# Candidate Guide: Electronic Fetal Monitoring (C-EFM®)

**Congratulations on taking the next step in your career – earning your C-EFM certification!**

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## Exam’s Purpose

The purpose of the NCC Electronic Fetal Monitoring Subspecialty Certification is to provide a competency-based examination that tests specialty knowledge and the application of that knowledge for licensed health care professionals in the US and Canada, who utilize the application of electronic fetal monitoring and interpretation of data obtained to provide care to obstetrical patients in both inpatient and outpatient settings.

**It is important to read the information in this guide. It will answer your questions and will explain all policies to which you will be subject.**

## About This Guide

This guide lists fees and provides information that will help you prepare for the examination. It includes the exam content in outline form, competency statements and study guide. It also provides sample exam questions to familiarize you with question format, study resources and lists some of NCC administrative policies & procedures. It is recommended that you familiarize yourself with the information in this guide.

NCC examinations are offered in several different test administrations options. The NCC publication *Guide to Testing Methods* will explain the different rules and policies based on how you are taking the examination. Please download this publication from the NCC website and review the exam administration options. It should answer your questions about the NCC examination process.

If you have other questions, please feel free to contact NCC through the NCC website at NCCwebsite.org.

## NCC’s Philosophy of Testing

Certification is an evaluative process that provides the opportunity for health care professionals in the obstetric, gynecologic and/or neonatal specialty to demonstrate publicly what they know and to be recognized for the special knowledge they possess. The NCC certification carries no licensing authority. The ability to practice as a health care professional is regulated by the state, and while certification may be required in some states for specific health care roles, NCC has no regulatory power to require states to recognize NCC certification for this purpose. Practice and educational standards are reflected in the certification process, but the responsibility for development of such standards rests with the professional specialty organizations and the educational community. NCC encourages individual to seek out information about how certification relates to licensure requirements, program accreditation of the educational institutions attended, the educational and practice standards of national specialty organizations, and employment expectations.
Fees & General Policies

Examination and Related Fees

Examination Fees*
Computer Exam Fees are $210 which includes the non-refundable $50 application fee.

Change Request
Candidates who cannot take their currently scheduled examination, have missed their testing date or need to take a different exam - can request a change for a fee of $125. Details are on the NCC website.

Withdrawal Fee
A computer testing candidate who withdraws from testing is subject to a $105 withdrawal fee. The candidate will receive $105 of their $210 payment, minus any outstanding charges. Bulk Purchase Voucher candidates cannot withdraw.

Retest Fee
Retest candidates must pay full application and examination fees. There are no discounts and they must complete a 90-day wait period* before resubmitting an application for testing. (*see Retest Policy page 4). Certification exams of the same specialty can only be taken TWICE in a calendar year for the same candidate.

Substitution Fee
Candidate substitutions are not allowed for any reason.

Third Party Payments
Applicant fees paid by third parties will be refunded to the third party in accordance with stated refund policies, in the event the applicant is determined ineligible or withdraws within the specified time.

No Refunds will be Considered for any Candidate
- who has taken an examination
- who is not successful in achieving certification
- who failed to take the exam via computer within the 90-day testing window and did not submit a change request within stated time frames
- who is beyond the first 30 days of their eligibility window and is unable to schedule their exam within their eligibility window.

Computer exam candidates can change their scheduled testing date to another date within their window once for free.

Candidates must handle this directly with PSI/AMP.

Refer to the NCC testing guide for details.
PAYMENT INFORMATION

- All applications are subject to a nonrefundable application fee.
- All fees are nonrefundable except where otherwise noted.
- Payments can be made by credit card (Visa, American Express and MasterCard only).
- Payments can be made by check: bank routing number and account number required.
- For payments made by third parties, any refund will be issued to the third party and not to the applicant.
- All payments must be in US funds.
- NCC does not accept debit cards or split payments (part check and part credit card).
- Exam fees can only be submitted online at the NCC website. Applications will not be accepted by mail, phone or fax.
- NCC will accept group payments for certification exams from institutions. Details are on the NCC website.

