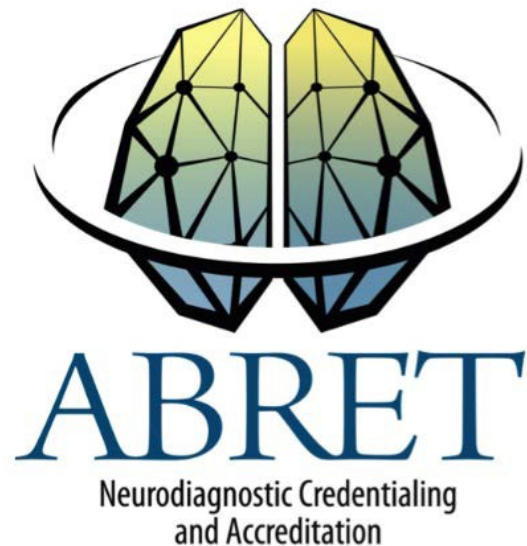


2025



# Handbook for Candidates Certification for

# Long-Term Monitoring CLTM



*ANSI National Accreditation Board*

ACCREDITED

ISO/IEC 17024

PERSONNEL CERTIFICATION  
BODY

ABRET Executive Office  
111 E. University Drive., #105-355, Denton, TX 76209

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**The Certification Examination for Long-Term Monitoring (CLTM)** is designed and written for the advanced level R.EEGT. professional, who has had at least one year of experience in Long-Term EEG Monitoring and is currently practicing in a monitoring environment. Candidates will be expected to have been an active participant in the set-up, monitoring, and review of prolonged video- EEG cases.

This handbook contains necessary information about the CLTM examination.

Please retain it for future reference.

Candidates are responsible for reading these instructions carefully.

This handbook is subject to change – Please refer to the [ABRET website](#) for the most up-to-date information.

# Introduction

ABRET is a nonprofit credentialing board. ABRET supports the concept of voluntary certification by examination for health care professionals in long-term monitoring (LTM). Certification focuses specifically on the individual and is an indication of current knowledge in LTM. ABRET does not guarantee the job performance of any individual.

## Objectives of ABRET

TO ESTABLISH COMPETENCY IN LONG-TERM MONITORING BY:

1. Providing a standard of knowledge in LTM required for certification.
2. Establishing and measuring the level of knowledge required for certification in LTM by means of an objective, computer-based written examination.
3. Formally recognizing those individuals who meet the eligibility requirements of ABRET and pass the Certification Examination in Long-Term Monitoring.
4. Encouraging continued professional growth in LTM through mandatory continuing education and recertification.

## Non Discrimination Statement

ABRET – Neurodiagnostic Credentialing & Accreditation does not discriminate based of age, gender, race, religion, national origin, marital status, or handicapped condition.

## Administration

The Certification Program is sponsored by ABRET. The Certification Examination in Long-Term Monitoring is administered for ABRET by the Professional Testing Corporation (PTC): 1350 Broadway – Suite 800, New York, New York 10018 – (212) 356-0660 – [PTC website - www.ptcny.com](http://www.ptcny.com)

Questions concerning the Certification Examination in Long-Term Monitoring should be addressed to the ABRET Executive Office: 111 E. University Dr. #105-355, Denton, TX 76209 – (217) 726-7980 – [www.abret.org](http://www.abret.org) or by email: [Tami@abret.org](mailto:Tami@abret.org)

## Fees

<b>Application Fee</b> for the Certification Examination for Long-Term Monitoring .....	\$500
<b>Rescheduling Fee</b> 29-5 days prior to scheduled appointment (but still within the 3-month testing period) Paid directly to Prometric (see page 4 for more information) .....	\$50

THERE ARE NO REFUNDS, EXTENSIONS, nor TRANSFER OF FEES

# 2025 CLTM Eligibility Chart

## CLTM Exam Requirements:

1. 1 year holding R. EEG T. or R.E.T. (Canadian EEG credential)
2. 1 year *Long-Term Monitoring Experience* following achievement of the R. EEG T. credential
3. Documentation of 50 LTM cases
4. Current CPR/BLS certification

**The CLTM credential is achieved upon successfully passing the CLTM Exam**

**Long-Term Monitoring Experience** must include extensive experience and clinical knowledge of LTM in epilepsy and in critical care ICU Monitoring. Additional experience and knowledge of ambulatory EEG monitoring and epilepsy surgery, including functional mapping, is also expected.

