



Acute/Critical Care
Nursing Certification
Adult • Pediatric • Neonatal

AACN
CERTIFICATION
CORPORATION

Certification Organization for the American Association of Critical-Care Nurses

MISSION

AACN Certification Corporation drives patient health and safety through comprehensive credentialing of acute and critical care nurses ensuring practice consistent with standards of excellence.

VISION

All nurses caring for acutely and critically ill patients and their families are certified.

VALUES

As the Corporation advances its mission and vision to fulfill its purpose and inherent obligation of ensuring the health and safety of patients experiencing acute and critical illness, the Corporation is guided by a set of deeply rooted values:

- **Providing leadership** to bring all stakeholders together to create and foster cultures of excellence and innovation
- **Acting with integrity** and upholding ethical values and principles in all relationships and the provision of sound, fair and defensible credentialing programs
- **Committing to excellence** in credentialing programs by striving to exceed industry standards and expectations
- **Promoting leading edge, research-based credentialing programs** for all nurses who care for and influence the care of acutely and critically ill patients
- **Demonstrating stewardship** through fair and responsible management of resources and cost-effective business processes

ETHICS

AACN and AACN Certification Corporation consider the American Nurses Association (ANA) Code of Ethics for Nurses foundational for nursing practice, providing a framework for making ethical decisions and fulfilling responsibilities to the public, colleagues and the profession. AACN Certification Corporation's mission of public protection supports a standard of excellence where certified nurses have a responsibility to read about, understand and act in a manner congruent with the ANA Code of Ethics for Nurses.

The following AACN Certification Corporation programs have been accredited by the National Commission for Certifying Agencies (NCCA), the accreditation arm of the Institute for Credentialing Excellence (ICE):



CCRN[®] (Adult)
CCRN[®] (Pediatric)
CCRN[®] (Neonatal)
CCRN-E[™] (Adult)

PCCN[®]
CMC[®]
CSC[®]

ACCNS-AG[®]
ACCNS-P[®]
ACCNS-N[®]
ACNPC-AG[®]

Our advanced practice certification programs, ACCNS-AG, ACCNS-P, ACCNS-N and ACNPC-AG, meet the National Council of State Boards of Nursing (NCSBN) criteria for APRN certification programs.

CCRN EXAM HANDBOOK

Acute/Critical Care Nursing Certification - Adult, Pediatric, Neonatal

As healthcare becomes increasingly complex and challenging, certification has emerged as a mark of excellence showing patients, employers and the public that a nurse possesses a defined body of knowledge and has met the rigorous requirements to achieve specialty and/or subspecialty certification.

AACN Certification Corporation programs were created to protect healthcare consumers by validating the knowledge of nurses who care for and/or influence the care delivered to the acutely and critically ill. We are pleased to provide you with this handbook with information about our programs and how to apply for and take the CCRN certification exam.

Today, more than 115,000 practicing nurses hold one or more of these certifications from AACN Certification Corporation:

Specialty Certifications

CCRN® is for nurses providing direct care to acutely/critically ill adult, pediatric or neonatal patients.

CCRN-K™ is for nurses who influence the care delivered to acutely/critically ill adult, pediatric or neonatal patients, but do not primarily or exclusively provide direct care.

CCRN-E™ is for nurses working in a tele-ICU monitoring/caring for acutely/critically ill adult patients from a remote location.

PCCN® is for progressive care nurses providing direct care to acutely ill adult patients.

PCCN-K™ is for nurses who influence the care delivered to acutely ill adult patients, but do not primarily or exclusively provide direct care.

Subspecialty Certifications

CMC® is for certified nurses providing direct care to acutely/critically ill adult cardiac patients.

CSC® is for certified nurses providing direct care to acutely/critically ill adult patients during the first 48 hours after cardiac surgery.

Advanced Practice Consensus Model-Based Certifications

ACNPC-AG® is for the adult-gerontology acute care nurse practitioner educated at the graduate level.

The **ACCNS** credentials are for clinical nurse specialists educated at the graduate level to provide care across the continuum from **wellness through acute care**:

ACCNS-AG® is for the adult-gerontology clinical nurse specialists educated to care for adult-gerontology patients.

ACCNS-P® is for the pediatric clinical nurse specialists educated to care for pediatric patients.

ACCNS-N® is for the neonatal clinical nurse specialists educated to care for neonatal patients.

Advanced Practice Certifications

With implementation of the Consensus Model in 2015, ACNPC and CCNS are available as *renewal options only*:

ACNPC® is for acute care nurse practitioners educated to provide care to adult patients.

CCNS® is for acute/critical care clinical care specialists educated to provide care to adult, pediatric or neonatal patients.

We continually seek to provide quality certification programs that meet the changing needs of nurses and patients. Please visit www.aacn.org/certification, or call 800-899-2226 for more information about the above certifications.

Thank you for your commitment to patients and their families and to becoming certified.



Please direct inquiries to:

AACN Certification Corporation, 101 Columbia, Aliso Viejo, CA 92656-4109
800-899-2226 • Fax: 949-362-2020 • certification@aacn.org

Please include your AACN customer number with all correspondence to AACN Certification Corporation.

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The following information can be found in the *Certification Exam Policy Handbook* online at www.aacn.org/certhandbooks:

- AACN Certification Programs
- Name and Address Changes
- Confidentiality of Exam Application Status
- Testing Site Information
- Exam Scheduling and Cancellation
- On the Day of Your Exam
- Duplicate Score Reports
- Recognition of Certification
- Use of Credentials
- Denial of Certification
- Revocation of Certification
- Review and Appeal of Certification Eligibility

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CCRN CERTIFICATION PROGRAM

CCRN® Registered Service Mark

CCRN is a registered service mark and denotes certification in acute/critical care nursing as granted by AACN Certification Corporation. Registered nurses who have not achieved CCRN certification, whose CCRN certification has lapsed or who have chosen Inactive status are not authorized to use the CCRN credential.

Although a common misconception, CCRN is not an acronym for “critical care registered nurse.” This would imply that nurses are registered as critical care nurses, which is not accurate.

Purpose and Rationale

CCRN certification is a specialty certification for nurses who provide direct care to acutely/critically ill adult, pediatric or neonatal patients and their families. These patients may be found in such units as: intensive care, cardiac care, combined ICU/CCU, medical/surgical ICU, trauma unit or critical care transport/flight.

The CCRN exam is based on a study of practice, also known as a job analysis. The job analysis, conducted at least every five years, validates the knowledge, skills and abilities required for safe and effective practice as an RN or APRN who provides direct care to acutely/critically ill patients in one of the following patient populations: adult, pediatric or neonatal.

The test plan, which provides an outline of exam content, is developed by an expert CCRN panel based on the results of the study of practice. The organizing framework for all AACN Certification Corporation exams is the AACN Synergy Model for Patient Care™.

Clinical practice requirements have been validated by subject matter experts. The required hours of clinical practice correspond to the third stage of competence in Benner’s Stages of Clinical Competence. CCRN-K certification denotes to the public those practitioners who possess a distinct and clearly defined body of knowledge called acute/critical care nursing.

CCRN Exam Content

The CCRN exams are 3-hour tests consisting of 150 multiple-choice items. Of the 150 items, 125 are scored and 25 are used to gather statistical data on item performance for future exams.

The CCRN exams focus on adult, pediatric and neonatal patient populations. Eighty percent (80%) of each exam focuses on Clinical Judgment and is age-specific for the adult, pediatric and neonatal populations. The remaining 20% covers Professional Caring and Ethical Practice. Professional Caring and Ethical Practice questions may be asked about any age across the life span while Clinical Judgment questions are restricted to adult, neonatal or pediatric populations.

CCRN Test Plans

The content of the CCRN exams is described in the test plans included in this handbook. Candidates are tested on a variety of patient care problems that are organized under major categories. Please note the percentage of the CCRN exam devoted to each category.

Passing Point/Cut Score

A criterion-referenced standard setting process, known as the modified Angoff, is used to establish the passing point/cut score for the exam. Each candidate’s performance on the exam is measured against a predetermined standard.

The passing point/cut score for the exam is established using a panel of subject matter experts, an exam development committee (EDC), who carefully reviews each exam question to determine the basic level of knowledge or skill that is expected. The passing point/cut score is based on the panel’s established difficulty ratings for each exam question.

Under the guidance of a psychometrician, the panel develops and recommends the passing point/cut score, which is reviewed and approved by AACN Certification Corporation. The passing point/cut score for the exam is established to identify individuals with an acceptable level of knowledge and skill. All individuals who pass the exam, regardless of their score, have demonstrated an acceptable level of knowledge.

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CCRN EXAM ELIGIBILITY

Licensure

Current, unencumbered U.S.* RN or APRN licensure is required.

- An unencumbered license is not currently being subjected to formal discipline by *any* state board of nursing and has no provisions or conditions that limit the nurse's practice in any way. This applies to *all* RN or APRN licenses you currently hold.
- If selected for audit, you will be asked to provide a copy of your RN or APRN license.
- Candidates and CCRN-certified nurses must notify AACN Certification Corporation **within 30 days** if any restriction is placed on their RN or APRN license(s).