OTHER NON-REFUNDABLE PAYMENT RELATED FEES

INCOMPLETE APPLICATION FEE

All incomplete applications are subject to a non-refundable $30 reprocessing fee upon the submission of proper documentation. Incomplete applications are those submitted with missing information, (e.g. required licensure information and corroborating uploaded documentation; containing incomplete or incorrect information; or do not include full fee payment).

RETURNED CHECKS AND CREDIT CARD CHARGEBACK FEES

A $30 fee will be assessed for any check or e-check returned or a credit card payment disputed for any reason. Remittance thereafter of all fees and applications must be in the form requested by NCC.

LICENSE VERIFICATION

If licensure information is requested requiring an additional submission, the candidate will have two weeks to provide the license with all the correct information and pay the non-refundable $30 reprocessing fee. If this is not provided within the two weeks, the application will be marked ineligible. Ineligible applicants will receive a refund minus the $50.00 non-refundable application fee. There are no refunds or withdrawals for applications using a bulk code.

VERIFICATION OF CERTIFICATION

Third party notification of status will not be released without authorization from the RNC. A $30 fee is required for any third party notification or issuance of duplicates of test results reports. Verification requests can only be submitted after official written results have been received in the mail.

Verification requests can only be made via the online verification system on the NCC website. NCC does not issue verifications via the mail or fax.

Certification will be revoked or withheld if a returned check or a chargeback request on a credit card payment results in loss of income to NCC and the monies are not recovered in an alternate payment. Fees received at any time will first be applied to any unpaid prior certification/special fees.
Unsuccessful Candidates
A candidate who sits for the examination and does not receive a passing score is not eligible for any refund nor for any credit on any later NCC exam.

Nondiscrimination
It is the policy of NCC that no individual will be excluded from the examinations as a result of age, sex, race, religion, national origin, ethnicity, disability, marital status, sexual orientation, military status or gender identity.

Americans with Disabilities Act
Special testing accommodations will be provided pursuant to the Americans with Disabilities Act. Any requests for special testing accommodations must be made in writing and submitted with the application. The accommodation request form can be downloaded from the NCC website. Upon receipt of a request for special accommodations, NCC will contact the applicant. Such requests must be signed by a clinician, physician, or other qualified specialist with training and experience appropriate to diagnose and treat the specified disability.

General Policies

Exam Category Changes
You can only request an exam category change by completing a Change Request Form on the NCC website and submitting with non-refundable payment of $125. Candidates are only allowed one change option (e.g. if you reschedule your exam date, you will not be able to change your exam category). All change requests must be approved by NCC. There will be no refund of original or Change Request fees. Eligibility must be re-established for the new exam category, and additional documentation and fees may be required. The time to consider eligibility for the new category will count toward the original assigned 90-day computer testing window. Examination category cannot be changed from a subspecialty or RN Core application to a NNP or WHNP certification. Examinees must take the exam for which they have been determined eligible. No changes will be permitted on examination day. If a candidate knowingly or unknowingly takes an examination other than the one they were found eligible to take, the examination will not be scored. No refunds will be allowed, and all fee policies will apply if the candidate reapplications for an examination. See website for complete details.

Retest Policy
You may retake the examination if you do not pass. You must reapply, submit all applicable fees and documentation, and re-establish eligibility according to the appropriate deadlines. There is no limit to the number of times you may retake the examination. However, the maximum number of times a candidate can take the same NCC test in a calendar year is two.

All retest candidates must wait 90 days from the date their exam was taken before they can submit a new application to retest.
• this date is provided in the candidate’s results notification
• this 90-day wait period affects all modes of testing

Any loss of power or internet during an exam in which there was more than 15 minutes of testing with exposure to more than 10% of the exam requires a retest after 90-days. There is no need to complete a new application but you will need to notify NCC to move your eligibility window so it begins 90-days after the exam attempt. Please notify NCC immediately if this occurs so that a new window can be set.

