Neonatal/Pediatric Specialty Examination Detailed Content Outline

Multiple-choice items are linked to open cells.

	Items				
		Cognitive Level			
	Ethics	Recall	Application	Analysis	Total
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, • immunizations • pre-existing conditions • environmental					
2. Physical examination					
3. Laboratory, for example, • blood gas analyses • CBC • cultures					
4. Imaging, for example, • chest radiograph • cardiac catheterization and angiography • echocardiography • fluoroscopy • MRI • CT					
5. Indices of respiratory physiology and mechanics, for example, • oxygenation • work of breathing • sleep study results					
6. Neurologic, for example, • respiratory function • level of consciousness					
7. Cardiovascular, for example, • physical assessment • pulmonary hypertension • hemodynamics • congenital heart disease					
8. Recognition of respiratory failure mechanisms					
a. primary pulmonary and airway diseases, for example, • atelectasis • pneumonia • asthma • croup					
b. other, for example, • neuromuscular • respiratory control • flail chest • apnea of prematurity					

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	Items				
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	Ethics	Recall	Application	Analysis	Total
9. Renal, metabolic, endocrine, and nutrition, for example, • fluid status • acid-base balance • electrolytes • nutrition / feeding • inborn errors of metabolism • diabetic ketoacidosis					
10. Gastrointestinal, for example, • congenital anomalies • abdominal distension • feeding tube placement • necrotizing enterocolitis					
11. Musculoskeletal, for example, • spinal cord injury • scoliosis • myopathy • myelomeningocele					
B. Evaluate Pulmonary Status		**0**	**1**	**1**	**2**
1. Gas exchange, for example, • SPO_2 • blood gases • end-tidal CO_2 tension					
2. Pulmonary function, for example, • spirometry • peak flow • MIP					
C. Assess and Manage Airways		**1**	**2**	**0**	**3**
1. Airway devices, for example, • established tracheostomy tubes • oral and nasopharyngeal					
2. Airway clearance devices and techniques, for example, • high-frequency chest wall oscillation • postural drainage • PEP • IPV • cough assist					
3. Airway challenges, for example, • acute upper airway obstruction • difficult / critical airway • unplanned extubation / decannulation • congenital anomalies					
D. Select and Manage Equipment		**1**	**6**	**0**	**7**
1. Oxygen administration devices, for example, • heated high flow nasal cannula • patient-appropriate sizing					
2. Aerosol delivery devices, for example, • intermittent • continuous					

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	Items				
		Cognitive Level			
	Ethics	Recall	Application	Analysis	Total
3. Airway devices, for example, • oral and nasopharyngeal • endotracheal • tracheostomy tubes • speaking valves • LMA					
4. Transcutaneous monitoring systems					
5. Airway clearance devices, for example, • insufflator-exsufflator • high-frequency chest wall oscillation					
6. Home care devices, for example, • mechanical ventilators • CPAP • humidifiers • apnea monitor • oxygen delivery • portable oxygen concentrators					
E. Facilitate Procedures and Evaluate Efficacy		**1**	**2**	**0**	**3**
1. Bronchoscopy and associated procedures, for example, • lavage • biopsies • brush					
2. Sputum culture, for example, • nasal swab • tracheal aspirate					
3. Blood gas sampling, for example, • 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, • naloxone • neostigmine					
5. Vasoactive and inotropic agents					
6. Diuretics					
7. Systemic smooth muscle relaxants, for example, • magnesium sulfate • terbutaline					
8. Drug interactions					
9. Influence of co-morbid conditions • renal failure • hepatic failure					

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	Items				
		Cognitive Level			
	Ethics	Recall	Application	Analysis	Total
G. Anticipate Care Based on Laboratory Results		**1**	**3**	**2**	**6**
1. Hematologic, for example, • CBC • Hgb electrophoresis					
2. Chemistry, for example, • electrolytes • glucose • albumin • sweat test					
3. Microbiology, for example, • nasal swab • culture • Gram stain					
4. Toxicology, for example, • 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, • sail sign • cardiac silhouette with CHD • lateral views					
2. Other, for example, • CT • ultrasound • MRI					
I. Manage Care Based on Nutritional Status		**1**	**1**	**0**	**2**
1. Complications of feedings, for example, • intolerance • malposition of feeding tube • aspiration					
2. Morbid obesity, for example, • airway management • sleep disordered breathing					
J. Assist with or Perform Resuscitation		**1**	**1**	**0**	**2**
1. Selection of appropriate equipment, for example, • T-piece resuscitator • flow-inflating resuscitation bag					
2. Following the appropriate protocol, for example, • NRP • PALS					

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	Items				
		Cognitive Level			
	Ethics	Recall	Application	Analysis	Total
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, • tracheostomy care • CPR • monitoring • car seat challenge					
2. Equipment and procedure instruction, for example, • set-up • troubleshooting • operation					
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, • amniotic fluid index • maternal medication					
2. Fetal and neonatal assessments, for example, • biophysical profile • fetal lung maturity indices • Apgar score					
3. Other diagnostic results, for example, • transillumination • oxygen challenge test					
B. Assess and Manage Airways		**0**	**6**	**2**	**8**
1. Establishment of a patent airway, for example, • bag-mask ventilation • oral / nasal airway placement					
2. Performing or assisting intubation, for example, • equipment selection • CO_2 verification					
3. Performing or assisting advanced intubation techniques, for example, • specialty laryngoscopic visualization devices					

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	Items				
		Cognitive Level			
	Ethics	Recall	Application	Analysis	Total
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_IO_2 • OI • SaO_2 / F_IO_2					
b. airway pressures and volumes, for example, • mean airway pressure • minute ventilation					
c. ventilator waveforms, for example, • NAVA catheter positioning					

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	Items				
		Cognitive Level			
	Ethics	Recall	Application	Analysis	Total
d. ventilator-patient interaction, for example • synchrony					
e. pulmonary mechanics, for example, • compliance • VD / VT • resistance • MIP					
f. effects of mechanical ventilation on cardiac function					
g. cerebral oximetry, for example, • near infrared spectroscopy					
8. Strategies					
a. weaning from mechanical ventilation, for example, • spontaneous breathing trials • protocols					
b. prevention of ventilator-induced lung injury					
c. lung-protective ventilation, for example, • 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, • through an umbilical or peripheral site					
3. Intubation					
4. Extubation, for example, • planned decannulation • endotracheal tube					
5. Chest tube management, for example, • insertion • troubleshooting					
6. Needle decompression of pneumothorax					
7. Therapeutic hypothermia, for example, • 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, • compliance changes • airway obstruction					
2. Airway instillations, for example, • lidocaine • epinephrine					

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Multiple-choice items are linked to open cells.

	Items				
		Cognitive Level			
	Ethics	Recall	Application	Analysis	Total
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, • determining extubation readiness • NPPV					
d. ventilator circuit care, for example, • 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, • palliative • advance directive • hospice					
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

	Item Counts Across the Examination		
	Target	Acceptable Range for Each Test Form	
Condition or Disorder	**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**		