Practice

Candidates must meet *one* of the following clinical practice requirement options:

- Practice as an RN or APRN for 1,750 hours in direct care of acutely/critically ill patients during the previous 2 years, with 875 of those hours accrued in the most recent year preceding application.

OR

- Practice as an RN or APRN for at least 5 years with a minimum of 2,000 hours in direct care of acutely/critically ill patients, with 144 of those hours accrued in the most recent year preceding application.

Eligible hours are those spent caring for the patient population (adult, pediatric or neonatal) in alignment with the exam for which you are applying. A majority of the total practice hours and those within the year prior to application for CCRN exam eligibility must focus on *critically ill* patients.

Orientation hours spent shadowing/working with another nurse who is the one with the patient assignment *cannot* be counted toward clinical hours for CCRN eligibility; however, orientation hours during which you are the assigned nurse providing direct care to acutely/critically ill patients may be counted.

Clinical practice hours must be completed in a U.S.-based* or Canada-based facility or in a facility determined to be comparable to the U.S. standard of acute/critical care nursing practice as evidenced by Magnet® designation or Joint Commission International accreditation.

Nurses serving as manager, educator (in-service or academic), APRN or preceptor may apply hours spent supervising nursing students or nurses at the bedside.

- Nurses in these roles must be actively involved in direct patient care; for example, demonstrating how to measure pulmonary artery pressures or supervising a new employee or student nurse performing a procedure.

Practice Verification

The name and contact information of a professional associate must be given for verification of eligibility related to clinical practice hours. If you are selected for audit, this associate will need to verify in writing that you have met the clinical hour requirements.

- A professional associate is defined as your clinical supervisor or a colleague (RN or physician) with whom you work.

AACN Certification Corporation may adopt additional eligibility requirements at its sole discretion. Any such requirements will be designed to establish, for purposes of CCRN certification, the adequacy of a candidate's knowledge in care of the acutely/critically ill.

**Includes District of Columbia and U.S. territories of Guam, Virgin Islands, American Samoa and Northern Mariana Islands*

APPLICATION FEES

CCRN Computer-Based Exam

| | |
|--------------|-------|
| AACN Members | \$235 |
| Nonmembers | \$340 |

CCRN Retest

| | |
|--------------|-------|
| AACN Members | \$170 |
| Nonmembers | \$275 |

CCRN Renewal by Exam

| | |
|--------------|-------|
| AACN Members | \$170 |
| Nonmembers | \$275 |

Payable in U.S. funds. Fees are subject to change without notice. A \$15 fee will be charged for a returned check.

Computer-based testing discounts are available for groups of **10 or more** candidates submitting their AACN certification exam applications in the same envelope. Employers may pre-purchase exam vouchers at a further discounted rate.

For details about Group and Value Program Discounts, visit www.aacn.org/certification > Explore Certification Volume Discounts, email certification@aacn.org or call 800-899-2226.

AACN Certification Corporation recommends that you be ready to test *before* applying for the CCRN exam.

ONLINE APPLICATION PROCESS

- ▶ **Register online** for computer-based testing at www.aacn.org/certification > Get Certified
- ▶ **Before you get started**, have available the following:
 - RN or APRN license number and expiration date
 - Name, address, phone and email address of your clinical supervisor or a professional colleague (RN or physician) who can verify your practice eligibility
 - Credit card (Visa, MasterCard, Discover or American Express)
- ▶ **Same day processing**

PAPER APPLICATION PROCESS

- ▶ **Paper applications are required** for those applying with a group, for paper and pencil exams and for testing outside the U.S.
- ▶ **Complete the application** on pages 37 and 38 **and honor statement** on page 39
 - Fill in all requested information, including that for your RN or APRN license
- ▶ **Include application fee**
 - Credit card, check or money order
- ▶ **Allow 2-3 weeks for processing**

Use your legal name on the application.

This name must match photo identification used for exam entry and will be the name printed on your certificate.

1. Receive notice of processed application

- AACN will send you an email confirming that you have successfully applied to take the CCRN exam.

2. Receive approval-to-test email

- AACN's testing service (PSI/AMP) will send an email and mail a postcard to eligible candidates within **5 to 10 days** after the confirmation email that will include:
 - A toll-free number and online instructions to schedule your testing appointment
 - The **90-day** period during which you must schedule and take the exam
 - Your **exam identification number**, which is your unique AACN customer number preceded by the letter "C" (e.g., C00123456).
- If you do not receive an email or postcard from PSI/AMP **within 2 weeks of receiving confirmation email**, please contact AACN Customer Care at 800-899-2226.

3. Schedule the exam

- Upon receipt of PSI/AMP's email or postcard:
 - Confirm that you are scheduled for the correct certification exam
 - Promptly schedule your exam appointment for a date and time that falls within your **90-day** testing window
- Testing is offered twice daily, Monday through Friday, at **9 a.m. and 1:30 p.m.**. Saturday appointments are available at most locations.
- To locate one of the more than 300 PSI/AMP testing centers within the U.S., visit **www.goAMP.com**.

4. Sit for the exam

- Upon completion of computer-based exams, results with a score breakdown will be presented on-site.
- Results of paper and pencil exams will be mailed to candidates 3 to 4 weeks following paper testing.
- Successful candidates will receive their wall certificate within 3 to 4 weeks of passing the exam.

Please ensure that AACN has your current contact information on record.

Updates may be made online at **www.aacn.org/myaccount** or emailed to **info@aacn.org**.

For name changes, please call AACN Customer Care at **800-899-2226**.

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CCRN CERTIFICATION RENEWAL

Purpose and Limitations of Renewal Options

The purpose of certification renewal is to promote continued competence. The renewal process helps to maintain an up-to-date knowledge base through continuing education and practice hours, or practice hours and passing the certification exam.

Following are the limitations to the components of the renewal options:

- CE/CERP limitations include content quality and relevance to practice as well as an individual's ability to self-select CE/CERPs most pertinent to the individual's practice and educational needs.
- Limitations of practice hours include the quality of the practice environment and limitations on learning opportunities.
- One limitation of the exam is not assessing new competencies, as exam competencies were validated through initial certification.

Requiring two components for renewal, rather than one, decreases the limitations and furthers the goal of continued competence.

Renewal Period

CCRN certification is granted for a period of 3 years. Your certification period begins the first day of the month in which the CCRN certification exam is passed and ends 3 years later; for example, February 1, 2019 through January 31, 2022.

Renewal notifications will be mailed and emailed to you starting 4 months before your scheduled CCRN renewal date. **You are responsible for renewing your certification even if you do not receive renewal notification.** Refer to www.aacn.org/certification > Renew Certification for current information.

Eligibility

Candidates for CCRN renewal must meet the following requirements:

- Current, unencumbered U.S.* RN or APRN license that was not subjected to formal discipline by *any* state board of nursing during the 3-year certification renewal period
- Completion of 432 hours of direct care of acutely/critically ill patients as an RN or APRN within the 3-year certification period, with 144 of those hours in the 12-month period preceding the scheduled renewal date
 - Eligible hours are those spent caring for the patient population (adult, pediatric or neonatal) in which certification is held.
 - A majority of the total practice hours and those within the year prior for renewal eligibility must focus on *critically* ill patients.
- Completion of the required CERPs *or* take/pass the CCRN exam for the applicable patient population (adult, pediatric or neonatal) of practice.

**Includes District of Columbia and U.S. territories of Guam, Virgin Islands, American Samoa and Northern Mariana Islands*

continued

CCRN CERTIFICATION RENEWAL (CONTINUED)

Renewal Options

You may seek CCRN certification renewal via Renewal by Synergy CERPs or Renewal by Exam, or you may choose Inactive, Retired or Alumnus status. Online Renewal is available to all active certificants as early as 4 months prior to their scheduled renewal date. Visit www.aacn.org/certification > Renew Certification.

Option 1 - Renewal by Synergy CERPs

- Meet eligibility requirements for CCRN-K renewal and complete the Continuing Education Recognition Point (CERP) Program, which requires 100 CERPs in various categories (A, B & C).
- Those moving to CCRN from CCRN-E or CCRN-K may complete the CERP requirements for CCRN or for the program from which you are moving. For details, refer to the applicable renewal handbook.

Option 2 - Renewal by Exam

- Meet the eligibility requirements for CCRN renewal and successfully apply for and schedule your exam.
- The CCRN exam must be completed **before** your scheduled renewal date. You may not take the exam early, then attempt to renew by CERPs if you do not pass.

Option 3 - Inactive Status

- Inactive status is available to CCRN-certified nurses who do not meet the renewal eligibility requirements but do not wish to lose their certification status. Inactive status provides additional time, up to 3 years from the scheduled renewal date, to meet the renewal eligibility requirements.
- **During the time of inactive status, the CCRN credential may not be used.**
- Inactive status may be held more than once, but not for 2 consecutive renewal periods.

For more details, refer to the **CCRN Renewal Handbook** online at www.aacn.org/certhandbooks.

CCRN-E Certification

If you work primarily or exclusively in a tele-ICU caring for critically ill adult patients from a remote location and do not meet the requirements for CCRN renewal, CCRN-E renewal may be an option.

For more details, refer to the **CCRN-E Renewal Handbook** online at www.aacn.org/certhandbooks.