If a retest application is submitted prior to the 90-day wait period, the application will be returned as ineligible. The applicant will be subject to the $50 non-refundable application fee.
**Courses and Materials**
NCC does not offer or sponsor review courses or review materials for its certification examinations. Examination candidates should view any course of study as being independent of NCC. You should carefully examine the merits of any individual exam preparation offering before you participate.

**Test Disclosure**
NCC does not make test questions available for review. Because test questions may be used for more than one examination administration, distributing this information would compromise the security of the test questions and would increase the cost of certification if the questions had to be replaced each year.

**Revocation**
Your certification may be revoked for falsifying any information submitted to determine eligibility to take the certification examination or for maintaining certification, for losing your license to practice, or for failing to pay designated certification or maintenance fees.

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**Policies are Subject to Change without Notice.**

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**General Policies (continued)**

**Internet Disconnections**
If you start the exam and are disconnected, please use the PSI tech lines if you are testing with LRP or if at a test center please discuss with the proctor to attempt to get reconnected and continue testing.

If you are unable to get reconnected after starting the exam, the timing for a second attempt to take the exam will be based on how much time and how many questions you were exposed to. If you are disconnected and cannot be reconnected and have tested for under 15 minutes and were exposed to less than 10% of the exam you will be rescheduled within your current eligibility window. **You must work directly with PSI that day to reschedule and if you run into any issues you must notify NCC within 3 days of testing.** If you tested for longer than 15 minutes and/or saw more than 10% of the questions on the exam you will have to wait 90 days and will be rescheduled. A decision on the timing of your second attempt will be made after reviewing the test exposure. Please note, you will need to retest at a computer center. Please notify NCC of the internet disconnection issue as soon as you have convenient computer access.

**Appeals Procedure**
Any request to waive any policy of the NCC Board of Directors relative to eligibility, administration, examination content issues, or certification maintenance must be received in writing within 60 days of the dispute. All requests should be sent to the attention of the NCC President at nccpresident@nccnet.org. The correspondence should contain a detailed account as to why the NCC policy should be waived or the candidate’s status should be changed. Such requests are referred to the NCC Policy Review Committee of the Board of Directors. All decisions will be provided in writing. Cases not resolved by the Policy Review Committee will be referred to the full Board of Directors.

**Designation Authorization**
Certification is a non-transferable, revocable, limited, non-exclusive license to use the certification designation “C-EFM®”, subject to compliance with the policies and procedures, as may be revised from time to time.

Any use or display of NCC certification marks and/or logos without the prior written permission of the NCC is prohibited. Any candidate or certificant who manufacturers, modifies, reproduces, distributes or uses a fraudulent or otherwise unauthorized NCC certificate, NCC designation or other credential may be subject to disciplinary action, including denial or revocation of eligibility or certification. Any individual who engages in such behavior also may be subject to legal action.
ABOUT THE EXAM

TIMED EXAMINATION
Two (2) hours are allotted to complete the examination.

EXAM FORMAT
The Electronic Fetal Monitoring examination consists of up to 125 test questions. 100 are scored and the remainder are embedded in the exam as pretest items. The pretest items do not count toward the examinee’s final results.

- There is one question format used for all NCC examinations.
- Each question has a premise (stem) and three alternative answers.
- The answer options are alphabetized by the first word in each answer option to randomize the answers.
- Computer tests are delivered in a different random order for each candidate.
- Questions will test both basic knowledge and application of knowledge.
- Questions that contain laboratory data will show results in conventional units of measure with international units in parentheses.
- Drugs are listed in both generic and trade names where appropriate.

EXAMINATION CONTENT DEVELOPMENT
The development of NCC certification involves many individuals and involves a meticulous process of review. There are three major groups that contribute to the test development process:

ITEM WRITERS:
MDs, RNCs and others identified with special expertise have the responsibility of drafting test items per designated assignment for review by the content team and expert reviewers. Item writers are solicited from the NCC certified population, by recommendations or through the volunteer portal.

REVIEWERS:
Reviewers are MDs, RNCs or other designated experts who assist the content teams in review of test items developed by the item writers. Reviewers are responsible for reviewing items for content relevance and confirming that references cited for the questions support the items as written.

