Exam Handbook

Cardiac Surgery Subspecialty Certification • Adult

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, advancing 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 driving the health and safety of patients experiencing acute and critical illness, we are guided by a set of deeply rooted values. These values are the foundation upon which we build our relentless pursuit of excellence.

- **Integrity –** *We demonstrate sound judgment, ethical behavior and accountability in all we do.*
- **Inclusion –** *We cultivate an inclusive culture, where everyone contributes their unique strengths and perspectives.*
- **Transformation –** *We drive change and innovation to positively impact the healthcare system and improve the lives of patients, families and nurses.*
- **Leadership –** *We advocate and influence to achieve optimal outcomes and healthy work environments.*
- **Relationships –** *We collaborate and advance partnerships, honoring each individual to strengthen the collective.*

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 Accreditation Board for Specialty Nursing Certification (ABSNC).

CCRN® (Adult)	**CCRN® (Pediatric)**	**CCRN® (Neonatal)**	**PCCN® (Adult)**	**ACNPC-AG®**
CMC®	**CSC®**	**ACCNS-AG®**	**ACCNS-N®**	**ACCNS-P®**

Our advanced practice certification programs, ACCNS-AG, ACCNS-P, ACCNS-N and ACNPC-AG, are in alignment with the Consensus Model for APRN Regulation and other foundational national standards for APRN education, accreditation and regulation.

AACN
CERTIFICATION CORPORATION

Certification Organization for the American Association of Critical-Care Nurses

CSC EXAM HANDBOOK

Acute/Critical Care Cardiac Surgery Subspecialty Certification - Adult

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 CSC certification exam.

Today, nurses hold more than 140,000 certifications from AACN Certification Corporation.

Specialty Certifications

CCRN® is for the nurse providing care to or influencing the care of acutely/critically ill adult, pediatric or neonatal patients. Three eligibility pathways are available:

- **Direct Care** - for the nurse who provides direct care to acutely/critically ill adult, pediatric or neonatal patients.
- **Knowledge Professional** - for the nurse who influences the care delivered to acutely/critically ill adult, pediatric or neonatal patients, but does not primarily or exclusively provide direct care.
- **Tele-critical Care -** for the nurse working in a tele-critical care setting monitoring/caring for acutely/critically ill adult patients from a remote location.

PCCN® is for the progressive care nurse. Two pathways of eligibility are available:

- **Direct Care -** for the nurse providing direct care to acutely ill adult patients.
- **Knowledge Professional -** for the nurse who influences the care delivered to acutely ill adult patients, but does not primarily or exclusively provide direct care.

Subspecialty Certifications

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

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

Advanced Practice Certifications

ACNPC-AG® is for the nurse educated at the graduate level as an adult-gerontology acute care nurse practitioner (AGACNP).

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

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

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

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

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

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

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

AACN Certification Corporation's APRN certifications are recognized for licensure in all U.S. states and territories.

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, 27071 Aliso Creek Road, Aliso Viejo, CA 92656

800-899-2226 • Fax: 949-362-2020 • certification@aacn.org

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

Contents

Certification Program 1
Exam Eligibility 2
Application Fees 3
Application Process 4
Certification Renewal 5-6
Test Plan 7-8
Sample Questions 9
Exam Bibliography 10
Exam Preparation Tools 11

Forms

CSC Exam Application (1st and 2nd pages of 3-page application) 12-13
CSC Exam Honor Statement (3rd page of 3-page application) 14

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 Options
- Exam Scheduling and Cancellation
- Exam Day Experience
- Duplicate Score Reports
- Recognition of Certification
- Use of Credentials
- Denial of Certification
- Revocation of Certification
- Review and Appeal of Certification Eligibility

CSC Certification Program

CSC® Registered Service Mark

CSC (Cardiac Surgery Certification) is a registered service mark and denotes certification in cardiac surgery nursing as granted by AACN Certification Corporation. Registered nurses who have not achieved CSC certification, whose CSC certification has lapsed, or whose clinical nursing specialty certification has lapsed or is inactive are not authorized to use the CSC credential.