## Completion of the CLTM Documentation Form

1. Cases must have been recorded within the last 5 years, with 10% (5) being recorded within the last 24 months.
2. No more than 10% (5) of cases may be ambulatory monitoring - and - no more than 10% (5) of cases may be 10-10 electrode placement or electrode maintenance.
3. Each admission may only be counted as 1 case, regardless of the number of days of monitoring.
4. ABRET will accept documentation on up to three cases per day. Do not submit more than the requested number of cases.
5. Remote Monitoring LTM must include a letter of recommendation from either a Physician or NA-CLTM NeuroAnalyst with documentation submission.
6. Documentation forms will be randomly audited which can delay or negate eligibility.

The CLTM credential is awarded for five years. See information under the [Recertification tab of the ABRET website](#). After 3 unsuccessful attempts to pass the examination within a 2-year timeframe, candidates must wait 6 months and submit an additional 10 hours of LTM-related Continuing Education before being eligible to retest.

**Petition of Eligibility** – Visit [ABRET.org to find](#) the petition form and instructions.

## **Quick Tips** Before Proceeding with the Application Process

\*Your name must match exactly with the name shown on current government-issued photo ID, such as a driver's license or passport.

Do not use nicknames or abbreviations.

\*EEG Documentation forms are available on the ABRET website – [www.abret.org](http://www.abret.org)

\*Have all required eligibility documents ready to be uploaded into your ABRET Certemy Account.

\*PDFs are best.

\*Retain copies of all uploaded documents for your records.

\*Keep this HANDBOOK for reference.

# Application Procedure

Applications for the ABRET examinations should be completed online through [www.abret.org](http://www.abret.org)

- 1) Read the Handbook for Candidates and follow instructions.
- 2) Visit ABRET.org – click on **EXAMS** and select **Pathways & Application under CLTM**
- 3) Scroll down the page and select the “Apply for CLTM” button.
- 4) [Log into your ABRET Certemy or Create a new ABRET Certemy account.](#)
- 5) Complete the application by inputting your information and uploading your eligibility requirements including payment of the \$500 examination fee.
  - Most major credit cards are accepted.
  - Ensure Checks identify your name as an exam candidate and the ABRET exam you are applying for. Mail checks to: ABRET Executive Office – 111 E. University Dr., #105-355, Denton, TX 76209

Upon verification of your eligibility requirements and application, your registration for the exam will be sent to PTC. See the “Scheduling Examination” section of this handbook for information on scheduling your exam.

A denial of eligibility for certification may be appealed in writing and sent to ABRET within 30 days. See **APP-9 & APP-10** of ABRET Examination Policies posted on the [ABRET website under Principles](#).

**Candidates have three (3) months from the status of “Eligible to Test” date to sit for the examination.  
After the 3-month period, candidates will need to reapply for the examination and pay a new application fee.  
THERE ARE NO REFUNDS, EXTENSIONS, nor TRANSFER OF FEES**

After exam results are uploaded into your ABRET Certemy account, proceed as directed:

**Pass Results:** The **CLTM** credential is awarded for five years. See information in [ABRET's Recertification webpage](#).

**Fail Results:** Candidates are provided one (1) exam attempt per application submission within the established 3-month time frame. Please contact ABRET to reassign your application at 217-726-7980 or by submitting a [Contact Us email](#). You will essentially need to repeat ALL steps of the online application process to reassign.

Candidates who do not pass the CLTM exam after 3 unsuccessful tries within a 2-year timeframe will not be allowed to retest for 6 months and will be required to submit 10 LTM-related education credits.

\* Please do not contact the ABRET office about your results until you receive your OFFICIAL test results. You will not be able to reapply until the OFFICIAL test results are in.

## Quick Tips Following the Application Process

\*Candidates should retain copies of all uploaded documents submitted for eligibility requirements for your records.