CONTENT TEAMS:
Content team members are experienced practitioners and are appointed on an annual basis by the NCC President. Content teams are solicited from the NCC certified population, by recommendations or through the volunteer portal. To see the current membership composition of the Content Team responsible for the Electronic Fetal Monitoring examination, please visit the NCC website under the section on NCC Leadership.

Content team members are MDs, RNCs or other identified experts who:
- develop and update the test outline and competency statements
- review test items developed by item writers
- review item statistics from exam administrations and pretest examinations
- approve the exam forms to be administered
- review item banks

In addition, NCC uses volunteers for standard setting and content validation studies.
The chart shows the percentage distribution of questions on the Electronic Fetal Monitoring exam across the major content categories covered on the examination.

The major focus is on Pattern Recognition and Intervention. Lesser emphasis is on Physiology, and Fetal Assessment Methods with EFM Monitoring Equipment and Professional Issues having the lowest percentage of content covered on the exam.
EXAM OUTLINE

This is an outline of topics and areas which may be included in the Electronic Fetal Monitoring examination.

Percentages identified for the topic areas represent a range of the number of test questions assigned to each content area and therefore might total more or less than 100 percent. These ranges do not necessarily reflect the content of future exams.

10.00 Electronic Monitoring Equipment (5%)
(External and Internal, Artifact, Signal Ambiguity, Failure and Troubleshooting)

11.00 Physiology (11%)

Uteroplacental
Factors affecting Fetal Oxygenation

12.00 Pattern Recognition and Intervention (70%)

Fetal Heart Rate Baseline
Fetal Heart Rate Variability
Abnormal Uterine Activity
Fetal Dysrhythmias
Maternal Complications
Uteroplacental Complications
Fetal Complications
Fetal Heart Rate Accelerations
Fetal Heart Rate Decelerations
Normal Uterine Activity

13.00 Fetal Assessment Methods (9%)
(Auscultation, Fetal Movement and Stimulation, Nonstress Testing, Biophysical Profile, Cord Blood and Acid Base Balance)

14.00 Professional Issues (5%)
(Legal, Ethics, Patient Safety and Quality Improvement)
EXAMINATION CONTENT

ASSOCIATED COMPETENCIES

• Apply knowledge of maternal-fetal assessment methods when selecting electronic fetal monitoring or intermittent auscultation to evaluate fetal status.

• Interpret data from the electronic fetal monitor to differentiate between actual fetal data and equipment failure.

• Use knowledge of the advantages and disadvantages of electronic fetal monitoring to provide information to the pregnant woman and her support person(s).

• Apply knowledge of fetal heart rate regulation to the interpretation of electronic fetal monitoring data.

• Identify and interpret the significance of fetal heart rate patterns.

• Interpret data from electronic fetal monitoring to differentiate between normal and abnormal fetal heart rate patterns.

• Apply knowledge of common pregnancy complications to the development of a comprehensive plan of care based on electronic fetal monitoring data.

• Apply knowledge of uteroplacental and maternal-fetal physiology as they relate to fetal oxygenation.

• Identify indications for adjunct fetal assessment and incorporate findings into the plan of care.

• Incorporate knowledge of current practice and legal practices into nursing care.
STUDY GUIDE

ELECTRONIC MONITORING EQUIPMENT

- Fetal heart rate monitoring
  - Internal
  - External
- Uterine monitoring
  - External
  - IUPC
- Equipment failure and troubleshooting
  - Artifact Detection
  - Signal Ambiguity

PHYSIOLOGY

- Uteroplacental
  - Uteroplacental circulation
  - Fetal circulation
  - Fetal heart regulation
- Factors affecting fetal oxygenation
  - Uterine activity
  - Maternal factors
  - Anesthesia
  - Drugs (Therapeutic & Recreational)
  - Placental factors
  - Umbilical blood flow
  - Acid base and cord blood gases
PATTERN RECOGNITION AND INTERVENTION

- Fetal baseline heart rate
  - Bradycardia
  - Tachycardia
  - Variability
  - Sinusoidal