Misuse of the credential is viewed by AACN Certification Corporation as misleading to the public and may result in denial or revocation of certification.

Purpose and Rationale

CSC is a nursing subspecialty designed for specialty certified nurses who provide care for acutely/critically ill cardiac surgery patients within the first 48 hours postoperatively. Specialty nurses interested in this subspecialty certification may work in areas such as cardiothoracic surgery, cardiovascular surgery and postanesthesia care units.

The CSC 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 experience required for safe and effective practice as an RN or APRN in direct care of acutely/critically ill adult cardiac surgical patients within the first 48 hours postoperatively.

The test plan, which provides an outline of exam content, is developed by an expert CSC 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™, with CSC focusing exclusively on the clinical judgment component. A current clinical nursing specialty certification is required to ensure key nursing competencies of professional caring and ethical practice as outlined in the Synergy Model for Patient Care have been tested.

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. CSC certification denotes to the public those practitioners who possess a distinct and clearly defined body of knowledge called cardiac surgery nursing.

CSC Exam Content

The CSC exam is a 2-hour test consisting of 90 multiple-choice items. Of the 90 items, 75 are scored and 15 are used to gather statistical data on item performance for future exams. The content of the CSC exam is described in the test plan. The CSC exam focuses on the adult patient population. One hundred percent (100%) of the exam focuses on clinical judgment.

AACN Certification Corporation is transitioning to the use of generic names only for medications in exams and practice exam products. During the transition, exam candidates may continue to see items that include both generic and trade names.

CSC Test Plans

Candidates are tested on a variety of patient care problems that are organized under major categories on the CSC Test Plan. Refer to the test plan on pages 7 and 8 for more information. Please note the percentage of the CSC 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, a Score Evaluation Committee (SEC), 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.

CSC Exam Eligibility

Licensure

Current, unencumbered U.S.[1] RN or APRN licensure is required.

- An unencumbered license, as defined by AACN Cert Corp, is not currently being subjected to formal discipline by the board of nursing in the state(s) in which you are practicing and has no provisions or conditions that limit your nursing practice.[2]
- Your state Board's definition of unencumbered may be different from AACN Cert Corp's definition.
- Provisions or conditions may include, but are not limited to, direct supervision of practice, drug administration limitations and/or practice area exclusions.
- Documentation of all provisions and conditions from the board or its designee must be reviewed prior to approval for testing.
- Candidates and CSC-certified nurses must notify AACN Certification Corporation **within 30 days** if any provisions or conditions are 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 **adult** patients during the previous 2 years, with 875 of those hours accrued in the most recent year preceding application. Of those 1,750 hours, 875 need to be in the care of acutely/critically ill **adult cardiac surgery patients within the first 48 hours postoperatively**.

  OR

- Practice as an RN or APRN during the previous 5 years with a minimum of 2,000 hours in direct care of acutely/critically ill **adult** patients, with 144 of those hours accrued in the most recent year preceding application. Of those 2,000 hours, 1,000 need to be in the care of acutely/critically ill **adult cardiac surgery patients within the first 48 hours postoperatively**.

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

Practice hours for the CSC exam or renewal eligibility must be completed in a U.S.-based[1] 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 their hours spent supervising nursing students or nurses *at the bedside*.

- Nurses in these roles must be actively involved in caring for cardiac and/or cardiac surgery patients; for example, demonstrating how to measure pulmonary artery pressures or supervising a new employee or student nurse performing a procedure.

Certification

A current clinical nursing specialty certification, to which the CSC credential will be attached, is required. The clinical nursing specialty certification must:

- involve direct care of adult patients, *and*
- be nationally accredited by ABSNC (American Board of Specialty Nursing Certification) or NCCA (National Commission for Certifying Agencies), *and*
- test beyond clinical judgment to include key nursing competencies of professional caring and ethical practice as outlined in the Synergy Model for Patient Care.