CCRN-K Certification

CCRN-K validates the clinical specialty knowledge of acute/critical care nurses who do not exclusively or primarily provide direct care. Eligible practice hours include those in which the nurse applies knowledge in a way that influences patients, nurses and/or organizations to have a positive impact on the care delivered to acutely/critically ill patients (population matching certification held - adult, pediatric or neonatal).

- Nurses with practice hours in roles such as Clinical or Patient Educator, Academic Faculty, Manager/Supervisor, Clinical Director, Nursing Administrator, Case Manager, Transitional Care Coordinator **may** qualify. This is not an all-inclusive list, nor does it mean all nurses working in these roles are eligible for CCRN-K renewal.

For more details, refer to the **CCRN-K Renewal Handbook** online at www.aacn.org/certhandbooks.

AACN SYNERGY MODEL FOR PATIENT CARE

Synergy is an evolving phenomenon that occurs when individuals work together in mutually enhancing ways toward a common goal. AACN Certification Corporation is committed to ensuring that certified nursing practice is based on the needs of patients. Integration of the AACN Synergy Model for Patient Care into AACN Certification Corporation's certification programs puts emphasis on the patient and says to the world that patients come first.

The Synergy Model creates a comprehensive look at the patient. It puts the patient in the center of nursing practice. The model identifies nursing's unique contributions to patient care and uses language to describe the professional nurse's role. It provides nursing with a venue that clearly states what we do for patients and allows us to start linking ourselves to, and defining ourselves within, the context of the patient and patient outcomes.

Patient Characteristics

The Synergy Model encourages nurses to view patients in a holistic manner rather than the "body systems" medical model. Each patient and family is unique, with a varying capacity for health and vulnerability to illness. Each patient, regardless of the clinical setting, brings a set of unique characteristics to the care situation. Depending on where they are on the healthcare continuum, patients may display varying levels of the following characteristics:

| | |
|---|--|
| Resiliency | Capacity to return to a restorative level of functioning using compensatory/coping mechanisms; the ability to bounce back quickly after an insult. |
| Vulnerability | Susceptibility to actual or potential stressors that may adversely affect patient outcomes. |
| Stability | Ability to maintain a steady-state equilibrium. |
| Complexity | Intricate entanglement of two or more systems (e.g., body, family, therapies). |
| Resource Availability | Extent of resources (e.g., technical, fiscal, personal, psychological and social) the patient/family/community bring to the situation. |
| Participation in Care | Extent to which patient/family engages in aspects of care. |
| Participation in Decision Making | Extent to which patient/family engages in decision making. |
| Predictability | A characteristic that allows one to expect a certain course of events or course of illness. |

FOR EXAMPLE:

A healthy, uninsured, 40-year-old woman undergoing a pre-employment physical could be described as an individual who is (a) stable (b) not complex (c) very predictable (d) resilient (e) not vulnerable (f) able to participate in decision making and care, but (g) has inadequate resource availability.

On the other hand: a critically ill, insured infant with multisystem organ failure can be described as an individual who is (a) unstable (b) highly complex (c) unpredictable (d) highly resilient (e) vulnerable (f) unable to become involved in decision making and care, but (g) has adequate resource availability.

continued

AACN SYNERGY MODEL FOR PATIENT CARE (CONTINUED)

Nurse Characteristics

Nursing care reflects an integration of knowledge, skills, abilities and experience necessary to meet the needs of patients and families. Thus, nurse characteristics are derived from patient needs and include:

| | |
|-----------------------------------|--|
| Clinical Judgment | Clinical reasoning, which includes clinical decision making, critical thinking and a global grasp of the situation, coupled with nursing skills acquired through a process of integrating education, experiential knowledge and evidence-based guidelines. |
| Advocacy/ Moral Agency | Working on another's behalf and representing the concerns of the patient/family and nursing staff; serving as a moral agent in identifying and helping to resolve ethical and clinical concerns within and outside the clinical setting. |
| Caring Practices | Nursing activities that create a compassionate, supportive and therapeutic environment for patients and staff, with the aim of promoting comfort and healing and preventing unnecessary suffering. These caring behaviors include but are not limited to vigilance, engagement and responsiveness of caregivers. Caregivers include family and healthcare personnel. |
| Collaboration | Working with others (e.g., patients, families, healthcare providers) in a way that promotes/encourages each person's contributions toward achieving optimal/realistic patient/family goals. Collaboration involves intra- and inter-disciplinary work with colleagues and community. |
| Systems Thinking | Body of knowledge and tools that allow the nurse to manage whatever environmental and system resources that exist for the patient/family and staff, within or across healthcare systems and non-healthcare systems. |
| Response to Diversity | The sensitivity to recognize, appreciate and incorporate differences into the provision of care. Differences may include, but are not limited to, individuality, cultural, spiritual, gender, race, ethnicity, lifestyle, socioeconomic, age and values. |
| Facilitation of Learning | The ability to facilitate learning for patients/families, nursing staff, other members of the healthcare team and community. Includes both formal and informal facilitation of learning. |
| Clinical Inquiry | The ongoing process of questioning and evaluating practice and providing informed practice. Creating changes through evidence-based practice, research utilization and experiential knowledge. |

Nurses become competent within each continuum at a level that best meets the fluctuating needs of their population of patients. More compromised patients have more severe or complex needs, requiring nurses to have advanced knowledge and skills in an associated continuum.

FOR EXAMPLE:

If the patient was stable but unpredictable, minimally resilient and vulnerable, primary competencies of the nurse would be centered on clinical judgment and caring practices (which includes vigilance). If the patient was vulnerable, unable to participate in decision making and care, and had inadequate resource availability, the primary competencies of the nurse would focus on advocacy and moral agency, collaboration and systems thinking.

Although all eight competencies are essential for contemporary nursing practice, each assumes more or less importance depending on a patient's characteristics. **Synergy results when a patient's needs and characteristics are matched with the nurse's competencies.**

Based on the most recent AACN Certification Corporation study of nursing practice, the test plans for our certification exams reflect the Synergy Model as well as findings related to nursing care of the patient population studied, e.g., adult, pediatric and neonatal.

For more information about the AACN Synergy Model for Patient Care visit www.aacn.org.

ADULT CCRN TEST PLAN

I. CLINICAL JUDGMENT (80%)

A. Cardiovascular (18%)

1. Acute coronary syndromes (including unstable angina)
2. Acute myocardial infarction/ischemia (including papillary muscle rupture)
3. Acute peripheral vascular insufficiency
 - a. Carotid artery stenosis
 - b. Endarterectomy
 - c. Fem-pop bypass
 - d. Peripheral stents
4. Acute pulmonary edema
5. Arterial venous occlusion
 - a. Peripheral vascular insufficiency
6. Cardiac/vascular catheterization
 - a. Diagnostic
 - b. Interventional
7. Cardiogenic shock
8. Cardiomyopathies
 - a. Dilated
 - b. Hypertrophic
 - c. Idiopathic
 - d. Restrictive
9. Dysrhythmias
10. Heart failure
11. Hypertensive crisis
12. Myocardial conduction system defects
13. Structural heart defects (acquired and congenital, including valvular disease)
14. Ruptured or dissecting aneurysm (e.g., thoracic, abdominal, thoracoabdominal)

B. Pulmonary (17%)

1. Acute pulmonary embolus
2. Acute respiratory distress syndrome (ARDS), to include acute lung injury (ALI) and respiratory distress syndrome (RDS)
3. Acute respiratory failure
4. Acute respiratory infection (e.g., pneumonia)
5. Air-leak syndromes
6. Aspiration
7. Chronic conditions (e.g., COPD, asthma, bronchitis, emphysema)
8. Failure to wean from mechanical ventilation

9. Pulmonary fibrosis
10. Pulmonary hypertension
11. Status asthmaticus
12. Thoracic surgery
13. Thoracic trauma (e.g., fractured rib, lung contusion, tracheal perforation)

C. Endocrine/Hematology/Gastrointestinal/Renal/Integumentary (20%)

1. Endocrine
 - a. Acute hypoglycemia
 - b. Diabetes insipidus
 - c. Diabetic ketoacidosis
 - d. Hyperglycemia
 - e. Hyperglycemic hyperosmolar nonketotic syndrome (HHNK)
 - f. Syndrome of inappropriate secretion of antidiuretic hormone (SIADH)
2. Hematology/Immunology
 - a. Anemia
 - b. Coagulopathies (e.g., ITP, DIC, HIT)
 - c. Immune deficiencies
 - d. Leukopenia
 - e. Thrombocytopenia
3. Gastrointestinal
 - a. Acute abdominal trauma
 - b. Acute GI hemorrhage
 - c. Bowel infarction/obstruction/perforation (e.g., mesenteric ischemia, adhesions)
 - d. Gastroesophageal reflux
 - e. GI surgeries
 - f. Hepatic failure/coma (e.g., portal hypertension, cirrhosis, esophageal varices, fulminant hepatitis, biliary atresia)
 - g. Malnutrition and malabsorption
 - h. Pancreatitis
4. Renal/Genitourinary
 - a. Acute kidney injury (AKI), acute renal failure, acute tubular necrosis (ATN)
 - b. Chronic kidney disease
 - c. Incontinence
 - d. Infections
 - e. Life-threatening electrolyte imbalances

continued

ADULT CCRN TEST PLAN (CONTINUED)