- \*Application status will be PENDING until all steps of the application, including payment, are complete:
- If you paid by CHECK, your application will not be completed until payment is received.
  - You may have been randomly selected for an audit. You or your supervisor will be contacted by our auditor with any questions or instructions on next steps.

# Scheduling Your Examination

**Candidates cannot schedule an examination appointment until they have received a Scheduling Authorization from the Professional Testing Corporation (PTC) via email.**

Scheduling Authorizations will be emailed to candidates from [notices@ptcny.com](mailto:notices@ptcny.com) approximately 2–5 business days after the status of “Eligible to Test” is achieved. Please ensure you enter your correct email address on the application and add the ‘ptcny.com’ domain to your email safe list. If you do not receive a Scheduling Authorization within two weeks of achieving “Eligible to Test” status, contact PTC at (212 356-0660 or online at [www.ptcny.com/contact](http://www.ptcny.com/contact) for a duplicate.

The Scheduling Authorization will indicate how to schedule your examination appointment with Prometric as well as the dates during which testing is available. Appointment times are first come, first serve, so schedule your examination appointment as soon as you receive your Scheduling Authorization in order to maximize the availability for your preferred location and preferred date.

After you make your test appointment, Prometric will send you a confirmation email with the date, time, and location of your exam. Please check this confirmation carefully for the correct date, time, and location. Contact Prometric at (800) 741-0934 if you do not receive this email confirmation or if there is a mistake with your appointment.

**Note: International candidates may also schedule, reschedule, or cancel an appointment online at [prometric.com](http://prometric.com).**

Current government-issued photo ID (driver’s license or passport) must be presented in order to gain admission to sit for the exam. **Temporary, paper driver's licenses are not accepted.** It is recommended to have a printed copy of the Scheduling Authorization as well as Prometric appointment confirmation.

***It is the candidate’s responsibility to contact Prometric to schedule the examination appointment.***

Arrival at the testing site at the appointed time is the responsibility of the candidate. Plan for weather, traffic, parking, and any security requirements specific to the testing location. Late arrival may prevent you from testing.

\*It is highly recommended the candidate becomes familiar with the testing site’s location prior to appointment.

# Changing Your Examination Appointment

To reschedule current examination appointment to a different date within your three (3) month testing period, you **MUST** contact Prometric either online at [www.prometric.com/abret](http://www.prometric.com/abret) or by phone at (800) 741-0934.

## **Rescheduling Fees:**

**30 days prior** to the scheduled appointment, there is NO (\$0) Rescheduling Fee.

**29-5 days prior** to the scheduled appointment (but still within the stated 3-month testing period), there is a **\$50.00 US** Rescheduling Fee paid directly to Prometric.

**\*NO Rescheduling is Permitted Less than 5 days prior to scheduled appointment.**

**Candidates have three (3) months from the status of “Eligible to Test” date to sit for the examination.**

**After the 3-month period, candidates will need to reapply for the examination and pay a new application fee.**

**THERE ARE NO REFUNDS, EXTENSIONS, nor TRANSFER OF FEES**

# Special Accommodation Requests

ABRET and PTC support the intent of and comply with the Americans with Disabilities Act (ADA). PTC will take steps reasonably necessary to make certification accessible to persons with disabilities covered under the ADA. According to the ADA, an individual with a disability is a person who has a physical or mental impairment that substantially limits a major life activity (such as seeing, hearing, learning, reading, concentrating, walking) or a major bodily function (such as neurological, endocrine, or digestive system).

The information you provide and any documentation regarding your disability and special test accommodations will be held in strict confidence.

All approved testing accommodations must maintain the psychometric nature and security of the examination. Accommodations that fundamentally alter the nature or security of the exam will not be granted. Note that accommodation for an examination (test accommodation) may not be the same as accommodation provided by your employer for your job. You can find more information about testing accommodations under the Americans with Disabilities Act ([www.ada.gov](http://www.ada.gov)).

Requests for Test Accommodations must be uploaded with the candidate's application and fees at least 8 weeks before the start of your testing period. You must complete and upload both Part 1 and Part 2 of this Form at the same time. Missing information or incomplete Forms will result in a delay in processing.