Examples of acceptable clinical nursing certifications include, but are not limited to, CCRN (via the Direct Care or Tele-critical Care Pathway), PCCN (via the Direct Care Pathway), ACNPC, ACNPC-AG, CCNS, ACCNS-AG, CNOR, CRNFA, CPAN, etc.

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 the purposes of CSC certification, the adequacy of a candidate's knowledge in care of the acutely/critically ill.

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

[2] *If a restriction (temporary or permanent) is placed on an RN or APRN license for an incident that occurred prior to obtaining the license, AACN Certification Corporation will evaluate such an occurrence on a case-by-case basis to determine if exam eligibility requirements are met.*

Application Fees

CSC Fees	Member	Nonmember
Computer-Based Exam	$150	$240
Retest	$125	$170
Renewal by Exam	$125	$170

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 prepurchase exam vouchers at a further discounted rate.

For details about the Group Discount and Organization Discount Programs, visit www.aacn.org/certdiscounts, email certification@aacn.org or call 800-899-2226.

AACN Certification Corporation recommends that you be ready to test ***before*** applying for the CSC 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 12 and 13 **and honor statement** on page 14
  - Fill in all requested information, including that for your RN or APRN license
- **Include application fee**
  - Credit card, check or money order
- **Allow 2 to 4 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 confirmation email**
   - After you *successfully* apply for the exam, you will receive a confirmation email from AACN with information about how to schedule your exam appointment. The email will include the eligibility period during which you must take the exam — normally a 90-day window, but currently a 180-day window.
   - If you do not receive your confirmation email after applying for an exam, please contact AACN Customer Care at 800-899-2226 or certcorp@aacn.org.
2. **Schedule your exam**
   - In your confirmation email from AACN, you will find a link to schedule your exam appointment. In your AACN customer dashboard, you will also find a "Schedule Exam" link. Both links will take you to the AACN Scheduling page.
   - Before selecting an exam date, you will need to choose your preferred computer-based testing option — at a PSI Testing Center or via Live Remote Proctoring from your computer in a quiet, private location. For details, refer to the *Certification Exam Policy Handbook* online at www.aacn.org/certhandbooks.
   - If you are taking a paper-and-pencil exam or testing outside the U.S., AACN and PSI will coordinate with you to schedule your exam appointment.
3. **Sit for the exam**
   - Upon completion of computer-based exams, results will show on-screen and a detailed score report will be emailed to you within 24 hours.
   - Results of paper-and-pencil exams are received by mail 6 to 8 weeks following testing.
   - Successful candidates will be mailed their wall certificate approximately 4-6 weeks after testing. Certificants are also able to self-print a certificate through their AACN Dashboard; log into AACN.org and select Certification. More information will be provided in your congratulations email.

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**.

CSC 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

CSC certification is granted for a period of 3 years. Your certification period begins the first day of the month in which the CSC certification exam is passed and ends 3 years later; for example, February 1, 2023 through January 31, 2026.

You have up to 90 days beyond your certification expiration date to renew; however, practice hours and CERP's must have been completed during the 3-year period of your certification date. **CERPs or practice hours cannot be accumulated during the 90-day grace period.**

Renewal notifications will be emailed to you starting 4 months before your scheduled CSC 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 CSC renewal must meet the following requirements:

- Current, unencumbered U.S.[1] RN or APRN license that was not subjected to formal discipline by the board of nursing in the state(s) in which you practiced and had no provisions or conditions that limited your nursing practice during the 3-year certification renewal period
- Current clinical nursing **specialty certification** meeting all of the following criteria:
  - involves direct care of adult patients, *and*
  - is nationally accredited by ABSNC (American Board of Specialty Nursing Certification) or NCCA (National Commission for Certifying Agencies), *and*
  - tests beyond clinical judgment to include key nursing competencies of professional caring and ethical practice as outlined in the Synergy Model for Patient Care.
- Completion of 432 clinical practice hours caring for acutely/critically ill adult cardiac patients as an RN or APRN within the 3-year period preceding your scheduled renewal date, with 144 of those hours accrued in the most recent year preceding your scheduled renewal date
- Completion of the required CERPs *or* take/pass the CSC exam.

continued

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

Renewal Eligibility Options

You may seek CSC certification renewal via Renewal by Synergy CERPs or Renewal by Exam, or apply for Inactive 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

- Complete 25 Category A Clinical Judgment CERPs pertaining to cardiology (includes all items on the CSC Test Plan) during the 3-year certification renewal period.