5. Integumentary
 - a. IV infiltration
 - b. Pressure ulcer
 - c. Wounds
 - i. Infectious
 - ii. Surgical
 - iii. Trauma

D. Musculoskeletal/Neurology/Psychosocial (13%)

1. Musculoskeletal
 - a. Infections
 - b. Functional issues (e.g., immobility, falls, gait disorders)
2. Neurology
 - a. Brain death
 - b. Encephalopathy
 - c. Hemorrhage
 - i. Intracranial (ICH)
 - ii. Intraventricular (IVH)
 - iii. Subarachnoid (traumatic or aneurysmal)
 - d. Ischemic stroke
 - e. Neurologic infectious disease (e.g., viral, bacterial, fungal)
 - f. Neurosurgery
 - g. Seizure disorders
 - h. Space-occupying lesions (e.g., brain tumors)
 - i. Traumatic brain injury (e.g., epidural, subdural, concussion, non-accidental trauma)
3. Behavioral/Psychosocial
 - a. Agitation
 - b. Antisocial behaviors, aggression, violence
 - c. Delirium
 - d. Dementia
 - e. Medical non-adherence
 - f. Mood disorders, depression, anxiety
 - g. Post-traumatic stress disorder (PTSD)
 - h. Risk-taking behavior
 - i. Substance dependence or abuse (e.g., withdrawal, drug-seeking behavior, chronic alcohol or drug dependence)
 - j. Suicidal ideation and/or behaviors

E. Multisystem (14%)

1. Bariatric complications
2. Comorbidity in patients with transplant history
3. End of life
4. Healthcare-associated infections (HAI)
 - a. Central line-associated bloodstream infections (CLABSI)
 - b. Catheter-associated urinary tract infection (CAUTI)
 - c. VAP (i.e., ventilator-associated event or VAE)
5. Hypotension
6. Infectious diseases
 - a. Multidrug-resistant organisms (e.g., MRSA, VRE, CRE)
 - b. Influenza (e.g., pandemic or epidemic)
7. Multi-organ dysfunction syndrome (MODS)
8. Multisystem trauma
9. Pain
10. Palliative care
11. Rhabdomyolysis
12. Sepsis continuum (systemic inflammatory response syndrome (SIRS), sepsis, severe sepsis, septic shock)
13. Shock states
 - a. Distributive (e.g., anaphylactic, neurogenic)
 - b. Hypovolemic
14. Sleep disruption (including sensory overload)
15. Thermoregulation
16. Toxin/drug exposure (including allergies)
17. Toxic ingestions/inhalations (e.g., drug/alcohol overdose)

II. PROFESSIONAL CARING & ETHICAL PRACTICE (20%)

- A. Advocacy/Moral Agency
- B. Caring Practices
- C. Response to Diversity
- D. Facilitation of Learning
- E. Collaboration
- F. Systems Thinking
- G. Clinical Inquiry

*Order of content does not necessarily reflect importance.
The sum of these percentages is not 100 due to rounding.*

ADULT CCRN TEST PLAN TESTABLE NURSING ACTIONS

- Assess pain considering patient's cognitive status and age
- Identify and monitor normal and abnormal diagnostic test results
- Manage patients receiving:
 - medications (e.g., safe administration, monitoring, polypharmacy)
 - complementary alternative medicine and/or non-pharmacologic interventions
- Monitor patients and follow protocols for pre- and postoperative care
- Recognize indications for and manage patients requiring:
 - central venous access
 - SVO₂ monitoring
- Recognize normal and abnormal developmental assessment findings and provide developmentally appropriate care
- Recognize normal and abnormal:
 - physical assessment findings
 - psychosocial assessment findings
- Recognize signs and symptoms of emergencies, initiate interventions and seek assistance as needed
- Apply leads for cardiac monitoring
- Identify, interpret and monitor cardiac rhythms
- Monitor hemodynamic status, and recognize signs and symptoms of hemodynamic instability
- Recognize indications for and manage patients requiring:
 - 12-lead ECG
 - arterial catheter
 - cardiac catheterization
 - cardioversion
 - central venous pressure monitoring
 - defibrillation
 - invasive hemodynamic monitoring
 - IABP
 - percutaneous coronary interventions
 - vascular stenting
- Interpret blood gas results
- Recognize indications for and manage patients requiring:
 - endotracheal tubes
 - bronchoscopy
 - chest tubes
 - conventional modes of mechanical ventilation
 - non-conventional modes of mechanical ventilation (e.g., high-frequency)
 - noninvasive positive pressure ventilation (e.g., BiPAP, CPAP, high-flow nasal cannula)
 - oxygen therapy delivery device
 - prevention of complications related to mechanical ventilation (ventilator bundle)
 - prone positioning (lateral rotation therapy)
 - pulmonary therapeutic interventions related to mechanical ventilation:
 - airway clearance
 - intubation
 - weaning
 - extubation
 - respiratory monitoring devices (e.g., SPO₂, SVO₂, ETCO₂) and report values
 - therapeutic gases (e.g., oxygen, nitric oxide, heliox, CO₂)
 - thoracentesis
 - tracheostomy
 - tracheostomy with mechanical ventilation
- Manage patients receiving transfusion of blood products
- Monitor patients and follow protocols pre-, intra-, post-intervention for hematology and immunology problems (e.g., plasmapheresis, exchange transfusion, leukocyte depletion)
- Monitor patients and follow protocols related to blood conservation
- Monitor patients and follow protocols for pre-, intra-, post-procedure for gastrointestinal problems (e.g., EGD, peg placement)

continued

ADULT CCRN TEST PLAN

TESTABLE NURSING ACTIONS (CONTINUED)

- Recognize indications for and manage patients requiring:
 - gastrointestinal monitoring devices (e.g., intra-abdominal compartment pressure)
 - gastrointestinal drains
- Recognize indications for and complications of enteral and parenteral nutrition
- Intervene to address barriers to nutritional/fluid adequacy (e.g., chewing/swallowing difficulties, alterations in hunger and thirst, inability to self-feed)
- Recognize indications for and manage patients requiring renal therapeutic intervention (e.g., hemodialysis, CRRT, peritoneal dialysis)
- Manage patients receiving electrolyte replacement
- Monitor patients and follow protocols pre-, intra-, post-renal procedure (e.g., renal biopsy, ultrasound)
- Recognize indications for and manage patients undergoing therapeutic integumentary interventions (e.g., wound VACs, pressure reduction surfaces, fecal management devices, IV infiltrate treatment)
- Manage patients requiring progressive mobility
- Monitor patients and follow protocols for neurologic procedures (e.g., pre-, intra-, post-procedure)
- Recognize indications for and monitor/manage patients requiring neurologic monitoring devices and drains (e.g., ICP, ventricular drain)
- Manage age-related communication problems
- Respond to behavioral emergencies (e.g., non-violent crisis intervention, de-escalation techniques)
- Recognize indications for and manage patients requiring:
 - behavioral therapeutic interventions
 - restraints
- Utilize behavioral assessment tools (e.g., delirium, alcohol withdrawal, mini-mental status)
- Recognize indications for and manage patients undergoing:
 - therapeutic hypothermia
 - intermittent sedation
 - continuous sedation
 - procedural sedation
 - minimal sedation
 - moderate sedation
 - deep sedation

ADULT CCRN SAMPLE EXAM QUESTIONS

The purpose of the sample questions is to familiarize candidates with the style and format of the certification exam items.

- 1. The nursing staff is resisting being assigned to a disruptive patient. An appropriate resolution would be to**
 - A. ask the physician to transfer the patient.
 - B. rotate the patient assignment among staff.
 - C. confront the family and demand an end to the behavior.
 - D. hold a nursing team conference to discuss care needs.
- 2. A patient with unstable angina has an IABP inserted. Hemodynamics are:**

| | |
|-------------|--------------------------------|
| HR | 148 (sinus tachycardia) |
| MAP | 40 mm Hg |
| PAOP | 25 mm Hg |
| CI | 1.4 L/min/m² |

Which of the following should be included in this patient's plan of care?