- Fetal heart rate variability
  - Identification
  - Causes

- Abnormal uterine activity
  - Decreased blood flow
  - Response to hypertonus
  - Tachysystole

- Fetal dysrhythmias
  - Supraventricular tachycardia
  - Congenital heart block
  - Ectopic beats

- Maternal Complications
  - Preterm Labor
  - Hypertension
    - Gestational hypertension
    - Preeclampsia-eclampsia
    - HELLP syndrome
    - Chronic (essential)
  - Postdates Pregnancy
  - Diabetes
    - (Gestational, Type 1, Type 2)
  - Multiple gestations
  - Infections
  - Maternal obesity

- Uteroplacental complications
  - (previa, abruption)
  - Uterine rupture/scar dehiscence

- Fetal complications
  - Injury
  - Cord compression
  - Hypoxemia
  - Demise

- Fetal heart rate accelerations

- Fetal heart rate decelerations
  - Early
  - Variable
  - Late
  - Prolonged

- Normal uterine activity
  - Resting tone
  - Contractions
    - Frequency
    - Duration
    - Intensity

FETAL ASSESSMENT METHODS

- Auscultation
- Fetal movement and stimulation
- Nonstress testing
- Cord Blood Acid Base Testing
- Biophysical profile
- Fetal Acoustic Stimulation

PROFESSIONAL ISSUES

- Legal
- Ethics
- Patient safety
- Quality Improvement
The following references are used by content team members and outside item writers to generate test questions for the EFM examination. This list is not intended as an all-inclusive list of references, nor does it imply that items on the current examinations were necessarily referenced from any of these publications.

SAMPLE QUESTIONS

ELECTRONIC FETAL MONITORING SAMPLE QUESTIONS

Listed below are five sample questions to acquaint you with the test question format. These questions do not reflect the scope or the difficulty level of the questions on the actual examination. The reference from which each question is derived is also cited. However, other references might substantiate a different answer, and the answer shown here might be substantiated by other references. The rigorous review to which actual test questions are subject is not applied to these sample questions. The focus that should be attended to in reviewing these items is format, not content.

1. Following an ultrasound which revealed decreased amniotic fluid, a woman at term is admitted in early labor. It should be recognized that oligohydramnios often results in fetal heart rate decelerations that are
   A. late in onset or occur after the peak of the contraction
   B. synchronous with that of the contraction
   C. varied in depth and duration

Answer: C


2. In comparing early and late decelerations, a distinguishing factor between the two is
   A. onset time to the nadir of the deceleration
   B. the number of decelerations that occur
   C. timing in relation to contractions

Answer: C

Miller, et al., *Pocket Guide to Fetal Monitoring*, Elsevier, 2022, pgs. 124, 125
3. Based on interpretation the above tracing, this tracing would classified as

A. Category I  
B. Category II  
C. Category III  

Answer: B  


4. The underlying cause of early decelerations is decreased  
A. baroceptor response  
B. increased peripheral resistance  
C. vagal reflex  

Answer: C  

SCORING & TEST REPORT

HOW EXAMS ARE SCORED

NCC examinations are criterion-referenced. This means the passing score is based on a predetermined criterion. This criterion is a statistical ability level established by the Content Team based on evaluation of criticality of content and the test questions’ past statistical performance. Questions used to determine pass/fail have proven statistical history that demonstrates the question is appropriate for use to measure an individual’s ability level.

There is no set percentage passing level. An ability level for each candidate is calculated based on the number of questions they answer correctly (there is no penalty for wrong answers). Pass/fail is determined based on this ability level as compared to pass/fail standard which is a predetermined ability criterion. When different forms of the examination are used, a process called equating is initiated. This procedure converts all results to a common scale. So someone who takes a slightly more difficult form of the exam will need to answer fewer questions correctly than someone who takes a slightly easier form of the exam.

NCC utilizes the item response theory of psychometrics for the analysis of its examinations. Item response theory (Rasch analysis) is the study of test and item scores based on assumptions concerning the mathematical relationship between abilities and item responses. This is a commonly used system, and such examinations as the NCLEX and other health related certification examinations utilize this type of psychometric analysis.