Option 2 - Renewal by Exam

- Meet the eligibility requirements for CSC renewal and successfully apply for and schedule your exam.
- The CSC 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.
- This option is unavailable in the last month of the renewal period.

Option 3 - Inactive Status

- Inactive status is available to CSC-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 CSC 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 ***CSC Renewal Handbook*** online at www.aacn.org/certhandbooks.

Cardiac Surgery Certification (CSC) Test Plan

Applies to exams taken on or before November 18, 2026.
If testing after the above date, refer to www.aacn.org > Certification > Revised CMC and CSC Exams

I. PROCEDURES (11%)

A. Cardiovascular

1. Coronary artery bypass surgery (CABG) with cardiopulmonary bypass
2. Coronary artery bypass surgery (CABG) without cardiopulmonary bypass
3. Cox maze and modified maze procedure
4. Minimally invasive cardiac surgery
5. Pericardial window
6. Repair of non-congenital heart defects (e.g., left-ventricular aneurysm, VSD post MI)
7. Surgical valve repair or replacement
8. Transcatheter valve replacement (e.g., TAVR)

B. Thoracic

1. Endovascular repair of the aorta
2. Open repair of thoracic aortic aneurysm or dissection

II. COMPLICATIONS (33%)

A. Cardiovascular

1. Cardiogenic shock
2. Hypotension and hypertension
3. Hypovolemia and hypervolemia
4. Bleeding
5. Myocardial infarction
6. Myocardial stunning
7. Open chest from the operating room
8. Pericarditis
9. Dysrhythmias
10. Right heart failure
11. Cardiac tamponade
12. Vascular complications (e.g., compartment syndrome, retroperitoneal bleeding)

B. Respiratory

1. Acute respiratory failure
2. Acute respiratory distress syndrome (ARDS)
3. Transfusion related acute lung injury (TRALI)
4. Transfusion associated circulatory overload (TACO)
5. Pleural space abnormalities (e.g., pneumothorax)
6. Air-leak syndromes (e.g., pneumopericardium, pneumomediastinum)
7. Aspiration
8. Atelectasis
9. Pleural effusion
10. Prolonged mechanical ventilation
11. Pulmonary hypertension

C. Endocrine

1. Hyperglycemia and hypoglycemia

D. Hematology / Immunology

1. Protamine reactions
2. Coagulopathies
3. Anemia
4. Heparin-induced thrombocytopenia (HIT)

E. Neurology

1. Postoperative impaired cognition
2. Cerebrovascular accident (stroke)
3. Lower limb deficits (e.g., spinal cord ischemia, paralysis)
4. Delirium

F. Gastrointestinal

1. Ischemic bowel

G. Renal

1. Acute kidney injury
2. Electrolyte imbalances

H. Multisystem

1. Multisystem organ dysfunction syndrome (MODS)
2. Chronic pain
3. Acute pain
4. Acid-base imbalances
5. Malignant hyperthermia

I. Behavioral / Psychosocial

1. Preexisting behavioral health disorder (e.g., anxiety, PTSD)
2. Substance use and withdrawal

continued

Cardiac Surgery Certification (CSC) Test Plan (continued)

III. THERAPEUTIC INTERVENTIONS (43%)

A. Cardiovascular

1. Fluid volume management specific to cardiac surgery
2. Defibrillation and cardioversion
3. Emergent resternotomy
4. Cardiac surgery advanced life support (CALS)
5. Temporary pacing
6. Intra-aortic balloon pump
7. Short-term ventricular assist devices (VADs)
8. Extracorporeal membrane oxygenation (ECMO)
9. Pericardial and mediastinal drain