 - A. checking timing of the IABP, decreasing balloon to 1:2 frequency
 - B. obtaining an echocardiogram and administering furosemide (Lasix)
 - C. infusing dobutamine (Dobutrex) and obtaining a 12-lead ECG
 - D. administering adenosine (Adenocard) rapidly and checking results of Hgb and Hct
- 3. The family of a critically ill patient wishes to spend the night, which is contrary to visiting policy. The nurse's best action would be to**
 - A. adhere to the visiting policy.
 - B. allow the family to stay in the room.
 - C. obtain a motel room near the hospital where the family can spend the night.
 - D. allow one or two family members to stay and evaluate the patient's response.
- 4. A patient with a recent myocardial infarction suddenly develops a loud systolic murmur. The most likely cause is which of the following?**
 - A. pulmonary embolism
 - B. congestive heart failure
 - C. ruptured papillary muscle
 - D. increased systemic vascular resistance
- 5. Members of the nursing staff are developing written patient education materials for a group of patients with diverse reading abilities. It would be most effective for the staff to**
 - A. design individual handouts for each patient.
 - B. develop a computer-based education series.
 - C. write the materials at a fourth-grade reading level.
 - D. limit text and provide color pictures.
- 6. A patient who is 72 hours postoperative repair of a ruptured abdominal aortic aneurysm suddenly becomes dyspneic with an increased respiratory rate from 24 to 40. An arterial blood gas sample obtained while the patient is receiving oxygen at 6 L/min via nasal cannula reveals the following results:**

| | |
|------------------------|-------------|
| pH | 7.50 |
| pCO₂ | 31 |
| pO₂ | 48 |

A chest x-ray is obtained and a "ground-glass-like appearance" is reported. Auscultation of the lungs reveals basilar crackles that were not previously present. The nurse should suspect that the patient has developed

 - A. a pulmonary embolus.
 - B. bacterial pneumonia.
 - C. chronic obstructive pulmonary disease.
 - D. acute respiratory distress syndrome.

continued

ADULT CCRN SAMPLE EXAM QUESTIONS (CONTINUED)

7. A patient on mechanical ventilation is post-operative day 5 for spinal injury sustained playing college football. He was unusually disengaged the previous day. Today he is agitated, combative during care and forgot his family was at the bedside an hour ago. Other physiological factors are ruled out. The nurse should recognize the patient is *most likely* experiencing
- A. acute dementia.
 - B. acute delirium.
 - C. alcohol withdrawal.
 - D. steroid withdrawal.
8. A patient who is one day post-gastroplasty has a sudden onset of restlessness, dyspnea and chest pain. His heart rate is 122, and auscultation of heart sound reveals an increased intensity of a pulmonary S2. The *most likely* cause is
- A. aspiration pneumonia.
 - B. a spontaneous pneumothorax.
 - C. a pleural effusion.
 - D. a pulmonary embolus.

Answers

- 1. D
- 2. A
- 3. D
- 4. C
- 5. C
- 6. D
- 7. B
- 8. D

PEDIATRIC CCRN TEST PLAN

I. CLINICAL JUDGMENT (80%)

A. Cardiovascular (15%)

1. Acute pulmonary edema
2. Cardiac surgery (e.g., congenital defects)
3. Cardiac/vascular catheterization
 - a. Diagnostic
 - b. Interventional
4. Cardiogenic shock
5. Cardiomyopathies
 - a. Dilated
 - b. Hypertrophic
 - c. Idiopathic
 - d. Restrictive
6. Dysrhythmias
7. Heart failure
8. Hypertensive crisis
9. Myocardial conduction system defects
10. Structural heart defects (acquired and congenital, including valvular disease)

B. Pulmonary (16%)

1. Acute pulmonary embolus
2. Acute respiratory distress syndrome (ARDS), to include acute lung injury (ALI) and respiratory distress syndrome (RDS)
3. Acute respiratory failure
4. Acute respiratory infection (e.g., pneumonia)
5. Air-leak syndromes
6. Aspiration
7. Bronchopulmonary dysplasia
8. Congenital anomalies (e.g., diaphragmatic hernia, tracheoesophageal fistula, choanal atresia, tracheal malacia, tracheal stenosis)
9. Chronic conditions (e.g., asthma, bronchitis)
10. Failure to wean from mechanical ventilation
11. Pulmonary hypertension
12. Status asthmaticus
13. Thoracic surgery
14. Thoracic trauma (e.g., fractured rib, lung contusion, tracheal perforation)

C. Endocrine/Hematology/Gastrointestinal/ Renal/Integumentary (19%)

1. Endocrine
 - a. Acute hypoglycemia

- b. Diabetes insipidus
 - c. Diabetic ketoacidosis
 - d. Hyperglycemia
 - e. Inborn errors of metabolism
 - f. Syndrome of inappropriate secretion of antidiuretic hormone (SIADH)
2. Hematology/Immunology
 - a. Anemia
 - b. Coagulopathies (e.g., ITP, DIC, HIT)
 - c. Immune deficiencies
 - d. Leukopenia
 - e. Oncologic complications
 - f. Sickle cell crisis
 - g. Thrombocytopenia
3. Gastrointestinal
 - a. Acute abdominal trauma
 - b. Acute GI hemorrhage
 - c. Bowel infarction/obstruction/perforation (e.g., mesenteric ischemia, adhesions)
 - d. Gastroesophageal reflux
 - e. GI abnormalities (e.g., omphalocele, gastroschisis, volvulus, imperforate anus, Hirschsprung disease, malrotation, intussusception)
 - f. GI surgeries
 - g. Hepatic failure/coma (e.g., portal hypertension, cirrhosis, esophageal varices, fulminant hepatitis, biliary atresia)
 - h. Malnutrition and malabsorption
4. Renal/Genitourinary
 - a. Acute kidney injury (AKI), acute renal failure, acute tubular necrosis (ATN)
 - b. Chronic kidney disease
 - c. Infections
 - d. Life-threatening electrolyte imbalances
5. Integumentary
 - a. IV infiltration
 - b. Pressure ulcer
 - c. Wounds
 - i. Infectious
 - ii. Surgical
 - iii. Trauma

continued

PEDIATRIC CCRN TEST PLAN (CONTINUED)

D. Musculoskeletal/Neurology/Psychosocial (16%)

1. Musculoskeletal
 - a. Infections
2. Neurology
 - a. Acute spinal cord injury
 - b. Brain death
 - c. Congenital neurological abnormalities (e.g., AV malformation, myelomeningocele, encephalocele)
 - d. Encephalopathy
 - e. Head trauma
 - f. Hemorrhage
 - i. Intracranial (ICH)
 - ii. Intraventricular (IVH)
 - iii. Subarachnoid (traumatic or aneurysmal)
 - g. Hydrocephalus
 - h. Ischemic stroke
 - i. Neurologic infectious disease (e.g., viral, bacterial, fungal)
 - j. Neuromuscular disorders
 - k. Neurosurgery
 - l. Seizure disorders
 - m. Space occupying lesions (e.g., brain tumors)
 - n. Spinal fusion
 - o. Traumatic brain injury (e.g., epidural, subdural, concussion, non-accidental trauma)
3. Behavioral/Psychosocial
 - a. Abuse, maltreatment, neglect
 - b. Agitation
 - c. Developmental delays
 - d. Failure to thrive
 - e. Medical non-adherence
 - f. Suicidal ideation and/or behaviors

E. Multisystem (14%)

1. Asphyxia
2. Comorbidity in patients with transplant history
3. End of life

4. Healthcare-associated infections (HAI)
 - a. Central line-associated bloodstream infections (CLABSI)
 - b. Catheter-associated urinary tract infection (CAUTI)
 - c. VAP (i.e., ventilator-associated event or VAE)
5. Hemolytic uremic syndrome (HUS)
6. Hypotension
7. Infectious diseases
 - a. Multidrug-resistant organisms (e.g., MRSA, VRE, CRE)
 - b. Influenza (e.g., pandemic or epidemic)
8. Multi-organ dysfunction syndrome (MODS)
9. Multisystem trauma
10. Pain
11. Palliative care
12. Sepsis continuum (systemic inflammatory response syndrome (SIRS), sepsis, severe sepsis, septic shock)
13. Shock states
 - a. Distributive (e.g., anaphylactic, neurogenic)
 - b. Hypovolemic
14. Sleep disruption (including sensory overload)
15. Submersion injuries
16. Thermoregulation
17. Toxic ingestions/inhalations (e.g., drug/alcohol overdose)
18. Toxin/drug exposure (including allergies)

II. PROFESSIONAL CARING & ETHICAL PRACTICE (20%)

A. Advocacy/Moral Agency

B. Caring Practices

C. Response to Diversity

D. Facilitation of Learning

E. Collaboration

F. Systems Thinking

G. Clinical Inquiry

Order of content does not necessarily reflect importance.

PEDIATRIC CCRN TEST PLAN TESTABLE NURSING ACTIONS

- Assess pain considering patient's cognitive status and age
- Identify and monitor normal and abnormal diagnostic test results
- Manage patients receiving:
 - medications (e.g., safe administration, monitoring, polypharmacy)
 - complementary alternative medicine and/or non-pharmacologic interventions
- Monitor patients and follow protocols for pre- and postoperative care
- Recognize indications for and manage patients requiring:
 - central venous access
 - SVO₂ monitoring
- Recognize normal and abnormal developmental assessment findings and provide developmentally appropriate care
- Recognize normal and abnormal:
 - physical assessment findings
 - psychosocial assessment findings
- Recognize signs and symptoms of emergencies, initiate interventions and seek assistance as needed
- Apply leads for cardiac monitoring
- Identify, interpret and monitor cardiac rhythms
- Monitor hemodynamic status, and recognize signs and symptoms of hemodynamic instability
- Recognize indications for and manage patients requiring:
 - 12-lead ECG
 - arterial catheter
 - cardiac catheterization
 - cardioversion
 - central venous pressure monitoring
 - defibrillation
 - invasive hemodynamic monitoring
 - vascular stenting
- Interpret blood gas results
- Recognize indications for and manage patients requiring:
 - endotracheal tubes
 - bronchoscopy
 - chest tubes
 - conventional modes of mechanical ventilation
 - non-conventional modes of mechanical ventilation (e.g., high-frequency)
 - noninvasive positive pressure ventilation (e.g., BiPAP, CPAP, high-flow nasal cannula)
 - oxygen therapy delivery device
 - prevention of complications related to mechanical ventilation (ventilator bundle)
 - prone positioning (lateral rotation therapy)
 - pulmonary therapeutic interventions related to mechanical ventilation:
 - airway clearance
 - intubation
 - weaning
 - extubation
 - respiratory monitoring devices (e.g., SPO₂, SVO₂, ETCO₂) and report values
 - therapeutic gases (e.g., oxygen, nitric oxide, heliox, CO₂)
 - thoracentesis
 - tracheostomy
 - tracheostomy with mechanical ventilation
- Manage patients receiving transfusion of blood products
- Monitor patients and follow protocols pre-, intra-, post-intervention for hematology and immunology problems (e.g., plasmapheresis, exchange transfusion, leukocyte depletion)
- Monitor patients and follow protocols related to blood conservation
- Monitor patients and follow protocols for pre-, intra-, post-procedure for gastrointestinal problems (e.g., EGD, peg placement)

continued

PEDIATRIC CCRN TEST PLAN

TESTABLE NURSING ACTIONS (CONTINUED)