Test reports identify pass/fail status, and they give feedback on the various content areas of the examination in the form of word descriptors: very weak, weak, average, strong and very strong. No percentages or standard scores are given. These descriptors are based on the items within a given subtest. The overall pass/fail decisions are based on the full test, and the verbal descriptors are intended to provide suggested feedback on strengths and weaknesses in various content areas. Since this feedback is based on relatively few items, general verbal descriptions are given instead of subtest scores. These word descriptors are for information only, and they should be interpreted cautiously due to the small number of items included in each content area.
SAMPLE TEST REPORT

You will receive an official test results report from NCC. Shown below is a sample test result report for a candidate who has passed the examination.

ELECTRONIC FETAL MONITORING EXAMINATION

Test Results

NAME

DATE

ADDRESS

Pass/Fail: PASS

EXAM CONTENT REPORT

The following provides information regarding your performance on the different content areas tested on the examination.

Test reports identify pass/fail status, and they give feedback on the various content areas of the examination in the form of word descriptors: Very weak, weak, average, strong and very strong. No percentages or standard scores are given. These descriptors are based on the items within a given subtest. The overall pass/fail decisions are based on the full test, and the verbal descriptors are intended to provide suggested feedback on strengths and weaknesses in various content areas. Since this feedback is based on relatively few items, general verbal descriptions are given instead of subtest scores. These word descriptors are for information only, and they should be interpreted cautiously due to the small number of items included in each content area.

<table>
<thead>
<tr>
<th>Content Area &amp; Percentage</th>
<th>Your Results:</th>
</tr>
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<tbody>
<tr>
<td>Range of Questions Asked:</td>
<td></td>
</tr>
<tr>
<td>Physiology</td>
<td>WEAK</td>
</tr>
<tr>
<td>(11%)</td>
<td></td>
</tr>
<tr>
<td>Pattern Recognition and Intervention</td>
<td>AVERAGE</td>
</tr>
<tr>
<td>(70%)</td>
<td></td>
</tr>
<tr>
<td>EFM Equipment; Fetal Assessment Methods; Professional Issues</td>
<td>AVERAGE</td>
</tr>
<tr>
<td>(19%)</td>
<td></td>
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</tbody>
</table>
**Terms of Certification and Certification Maintenance**

**When You Pass the Exam**

**Credential**
Your NCC certification status entitles you to use the credential C-EFM® (Certified – Electronic Fetal Monitoring).

**Terms of Certification**
NCC certification is awarded for a period of three years.

The effective date for certification is the date on the official NCC letter that tells you that you have successfully completed the certification process.

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**MAINTAINING YOUR CERTIFICATION**

- NCC certification must be maintained every three years.
- Certification that is not maintained will expire.
- The NCC certification maintenance program allows you to continue your certification status by obtaining 15 hours of continuing education credit.
- For continuing education credit to be used for certification maintenance it must be earned between the date of your notification of certification and the date your maintenance is due.
- The maintenance process includes submitting a maintenance application prior to your maintenance due date with appropriate fees and requested documentation. All CE must be in Electronic Fetal Monitoring. Using NCC CE modules does NOT automatically maintain your certification. You must submit a maintenance application and pay a maintenance fee in addition to any CE fees.
- Maintenance applications are subject to random audit. If you are chosen for audit, you will be required to upload CE certificates and course descriptions. These records should be maintained during each maintenance cycle, until your maintenance application has been approved. You can upload these documents in your maintenance application throughout your maintenance cycle.

You may apply for maintenance up to 1 year before your maintenance date. As long as you have obtained the required contact hours of continuing education credit—**you do not need to wait until your maintenance deadline to apply**. Maintenance will be due in the quarter in which you were notified of your certification (**not the date on which you took the examination**). Your maintenance due date can be found by signing into your NCC account. Sign into your account using your email and password.

The NCC website has more detailed information
For more information about the certification maintenance program, click the purple "Maintain your Certification" box.