B. Pharmacology

1. Platelet inhibitors
2. Thrombolytics
3. Anticoagulants
4. Vasoactive agents
5. Antidysrhythmics
6. Inotropes
7. Diuretics
8. Beta-blockers
9. Statins
10. Pharmacologic agents for controlling bleeding (e.g., desmopressin acetate, factor VII, antifibrinolytics)
11. Pulmonary vasodilators
12. Sedation
13. Neuromuscular blockade

C. Respiratory

1. Pleural chest tubes and drains
2. Invasive and non-invasive mechanical ventilation
3. Oxygen therapy delivery devices
4. Post-extubation care

D. Endocrine

1. Glycemic control

E. Hematology and Immunology

1. Blood and blood products

F. Neurology

1. Lumbar drain
2. Pain management

G. Renal

1. Renal replacement therapy (e.g., hemodialysis, CRRT)

H. Standards of Care

1. Deep vein thrombosis (DVT) prophylaxis
2. Early mobility protocols
3. Gastrointestinal (GI) prophylaxis
4. Surgical site protocols
5. Recovery from anesthesia
6. Rewarming from hypothermia
7. Pneumonia prevention

IV. MONITORING AND DIAGNOSTICS (13%)

A. Cardiovascular

1. Hemodynamic monitoring
2. Echocardiography
3. Electrocardiography (ECG)
4. Laboratory testing

B. Respiratory

1. Arterial blood gas (ABG)
2. Mixed venous gas
3. Pulse oximetry
4. Capnography
5. Radiography

C. Neurology

1. Bispectral index monitoring (BIS)
2. Cerebral oximetry monitoring
3. Train-of-four (TOF)

Order of content does not necessarily reflect importance.

CSC Sample Questions

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

1. The nurse notes 750 mL of chest tube drainage 2 hours following CABG procedure of 5 vessels. The MOST LIKELY cause is

A. increased bleeding time due to heparin administration.
B. mediastinal tissue injury due to breakage of sternal wires.
C. thrombocytopenia due to prolonged bypass time.
D. local hemorrhage due to rupture of the graft anastomosis.

2. After undergoing an emergency CABG, the patient has received one unit of PRBC and a 250 mL fluid bolus. The nurse notes sinus rhythm with no ectopy.

BP	**92/54**
HR	**88**
MAP	**67 mm Hg**
CO	**3.5 L/min**
CI	**1.8L L/min/m^2**
SVR	**1200 dynes/sec/cm^{-5}**
PAD	**22 mg Hg**

The nurse should anticipate

A. administering additional fluids.
B. infusing inotropes.
C. preparing for IABP placement.
D. beginning ventricular pacing.

3. One hour post CABG, the patient remains mechanically ventilated. During the inspiratory phase, the nurse observes a decrease in the arterial systolic pressure. The nurse should immediately auscultate for

A. bibasilar crackles.
B. diminished breath sounds.
C. muffled heart tones.
D. a murmur.

4. Following a 4 vessel CABG, the nurse is assessing a 70 kg patient for readiness to wean from mechanical ventilation. Which of the following findings would indicate the patient is ready to extubate?

A. PaO_2/FiO_2 ratio of 100
B. respiratory rate of 20
C. vital capacity of 600 mL
D. tidal volume of 350 mL

5. A patient develops thrombocytopenia following heparin administration. To prevent thromboembolism, the nurse should anticipate an order for

A. warfarin (Coumadin).
B. enoxaparin (Lovenox)
C. tranexamic acid (Cyklokapron).
D. argatroban (Acova)

6. After an uncomplicated mitral valve repair, assessment findings are as follows:

BP	**116/65**
HR	**90**
PAP	**73/50 mm Hg**
CO	**4.2 L/min**
CI	**1.7L L/min/m^2**

The nurse should anticipate an order for intravenous

A. epinephrine (Adrenalin).
B. epoprostenol (Flolan).
C. milrinone (Primacor).
D. dobutamine (Dobutrex).

7. Following an emergent thoracic surgery, the nurse notes a significantly low serum sodium level in a patient with history of liver cirrhosis. The clinical characteristics of this finding include

A. hypotension and dry mucous membranes.
B. tachycardia and pulmonary edema.
C. crackles and high end-tidal CO_2.
D. an S3 heart sound and JVD.