- Recognize indications for and manage patients requiring:
 - gastrointestinal monitoring devices (e.g., intra-abdominal compartment pressure)
 - gastrointestinal drains
- Recognize indications for and complications of enteral and parenteral nutrition
- Intervene to address barriers to nutritional/fluid adequacy (e.g., chewing/swallowing difficulties, alterations in hunger and thirst, inability to self-feed)
- Recognize indications for and manage patients requiring renal therapeutic intervention (e.g., hemodialysis, CRRT, peritoneal dialysis)
- Manage patients receiving electrolyte replacement
- Monitor patients and follow protocols pre-, intra-, post-renal procedure (e.g., renal biopsy, ultrasound)
- Recognize indications for and manage patients undergoing therapeutic integumentary interventions (e.g., wound VACs, pressure reduction surfaces, fecal management devices, IV infiltrate treatment)
- Manage patients requiring progressive mobility
- Monitor patients and follow protocols for neurologic procedures (e.g., pre-, intra-, post-procedure)
- Recognize indications for and monitor/manage patients requiring neurologic monitoring devices and drains (e.g., ICP, ventricular drain)
- Manage patients requiring spinal immobilization
- Manage age-related communication problems
- Respond to behavioral emergencies (e.g., non-violent crisis intervention, de-escalation techniques)
- Recognize indications for and manage patients requiring:
 - behavioral therapeutic interventions
 - restraints
- Recognize indications for and manage patients undergoing:
 - therapeutic hypothermia
 - intermittent sedation
 - continuous sedation
 - procedural sedation
 - minimal sedation
 - moderate sedation
 - deep sedation

PEDIATRIC CCRN SAMPLE EXAM QUESTIONS

The purpose of the sample questions is to familiarize candidates with the style and format of the certification exam items.

1. While caring for a patient with salicylate overdose, the nurse should anticipate administration of which of the following as a primary treatment measure?

- A. protamine sulfate
- B. glucose
- C. packed red blood cells
- D. fluid and electrolytes

2. An adolescent with the developmental age of a 4-year-old requires placement of a chest tube. The best way to prepare the patient for this procedure is to

- A. use short simple sentences and limit descriptions to concrete explanations.
- B. show the patient a chest tube and explain how it will feel.
- C. explain in detail why a chest tube is needed and how it works.
- D. tell the parents what will be done so they can explain it to their child.

3. A child is admitted with a gunshot wound to the head, accidentally inflicted by an older sibling. The parents are overcome with grief and appear to be ignoring the following statements made by the older sibling: "It was an accident. I didn't mean to do it. I'm sorry!" Which of the following actions by the nurse would be most appropriate?

- A. Discuss the importance of gun safety with the older sibling while the parents are at the bedside.
- B. Seek additional support for the parents for ways they can assist the older sibling.
- C. Tell the parents that they need to provide support for the older sibling.
- D. Tell the older sibling, "Accidents happen. I know you didn't mean to do it."

4. Which of the following laboratory findings is indicative of the syndrome of inappropriate ADH secretion (SIADH)?

- A. increased serum sodium
- B. decreased serum osmolality
- C. decreased blood urea nitrogen (BUN)
- D. increased serum potassium

5. A 3-year-old is receiving aggressive management for an episode of rapidly worsening asthma. Vital signs:

| | <u>Admission</u> | <u>Current</u> |
|------------------|------------------|----------------|
| HR | 120 | 140 |
| RR | 30 | 45 |
| SpO ₂ | 95% | 90% |

The nurse notes diminishing breath sounds with inspiratory and expiratory wheezing, intercostal retraction and increased somnolence. Which of the following should the nurse anticipate next?

- A. administration of NaHCO₃
- B. fluid resuscitation
- C. racemic epinephrine
- D. endotracheal intubation

6. A 2-year-old is admitted for digoxin (Lanoxin) toxicity. BP is 94/60, capillary refill time is 2 seconds and the electrocardiogram reveals 1st degree AV block with a heart rate of 60. The nurse should

- A. prepare for cardioversion
- B. administer Atropine
- C. perform vasovagal maneuvers
- D. continue to monitor

continued

PEDIATRIC CCRN SAMPLE EXAM QUESTIONS (CONTINUED)

7. **An adolescent with asthma is readmitted just a week after discharge from the hospital. On questioning, the nurse learns that the patient refuses to use the inhalers at school. The nurse should**
- A. inform the teen about long-term consequences if the treatment plan is not followed.
 - B. consult the school nurse to find out why they are not monitoring the medications at school.
 - C. suggest the parents set up a disciplinary contract with the teen.
 - D. arrange for the teen to attend an asthma support group.
8. **The parent of an unconscious 5-month-old reports the baby fell off the table during a diaper change by an older sibling. What findings would indicate further inquiry of the history?**
- A. a cephalic bruise
 - B. poorly reactive pupils
 - C. retinal hemorrhage
 - D. a linear skull fracture

Answers

- 1. D
- 2. A
- 3. B
- 4. B
- 5. D
- 6. D
- 7. D
- 8. C

NEONATAL CCRN TEST PLAN

I. CLINICAL JUDGMENT (80%)

A. Cardiovascular (5%)

1. Cardiac surgery (e.g., congenital defects)
2. Dysrhythmias
3. Structural heart defects (acquired and congenital, including valvular disease)

B. Pulmonary (24%)

1. Acute respiratory distress syndrome (ARDS), to include acute lung injury (ALI) and respiratory distress syndrome (RDS)
2. Acute respiratory failure
3. Acute respiratory infection (e.g., pneumonia)
4. Air-leak syndromes
5. Apnea of prematurity
6. Aspiration
7. Bronchopulmonary dysplasia
8. Congenital anomalies (e.g., diaphragmatic hernia, tracheoesophageal fistula, choanal atresia, tracheal malacia, tracheal stenosis)
9. Failure to wean from mechanical ventilation
10. Meconium aspiration syndrome (MAS)
11. Persistent pulmonary hypertension of the newborn (PPHN)
12. Pulmonary hypertension
13. Thoracic surgery
14. Transient tachypnea of the newborn (TTNB)

C. Endocrine/Hematology/Gastrointestinal/ Renal/Integumentary (24%)

1. Endocrine
 - a. Hyperglycemia
 - b. Inborn errors of metabolism
 - c. Neonatal hypoglycemia
2. Hematology/Immunology
 - a. Anemia
 - b. Anemia of prematurity
 - c. Coagulopathies (e.g., ITP, DIC, HIT)
 - d. Immune deficiencies
 - e. Hyperbilirubinemia
 - i. Pathologic
 - ii. Physiologic
 - f. Leukopenia
 - g. Rh incompatibilities, ABO incompatibilities, hydrops fetalis
 - h. Thrombocytopenia

3. Gastrointestinal
 - a. Bowel infarction/obstruction/perforation (e.g., mesenteric ischemia, adhesions)
 - b. Gastroesophageal reflux
 - c. GI abnormalities (e.g., omphalocele, gastroschisis, volvulus, imperforate anus, Hirschsprung disease, malrotation, intussusception)
 - d. GI surgeries
 - e. Malnutrition and malabsorption
 - f. Necrotizing enterocolitis
4. Renal/Genitourinary
 - a. Acute kidney injury (AKI), acute renal failure, acute tubular necrosis (ATN)
 - b. Infections
 - c. Life-threatening electrolyte imbalances
 - d. Polycystic kidney disease
5. Integumentary
 - a. IV infiltration
 - b. Surgical wounds

D. Musculoskeletal/Neurology/Psychosocial (13%)

1. Musculoskeletal
 - a. Infections
 - b. Osteopenia
2. Neurology
 - a. Birth injuries
 - b. Brain death
 - c. Congenital neurological abnormalities (e.g., AV malformation, myelomeningocele, encephalocele)
 - d. Encephalopathy
 - e. Hemorrhage
 - i. Intracranial (ICH)
 - ii. Intraventricular (IVH)
 - iii. Subarachnoid (traumatic or aneurysmal)
 - f. Hydrocephalus
 - g. Neurologic infectious disease (e.g., viral, bacterial, fungal)
 - h. Neurosurgery
 - i. Seizure disorders

continued

NEONATAL CCRN TEST PLAN (CONTINUED)

