intolerance malposition of feeding tube aspiration 					
2. Morbid obesity, for example, <ul style="list-style-type: none"> airway management sleep disordered breathing 					
J. Assist with or Perform Resuscitation		1	1	0	2
1. Selection of appropriate equipment, for example, <ul style="list-style-type: none"> T-piece resuscitator flow-inflating resuscitation bag 					
2. Following the appropriate protocol, for example, <ul style="list-style-type: none"> NRP PALS 					

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K. Prepare for Disaster and Mass Casualty Events		1	2	0	3
1. Procedures for patient movement and protection					
2. Triage procedures					
3. Equipment and supply management					
L. Interact with Members of an Interdisciplinary Team		0	1	1	2
1. Suggested modifications to the care plan based on the respiratory assessment					
2. Responses to proposed care plan modifications from other team members					
M. Evaluate Patient and Family Understanding of Education		1	2	0	3
1. Discharge and home, for example, <ul style="list-style-type: none"> • tracheostomy care • monitoring • CPR • car seat challenge 					
2. Equipment and procedure instruction, for example, <ul style="list-style-type: none"> • set-up • operation • troubleshooting 					
3. Medication administration					
II. COMPETENCIES SPECIFIC TO CRITICAL CARE		4	29	28	61
A. Evaluate Pertinent Information		1	2	1	4
1. Maternal history, for example, <ul style="list-style-type: none"> • amniotic fluid index • maternal medication 					
2. Fetal and neonatal assessments, for example, <ul style="list-style-type: none"> • biophysical profile • Apgar score • fetal lung maturity indices 					
3. Other diagnostic results, for example, <ul style="list-style-type: none"> • transillumination • oxygen challenge test 					
B. Assess and Manage Airways		0	6	2	8
1. Establishment of a patent airway, for example, <ul style="list-style-type: none"> • bag-mask ventilation • oral / nasal airway placement 					
2. Performing or assisting intubation, for example, <ul style="list-style-type: none"> • equipment selection • CO₂ verification 					
3. Performing or assisting advanced intubation techniques, for example, <ul style="list-style-type: none"> • specialty laryngoscopic visualization devices 					

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4. Artificial airways					
a. laryngeal mask airway					
b. endotracheal tube, for example,					
• securement • positioning					
c. newly placed tracheostomy tube					
C. Manage Specialty Gas Administration		0	2	2	4
1. Nitric oxide					
2. Helium-oxygen					
3. Other, for example,					
• isoflurane / sevoflurane • subambient					
D. Manage Ventilation and Oxygenation		1	7	16	24
1. Selection of initial settings					
2. Conventional modes					
3. High-frequency ventilation, for example,					
• HFJV • HFOV					
4. Alternative modes, for example,					
• volume-targeted • NAVA					
• APRV					
5. Noninvasive, for example,					
• CPAP • bi-level					
6. Adjunct techniques					
a. lung recruitment maneuvers					
b. prone positioning					
c. extracorporeal life support, for example,					
• ECMO • coagulation management					
• CO ₂ removal					
7. Monitoring					
a. measures of lung disease severity, for example,					
• PaO ₂ / F _i O ₂ • OI					
• SaO ₂ / F _i O ₂					
b. airway pressures and volumes, for example,					
• mean airway • minute ventilation pressure					
c. ventilator waveforms, for example,					
• NAVA catheter positioning					

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d. ventilator-patient interaction, for example <ul style="list-style-type: none"> synchrony 					
e. pulmonary mechanics, for example, <ul style="list-style-type: none"> compliance resistance VD / VT MIP 					
f. effects of mechanical ventilation on cardiac function					
g. cerebral oximetry, for example, <ul style="list-style-type: none"> near infrared spectroscopy 					
8. Strategies					
a. weaning from mechanical ventilation, for example, <ul style="list-style-type: none"> spontaneous breathing trials protocols 					
b. prevention of ventilator-induced lung injury					
c. lung-protective ventilation, for example, <ul style="list-style-type: none"> permissive hypercapnia 					
9. Optimizing patient-ventilator interaction					
E. Facilitate Procedures and Evaluate Efficacy		1	4	4	9
1. Inter-hospital or intra-hospital transport					
2. Intravascular catheter insertion, for example, <ul style="list-style-type: none"> through an umbilical or peripheral site 					
3. Intubation					
4. Extubation, for example, <ul style="list-style-type: none"> planned decannulation endotracheal tube 					
5. Chest tube management, for example, <ul style="list-style-type: none"> insertion troubleshooting 					
6. Needle decompression of pneumothorax					
7. Therapeutic hypothermia, for example, <ul style="list-style-type: none"> total body / head cooling passive / active cooling 					
F. Manage and/or Anticipate Effects of Medication Administration		0	2	1	3
1. Surfactant replacement therapy, for example, <ul style="list-style-type: none"> compliance changes airway obstruction 					
2. Airway instillations, for example, <ul style="list-style-type: none"> lidocaine epinephrine 					

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G. Prevent Hospital-Acquired Conditions		1	4	1	6
1. Ventilator-associated pneumonia					
a. oral care					
b. bed position					
c. minimizing intubation time, for example, <ul style="list-style-type: none"> • determining extubation readiness • NPPV 					
d. ventilator circuit care, for example, <ul style="list-style-type: none"> • closed suction • heated wire 					
2. Device-related pressure ulcers					
H. Manage End-of-Life Care		0	2	1	3
1. Types of end-of-life care, for example, <ul style="list-style-type: none"> • palliative • hospice • advance directive 					
2. Determination of brain death					
3. Withdrawal of life support					
4. Care of organ donor					
Totals	3*	14	61	45	120

* Each test form will include 3 items that engage thinking about ethics to select the best answer.

* Each of these 3 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	
	120	Minimum	Maximum
GENERAL – No specific condition or disorder	29	24	34
NEO PULMONARY (Neonatal pulmonary, for example, meconium aspiration, pneumonia, PPHN)	9	7	11
INFECT DISEASE (Infectious disease, for example, pneumonia, croup)	9	7	11
CHRONIC LUNG (Chronic lung disease of prematurity)	9	7	11
ASTHMA	9	7	11
PREMATURITY (Prematurity acute phase, for example, surfactant deficiency apnea)	9	7	11
BRONCHIOLITIS	7	6	8
CON DEFECTS (Congenital defects that require surgical correction)	5	3	7
CON HRT DISEASE (Congenital heart disease)	5	3	7
NEUROLOGIC (for example, seizures, brain tumors, hydrocephalus)	5	3	7
PED AIRWAY (Pediatric airway, for example, tracheomalacia, vocal cord paralysis, vascular ring)	3	2	4
IMMUNOCOMPROMISED	3	2	4
SHOCK	3	2	4
TRAUMA	3	2	4
HEART FAILURE	3	2	4
CYSTIC FIBROSIS	3	2	4
NEUROMUSCULAR (for example, spinal muscle atrophy, muscular dystrophy)	3	2	4
SLEEP RELATED (sleep related disorders, for example, obstructive sleep apnea, central hypoventilation)	2	1	3
INHALATION (Inhalation injuries)	1	0	1
Total	120		

Neonatal/Pediatric Specialist Admission Requirements

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| 1. Applicants shall be a Registered Respiratory Therapist (RRT). |
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Neonatal/Pediatric Specialist Examination Fees

New Applicant	Repeat Applicant
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\$250	\$220
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