8. When reviewing lab data 4 hours following mitral valve replacement, the nurse notes a decreased Hgb and HCT, increased INR and decreased platelets. The nurse should anticipate orders for which of the following?

A. FFP and platelets
B. FFP and cryoprecipitate
C. fibrinogen and cryoprecipitate
D. fibrinogen and platelets

Answers

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

CSC Exam Bibliography

References Used for Item Validation

American Heart Association. *2020 Guidelines Update for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care*. https://www.ahajournals.org/toc/circ/142/16_suppl_2. Published October 21, 2020.

Atwood S, Stanton C, Storey-Davenport J. *Introduction to Basic Cardiac Dysrhythmias*. Revised 5th ed. Burlington, MA: Jones & Bartlett; 2018.

Banasik JL. *Pathophysiology*. 7th ed. St. Louis, MO: Saunders/Elsevier; 2021.

Bojar RM. *Manual of Perioperative Care in Adult Cardiac Surgery*. 6th ed. West Sussex, UK: Wiley-Blackwell; 2021.

Bryant RA, Nix DP. *Acute and Chronic Wounds*. 5th ed. St. Louis, MO: Mosby/Elsevier; 2015.

Burns SM, Delgado SA. *AACN Essentials of Critical-Care Nursing*. 4th ed. New York, NY: McGraw-Hill; 2018.

Creager MA, Beckman JA, Loscalzo J. *Vascular Medicine: A Companion to Braunwald's Heart Disease: Expert Consult*. 3rd ed. Philadelphia, PA: Elsevier; 2019.

Ferri FF. *Ferri's Clinical Advisor 2020.* Philadelphia, PA: Elsevier; 2019.

Gahart BL, Nazareno AR, Ortega MQ. *Gahart's 2020 Intravenous Medications*. 36th ed. St. Louis, MO: Elsevier; 2019.

Green JM, Chiaramida AJ. *12-Lead EKG Confidence: A Step-By-Step Guide*. 3rd ed. New York, NY: Springer; 2014.

Hardin SR, Kaplow R. *Cardiac Surgery Essentials of Critical Care Nursing*. 3rd ed. Burlington, MA: Jones & Bartlett; 2019.

Hickey JV, Strayer AL, eds. *The Clinical Practice of Neurological and Neurosurgical Nursing*. 8th ed. Philadelphia, PA: Lippincott Williams & Wilkins; 2019.

Jacobson C, Marzlin K, Webner C. *Cardiovascular Nursing Practice*. 3rd ed. Burien, WA: Cardiovascular Nursing Education Associates; 2021.

Jaski BE. *The 4 Stages of Heart Failure*. Minneapolis, MN: Cardiotext; 2015.

Kizior RJ, Hodgson KJ. *Saunders Nursing Drug Handbook 2021*. St. Louis, MO: Saunders/Elsevier; 2020.

Lough ME. *Hemodynamic Monitoring: Evolving Technologies and Clinical Practice*. St. Louis, MO: Mosby/Elsevier; 2015.

Pagana KD, Pagana TJ, Pagana TN. *Mosby's Diagnostic and Laboratory Test Reference*. 15th ed. St. Louis, MO: Mosby/Elsevier; 2020.

Sole ML, Klein DG, Moseley MJ. *Introduction to Critical Care Nursing*. 8th ed. Philadelphia, PA: Elsevier; 2020.