3. Behavioral/Psychosocial
 - a. Agitation
 - b. Developmental delays
 - c. Failure to thrive
 - d. Stress in extremely low birth weight infants
 - e. Substance dependence or abuse (e.g., withdrawal, chronic alcohol or drug dependence)

E. Multisystem (15%)

1. Asphyxia
2. End of life
3. Healthcare-associated infections (HAI)
 - a. Central line-associated bloodstream infections (CLABSI)
 - b. Catheter-associated urinary tract infection (CAUTI)
 - c. VAP (i.e., ventilator-associated event or VAE)
4. Hypotension
5. Infectious diseases
 - a. Multidrug-resistant organisms (e.g., MRSA, VRE, CRE)
 - b. Influenza (e.g., pandemic or epidemic)
6. Life-threatening maternal-fetal complications (e.g., eclampsia, HELLP syndrome, maternal-fetal transfusion, placental abruption, placenta previa)
7. Low birth weight/prematurity
8. Multi-organ dysfunction syndrome (MODS)
9. Pain
10. Palliative care
11. Sepsis continuum (systemic inflammatory response syndrome (SIRS), sepsis, severe sepsis, septic shock)
12. Shock states:
 - a. Distributive (e.g., anaphylactic, neurogenic)
 - b. Hypovolemic
13. Sleep disruption (including sensory overload)
14. Thermoregulation
15. Toxin/drug exposure (including allergies)

II. PROFESSIONAL CARING & ETHICAL PRACTICE (20%)

- A. Advocacy/Moral Agency
- B. Caring Practices
- C. Response to Diversity
- D. Facilitation of Learning
- E. Collaboration
- F. Systems Thinking
- G. Clinical Inquiry

*Order of content does not necessarily reflect importance.
The sum of these percentages is not 100 due to rounding.*

NEONATAL CCRN TEST PLAN TESTABLE NURSING ACTIONS

- Assess pain considering patient's cognitive status and age
- Identify and monitor normal and abnormal diagnostic test results
- Manage patients receiving:
 - medications (e.g., safe administration, monitoring, polypharmacy)
 - complementary alternative medicine and/or non-pharmacologic interventions
- Monitor patients and follow protocols for pre- and postoperative care
- Recognize indications for and manage patients requiring:
 - central venous access
 - SVO₂ monitoring
- Recognize normal and abnormal developmental assessment findings and provide developmentally appropriate care
- Recognize normal and abnormal:
 - physical assessment findings
 - psychosocial assessment findings
- Recognize signs and symptoms of emergencies, initiate interventions and seek assistance as needed
- Apply leads for cardiac monitoring
- Identify, interpret and monitor cardiac rhythms
- Monitor hemodynamic status, and recognize signs and symptoms of hemodynamic instability
- Recognize indications for and manage patients requiring:
 - 12-lead ECG
 - arterial catheter
 - cardiac catheterization
 - cardioversion
 - central venous pressure monitoring
 - invasive hemodynamic monitoring
 - umbilical catheter
- Recognize normal fetal circulation and transition to extrauterine life
- Interpret blood gas results
- Recognize indications for and manage patients requiring:
 - endotracheal tubes
 - bronchoscopy
 - chest tubes
 - conventional modes of mechanical ventilation
 - non-conventional modes of mechanical ventilation (e.g., high-frequency)
 - noninvasive positive pressure ventilation (e.g., BiPAP, CPAP, high-flow nasal cannula)
 - oxygen therapy delivery device
 - prevention of complications related to mechanical ventilation (ventilator bundle)
 - prone positioning (lateral rotation therapy)
 - pulmonary therapeutic interventions related to mechanical ventilation
 - airway clearance
 - intubation
 - weaning
 - extubation
 - respiratory monitoring devices (e.g., SPO₂, SVO₂, ETCO₂) and report values
 - therapeutic gases (e.g., oxygen, nitric oxide, heliox, CO₂)
 - thoracentesis
 - tracheostomy
 - tracheostomy with mechanical ventilation
- Manage patients receiving transfusion of blood products
- Monitor patients and follow protocols pre-, intra-, post-intervention for hematology and immunology problems (e.g., plasmapheresis, exchange transfusion, leukocyte depletion)
- Monitor patients and follow protocols related to blood conservation
- Monitor patients and follow protocols for pre-, intra-, post-procedure for gastrointestinal problems (e.g., EGD, peg placement)

continued

NEONATAL CCRN TEST PLAN

TESTABLE NURSING ACTIONS (CONTINUED)

- Recognize indications for and manage patients requiring:
 - gastrointestinal monitoring devices (e.g., intra-abdominal compartment pressure)
 - gastrointestinal drains
- Recognize indications for and complications of enteral and parenteral nutrition
- Recognize indications for and manage patients requiring renal therapeutic intervention (e.g., hemodialysis, CRRT, peritoneal dialysis)
- Manage patients receiving electrolyte replacement
- Monitor patients and follow protocols pre-, intra-, post-renal procedure (e.g., renal biopsy, ultrasound)
- Recognize indications for and manage patients undergoing therapeutic intervention (e.g., neonatal skin care, humidity)
- Monitor patients and follow protocols for neurologic procedures (e.g., pre-, intra-, post-procedure)
- Recognize indications for and monitor/manage patients requiring neurologic monitoring devices and drains (e.g., ICP, ventricular drain)
- Manage age-related communication problems
- Respond to behavioral emergencies (e.g., nonviolent crisis intervention, de-escalation techniques)
- Recognize indications for and manage patients undergoing:
 - therapeutic hypothermia
 - intermittent sedation
 - continuous sedation
 - procedural sedation
 - minimal sedation
 - moderate sedation
 - deep sedation

NEONATAL CCRN SAMPLE EXAM QUESTIONS

The purpose of the sample questions is to familiarize candidates with the style and format of the certification exam items.

- 1. After application of a warm saline-soaked gauze dressing to an infant's abdominal wall defect, the most effective method for preventing evaporative heat loss is to**
 - A. place the infant in a warmed isolette.
 - B. place the infant under a radiant heat source.
 - C. moisten the gauze dressing every 30 minutes.
 - D. cover the gauze dressing with plastic.
- 2. An infant has just been intubated for respiratory failure due to respiratory distress syndrome (RDS). The infant's breath sounds are heard on the right side but not on the left. Which of the following interventions would be most appropriate?**
 - A. leave the tube in position and increase bag pressure
 - B. advance the tube until breath sounds are heard bilaterally
 - C. withdraw the tube until breath sounds are heard bilaterally
 - D. remove the tube and re-intubate the infant
- 3. A preterm infant with necrotizing enterocolitis and resultant bowel perforation has returned from the operating room with an ileostomy. Which of the following would best facilitate management of the ostomy?**
 - A. contacting the dietitian for recommendations regarding easily digested formula
 - B. contacting the enterostomal nurse to provide a pattern for the ostomy appliance
 - C. applying a dry sterile dressing over the ostomy
 - D. clini-testing stool to determine degree of malabsorption
- 4. An infant at 38-weeks-gestation is born via cesarean section. At 4 hours of age, heart rate is 155 and respiratory rate is at 60. Physical assessment reveals grunting, mild retractions and nasal flaring. A chest x-ray reveals perihilar streaking bilaterally. The following arterial blood gas (ABG) results are obtained:**

| | |
|------------------|-----|
| pH | 7.4 |
| pCO ₂ | 35 |
| pO ₂ | 40 |
| HCO ₃ | 22 |

Appropriate management of this patient would consist of

 - A. intubation and mechanical ventilation.
 - B. surfactant replacement therapy.
 - C. chest tube insertion.
 - D. oxygen administration via hood.
- 5. A meeting is planned to discuss the parents' ethical concerns regarding life support interventions for their neonate with Trisomy 18. The nurse's role would be to**
 - A. assist the parents in articulating their questions and concerns.
 - B. provide legal information regarding end-of-life decisions.
 - C. describe reasons for the infant's poor prognosis.
 - D. inform the parents that the goal of the meeting is to obtain a DNR order.
- 6. An infant with documented hypoglycemia is being started on a continuous dextrose infusion following a bolus injection of glucose. An appropriate rate of dextrose infusion would be**
 - A. 1 - 3 mg/kg/min.
 - B. 4 - 8 mg/kg/min.
 - C. 9 - 12 mg/kg/min.
 - D. 13 - 16 mg/kg/min.

continued

NEONATAL CCRN SAMPLE EXAM QUESTIONS (CONTINUED)

7. An infant with isometric hydrops is delivered at 28-weeks-gestation by cesarean section. Which of the following interventions should be anticipated in the initial management of this infant?
- A. administration of sodium polystyrene sulfonate (Kayexalate)
 - B. placement of an umbilical venous catheter and slow push of O-positive whole blood
 - C. thoracentesis and/or paracentesis
 - D. a difficult intubation
8. The following results were obtained from a cerebrospinal fluid (CSF) sample obtained by lumbar puncture:
- 40 WBC/mm**
65% polymorphonuclear cells
Glucose 50 mg/dL
Protein 165 mg/dL
Bacteria shown by Gram-staining
- On the basis of these results, the *most appropriate* additional study would include
- A. drawing blood for sedimentation rate.
 - B. obtaining surface cultures.
 - C. continuing monitoring without intervention.
 - D. obtaining blood and urine cultures.
9. The mother of an infant with severe persistent pulmonary hypertension of the newborn (PPHN) would like to hold her infant. The infant's oxygen saturation is 88% to 92% at rest and mean blood pressure is 28. The nurse's *best* response should be to
- A. explain signs and symptoms that demonstrate instability of the infant.
 - B. assist the mother in holding the infant skin-to-skin.
 - C. encourage the mother to talk to the infant.
 - D. teach the mother how to provide gentle infant massage.
10. Lab tests from the mother of a neonate reveal the presence of cocaine. The baby demonstrates irritability, hypertonicity and sleep disturbances. Nursing care for the neonate should include
- A. swaddling and periods of undisturbed rest.
 - B. removal of parental rights and designation of a guardian.
 - C. encouragement of breast feeding and increased frequency of feedings.
 - D. mechanical ventilation and sedation.

Answers

- 1. D
- 2. C
- 3. B
- 4. D
- 5. A
- 6. B
- 7. C
- 8. D
- 9. A
- 10. A

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More current versions may be available.

PUBLISHER CONTACTS:

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| Online Adult CCRN/CCRN-E/CCRN-K Certification Review Course: Individual Purchase. 2015. | ACCRNOD |
| <i>Adult Practice CCRN/CCRN-E/CCRN-K Exam Questions.</i> 7th ed. 2015. 150 questions with rationales. | 200305 |

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| <i>Pediatric Practice CCRN/CCRN-K Exam Questions.</i> 6th ed. 2015. 150 questions with rationales. | 200205 |

| CCRN - Neonatal | Item # |
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| <i>AACN Procedure Manual for High Acuity, Progressive and Critical Care</i> . 7th ed. 2017. Wiegand DJ. 1,312 pages. | 128150 |
| <i>ACLS Pocket Reference Cards</i> . 2015. AHA, AACN. Set of 2. | 400862 |
| <i>Cardiac Surgery Essentials of Critical Care Nursing</i> . 2nd ed. 2016. Hardin SR, Kaplow R. 550 pages. | 100257 |
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| <i>Synergy: The Unique Relationship Between Nurses and Patients</i> . 2007. Curley MAQ. 304 pages. | 100148 |

| CCRN - Pediatric | Item # |
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5. DEMOGRAPHIC INFORMATION

Check **one** box in each category. Information used for statistical purposes and may be used in eligibility determination.

Primary Area Employed

- Acute Hemodialysis Unit (21)
- Burn Unit (13)
- Cardiac Rehabilitation (26)
- Cardiac Surgery/OR (36)
- Cardiovascular/Surgical ICU (09)
- Catheterization Lab (22)
- Combined Adult/Ped. ICU (23)
- Combined ICU/CCU (01)
- Coronary Care Unit (03)
- Corporate Industry (24)
- Crit. Care Transport/Flight (17)
- Direct Observation Unit (39)
- Emergency Dept. (12)
- General Med./Surg. Floor (18)
- Home Care (25)
- Intensive Care Unit (02)
- Interventional Cardiology (31)
- Long-Term Acute Care (27)
- Medical Cardiology (34)
- Medical ICU (04)
- Medical Surgical ICU (35)
- Neonatal ICU (06)
- Neuro./Neurosurgical ICU (10)
- Oncology Unit (19)
- Operating Room (15)
- Outpatient Clinic (29)
- Pediatric ICU (05)
- Private Practice (32)
- Progressive Care Unit (16)
- Recovery Room/PACU (14)
- Respiratory ICU (08)
- Stepdown Unit (30)
- Subacute Care (28)
- Surgical ICU (07)
- Tele-ICU (37)
- Telemetry (20)
- Trauma Unit (11)
- Other - specify below _____ (99)

Primary Position Held

- Academic Faculty (07)
- Acute Care Nurse Practitioner (09)
- Bedside/Staff Nurse (01)
- Case Manager (39)
- Charge Nurse (45)
- Clinic Nurse (40)
- Clinical Coordinator (44)
- Clinical Director (04)
- Clinical Nurse Specialist (08)
- Corporate/Industry (11)
- Hospital Administrator (38)
- Internist (37)
- Legal Nurse Consultant (47)
- Manager (03)
- Nurse Anesthetist (02)
- Nurse Educator (46)
- Nurse Midwife (13)
- Nurse Practitioner (05)
- Outcomes Manager (42)
- Physician (16)
- Physician Assistant (17)
- Researcher (18)
- Respiratory Therapist (19)

- Technician (21)
- Unit Coordinator (22)
- Other - specify below _____ (99)
- Home Health (13)
- Long-Term Acute Care Hosp. (16)
- Military/Government Hospital (04)
- Non-Academic Teaching Hosp. (14)
- Registry (10)
- Self-Employed (09)
- State Hospital (06)
- Travel Nurse (15)
- University Med. Ctr. (03)
- Other - specify below _____ (99)

Highest Nursing Degree

- Associate's Degree
- Bachelor's Degree
- Diploma
- Doctorate
- Master's Degree

Ethnicity

- African American (02)
- Asian (05)
- Hispanic (03)
- Native American (04)
- Pacific Islander (06)
- White/Non-Hispanic (01)
- Other - specify below _____ (99)

Number of Beds in Institution:

Years of Experience in Nursing:

Years of Experience in Acute/Critical Care Nursing:

Primary Type of Facility in Which Employed

- College/University (08)
- Community Hospital (Nonprofit) (01)
- Community Hospital (Profit) (02)
- Corporate/Industry (11)
- County Hospital (07)
- Federal Hospital (05)
- HMO/Managed Care (12)

Date of Birth: (mm/dd/yy)

Gender: Female Male

6. HONOR STATEMENT

Complete the Honor Statement on page 39.

7. SUBMIT APPLICATION

Attach Honor Statement to this application and submit with payment to:

AACN Certification Corporation
101 Columbia
Aliso Viejo, CA 92656-4109
or fax to: 949-362-2020

DO NOT mail AND fax your application - please choose only ONE method.

NOTE: Allow **2 to 3 weeks** from the date received by AACN Certification Corporation for application processing.

Questions? Please visit www.aacn.org/certification, email certification@aacn.org or call us at 800-899-2226.

Please complete page 3 of application (honor statement).

CCRN EXAM HONOR STATEMENT

PROCESSING WILL BE DELAYED IF INCOMPLETE OR NOT LEGIBLE.

PLEASE PRINT CLEARLY.

NAME:**AACN CUSTOMER #:**

Last

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MI

I hereby apply for the CCRN certification exam. Submission of this application indicates I have read and understand the exam policies and eligibility requirements as documented in the *CCRN Exam Handbook* and the *Certification Exam Policy Handbook*.

LICENSURE: I possess a current, unencumbered U.S. RN or APRN license. My _____ (state) nursing license _____ (number) is due to expire _____ (date).

An unencumbered license is not currently being subjected to formal discipline by any state board of nursing and has no provisions or conditions that limit my practice in any way. This applies to all RN or APRN licenses I currently hold. I understand that I must notify AACN Certification Corporation **within 30 days** if any disciplinary action is taken against my RN or APRN license(s) in the future.

PRACTICE: I have fulfilled one of the following clinical practice requirement options:

- Practice as an RN or APRN for 1,750 hours in direct care of acutely/critically ill patients during the past 2 years, with 875 of those hours accrued in the most recent year preceding application.

OR

- Practice as an RN or APRN for at least 5 years with a minimum of 2,000 hours in direct care of acutely/critically ill patients, with 144 of those hours accrued in the most recent year preceding application.

These clinical hours were in direct care of the following acutely/critically ill patient population:

Adult Pediatric Neonatal (check **one** box only)

A majority of the total practice hours and those within the year prior to application for exam eligibility were focused on *critically* ill patients.

Hours were completed in a U.S.-based or Canada-based facility or in a facility determined to be comparable to the U.S. standard of acute/critical care nursing practice as evidenced by Magnet® designation or Joint Commission International accreditation.

PRACTICE VERIFICATION: Following is the contact information for my clinical supervisor or a professional colleague (RN or physician) who can verify that I have met the clinical hour eligibility requirements:

VERIFIER'S NAME:**FACILITY NAME:**

Last

First

VERIFIER'S PHONE NUMBER:**VERIFIER'S EMAIL ADDRESS:**

You may not list yourself or a relative as your verifier.

AUDIT: I understand that my certification application is subject to audit, and failure to respond to or pass an audit will result in revocation of certification.

ETHICS: I understand the importance of ethical standards and agree to act in a manner congruent with the ANA Code of Ethics for Nurses.

NON-DISCLOSURE OF EXAM CONTENT: Submission of this application indicates my agreement to keep the contents of the exam confidential and not disclose or discuss specific exam content with anyone except AACN Certification Corporation. Per AACN Certification Corporation policy, sharing of exam content is cause for revocation of certification.

To the best of my knowledge, the information contained in this application is accurate and submitted in good faith. My signature below indicates I have read this honor statement and meet the eligibility requirements as outlined.

Applicant's Signature:**Date:**

This form may be photocopied and is also available online at www.aacn.org/certification.