Sorajja P, Lim MJ, Kern MJ. *Kern's Cardiac Catheterization Handbook*. 7th ed. Philadelphia, PA: Elsevier; 2019.

Urden LD, Stacy KM, Lough ME. *Critical Care Nursing: Diagnosis and Management*. 9th ed. St. Louis, MO: Elsevier; 2021.

Wiegand DL, ed. *AACN Procedure Manual for High Acuity, Progressive, and Critical Care*. 7th ed. St. Louis, MO: Saunders/Elsevier; 2016.

Many references are available through AACN; visit www.aacn.org > Store.

More current versions may be available.

How to Prepare for Your Certification Exam

Having a thoughtful study plan can boost your confidence and help you feel ready for your exam. AACN Certification Corporation surveys newly certified nurses, and most report they began preparing about three months before the exam, using the methods below.

Test Plan

The test plan in your exam handbook includes specific content areas, with each assigned a percentage reflecting how that area is weighted on the exam. The test plan also includes a list of competencies or testable nursing actions that will be assessed. Consider starting with a practice exam, noting your scores in each content area, and balancing your study time accordingly. If you are retaking a certification exam, refer to your previous score report to identify key areas of focus.

Practice Questions & Exams

Practice questions are certificants' most preferred study method. AACN offers subscription-based practice exams, with questions written in the style and format of exam items, with rationales for correct answers. Strengthen your test-taking skills with timed practice exams.

Review Courses

Formal exam preparation courses, whether online or in person, provide an in-depth review of relevant content areas and often include test-taking strategies. Some review courses also offer continuing education (CE) hours.

Books

When considering books for study, look for authors who are still in clinical practice and have earned the credential you're working toward. Focus on books published in the last five years. The bibliography in your exam handbook lists references used to create/validate items on the exam.

Group Study

Teaming up with colleagues can make learning fun and help boost confidence. Consider collaborating with nurses who have earned the credential you're seeking and/or starting a study group in your workplace or local AACN chapter.

Browse a wide selection of exam preparation resources, including books, online review courses and practice exam options:
www.aacn.org/cert-review-products

Check for review courses in your area: www.aacn.org/cert-review-events

008006 • 09.2025

AACN CERTIFICATION CORPORATION

Certification Organization for the American Association of Critical-Care Nurses

AACN Certification Corporation does not approve, endorse or require for eligibility the use of any specific exam preparation products.

Submit an ONLINE application at www.aacn.org/certification > Get Certified.

AACN CERTIFICATION CORPORATION

STAPLE CHECK HERE

CSC Exam Application

1. REGISTRATION INFORMATION

PLEASE PRINT CLEARLY. PROCESSING WILL BE DELAYED IF INCOMPLETE OR NOT LEGIBLE.
LEGAL NAME AS IT APPEARS ON YOUR GOVERNMENT-ISSUED ID CARD IS REQUIRED FOR EXAM.

AACN CUSTOMER: _____ **RN/APRN LICENSE:** _____
Number Exp. Date Number State Exp. Date

LEGAL NAME: _____
Last First MI Maiden

HOME ADDRESS: _____
City State Zip

EMAIL: _____ **HOME PHONE:** _____

EMPLOYER NAME: _____ **BUSINESS PHONE:** _____

EMPLOYER ADDRESS: _____
City State Zip

2. AACN MEMBERSHIP

I would also like to join/renew/extend my AACN membership at this time and select member pricing for my exam fees:

(check one box only)
☐ 1-year AACN membership…….....$78
☐ 2-year AACN membership…….....$148
☐ 3-year AACN membership…….....$200

AACN membership includes nonrefundable $12 and $15 one-year subscriptions to *Critical Care Nurse*® and the *American Journal of Critical Care*®, respectively. AACN dues are not deductible as charitable contributions for tax purposes, but may be deducted as a business expense in keeping with Internal Revenue Service regulations.

Member exam fee ($150) + 1-year Membership ($78) = Savings of $12 over Nonmember fee

Membership Fee
$_____
+
Exam Fee:
$_____
=
Total Payment:
$_____

3. EXAM FEES

CSC	Initial Exam Fee		Retest Fee	
	AACN Member	Nonmember	AACN Member	Nonmember
*Check **one** box only*	☐ $150	☐ $240	☐ $125	☐ $170

☐ Check this box if you've attached a request and supporting documentation for special testing accommodations.

4. PAYMENT INFORMATION - *application must be accompanied by payment*

☐ Check or money order attached – *payable to AACN Certification Corporation. U.S. funds only.*

Bill my credit card: ☐ Visa ☐ MasterCard ☐ American Express ☐ Discover Card

Credit Card # ☐☐☐☐ ☐☐☐☐ ☐☐☐☐ ☐☐☐☐ Exp. Date (mm/yy) ☐☐ / ☐☐

Name on Card _____ Signature _____

Amount Billed $_____ Address of Payor (if different than applicant) _____

☐ Please do not include my name on lists sold to other organizations.

Please complete pages 2 & 3 of application.

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

CSC Exam Application

NAME: _____ **AACN CUSTOMER #:** _____

Last First MI

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)
- ☐ TeleICU (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)

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)

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)
- ☐ 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)

Number of Beds in Institution:

_____

Years of Experience in Nursing:

_____

Years of Experience in Acute/Critical Care Nursing:

_____

Date of Birth: (mm/dd/yy):

_____

Gender:
☐ Male ☐ Female ☐ Non-binary

6. HONOR STATEMENT

Complete the Honor Statement on page 14.

7. SUBMIT APPLICATION

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

AACN Certification Corporation
27071 Aliso Creek Road
Aliso Viejo, CA 92656-3399

or fax to: 949-362-2020

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

NOTE: Allow **2 to 4 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).

AACN CERTIFICATION CORPORATION

CSC Exam Honor Statement

PROCESSING WILL BE DELAYED IF INCOMPLETE OR NOT LEGIBLE.

NAME: _____ **AACN CUSTOMER #:** _____

Last First MI

I hereby apply for the CSC subspecialty certification exam. Submission of this application indicates I have read and understand the exam policies and eligibility requirements as documented in the *CSC 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 the board of nursing in the state(s) in which I am practicing and has no provisions or conditions that limit my nursing practice in any way. I understand that I must notify AACN Certification Corporation **within 30 days** if any provisions or conditions are placed against my RN or APRN license(s) in the future.

CLINICAL NURSING SPECIALTY CERTIFICATION: I hold a current clinical nursing specialty certification that meets AACN's criteria, which includes but is not limited to being nationally-accredited (ABSNC or NCCA). If my specialty certification is conferred by an organization other than AACN Certification Corporation, I agree to submit proof of my certification with this application. I understand that I must notify AACN if my specialty certification lapses.

To which clinical nursing specialty certification will your CSC credential be tied?_____

Attach proof of non-AACN certification, such as copy of wallet card or wall certificate, or verification letter from certifying organization; **must be valid for 90 days beyond CSC application date.**

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 **adult** patients during the past 2 years, with 875 of those hours accrued in the most recent year preceding application. Of those 1,750 hours, 875 were in the care of **adult cardiac surgery patients within the first 48 hours postoperatively.**

  OR

- Practice as an RN or APRN during the previous 5 years with a minimum of 2,000 hours in direct care of acutely/critically ill **adult** patients, with 144 of those hours accrued in the most recent year preceding application. Of those 2,000 hours, 1,000 were in the care of **adult cardiac surgery patients within the first 48 hours postoperatively.**

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 eligibility is subject to audit, and failure to respond to or pass an audit will result in revocation of certification. If selected for audit, I understand that switching to renewal by exam, selecting Inactive or another status, or completing CERPs/CE Points is not an option.

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

NONDISCLOSURE 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.

RETAKE POLICY:
I understand that I may apply for and take the same certification exam **up to four times in a rolling 12-month period**, and that after 12 months signing a new honor statement is required.

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