To request test accommodations, complete the following steps:

1. Download the Request for Test Accommodations Form, available from [www.ptcny.com](http://www.ptcny.com) or by calling PTC at (212) 356-0660.
2. Complete Test Accommodations Form with your doctor/healthcare professional.
3. Upload the completed and signed Request for Test Accommodations Form with the online exam application. Submit your application at least 8 weeks prior to the start of your chosen testing period.

**If your Form is incomplete and/or not received at least 8 weeks before the start of the testing period, we cannot guarantee that we can make these test accommodations in time for you to test. Therefore, your application may need to be reprocessed for another testing period, and you would need to pay the reprocessing fee.**

## NOTES:

- Only those requests made and received on the official Request for Test Accommodations Form will be reviewed.
- All requests must be made at the time of application. Accommodation cannot be added to an existing exam appointment.
- Do not go to [www.prometric.com](http://www.prometric.com) or contact Prometric to request test accommodation as they are not authorized to approve accommodations. **All requests for test accommodation must be submitted on the PTC Request Form.**
- If you need to use your cell phone or another electronic device to monitor a medical condition, such as diabetes, please be sure to include this on Part 1 of the Request for Test Accommodations Form so that we can notify Prometric in advance.
- If you are a nursing parent and will need to use a breast pump during your exam, please complete Part 1 of the Request for Test Accommodations Form and submit it at least 8 weeks before your testing period to allow time to make suitable arrangements at the test center.
- Only pre-approved test accommodation will be permitted on the day of the examination. Test center personnel are not authorized to make any changes to the test accommodation on the day of the testing session and any such change may result in your examination score being canceled.

***\*Accommodations cannot be added to an existing exam appointment\****



# Application Agreement

- 1. Application.** I certify that all the information contained in my application is true and complete to the best of my knowledge. I hereby authorize ABRET and its officers, directors, employees, and agents (collectively, “ABRET”) to review my application and to determine my eligibility for certification.
- 2. Compliance with ABRET Rules.**
  - A.** I have read and agree to abide by ABRET’s policies and procedures, including but not limited to those listed below. I will read and keep up to date with these rules.
    - i. Handbook for Candidates (including the Code of Ethics and Disciplinary Policy);
    - ii. Use of Credential and Trademark Policy; and
    - iii. ABRET Examination Policies.
  - B.** I agree that ABRET may take action regarding my application, examination, or certification in accordance with its Disciplinary Policy, and that the penalties for violation of an ABRET rule include (but are not limited to) denial, revocation, or limitation of my certification.
  - C.** As specified within the Disciplinary Policy, I agree to notify ABRET of any change in name, address, telephone number, or email address, and of any development bearing on certification such as (but not limited to) suspension, revocation, or expiration of a state license to practice, being sued by a patient, or being investigated or reprimanded by a state regulatory board.
- 3. Cooperation.** I agree to cooperate promptly and fully in any review of my application, examination(s), or certification, and I agree to submit any additional information requested.
- 4. Examination Confidentiality.** I am seeking admission to take the examination(s) for the purpose of pursuing certification, and for no other purpose. Because of the confidential nature of the examination(s), I agree to not make or keep copies, excerpts, or notes of examination materials, and to not use or divulge information learned from the examination(s). The examination(s) is/are the exclusive property of ABRET, and I will not use examination information in any way without the express prior written consent of ABRET.
- 5. Examination Administration.**
  - A.** I agree to abide by ABRET’s reasonable rules regarding examination administration. ABRET may refuse my admission to an examination if I do not have the proper identification (valid photo ID and eligibility notice), or if administration has begun. The proctors may take steps as they believe necessary to maintain a secure and proper examination administration, including (but not limited to) relocating me before or during the examination.
  - B.** If I am refused admission or fail to appear at the examination site, or if my examination performance is voided based upon my behavior, I agree that I will not receive a refund of the application or examination fees and there will be no credit for any future examination.
  - C.** I understand that review of the adequacy of examination materials will be limited to computing accurate scoring; I hereby waive all further claims of examination review.
  - D.** I acknowledge that ABRET is concerned with reporting only valid scores. I agree that ABRET may cancel an examination score if there is adequate reason to question its validity because of misconduct or other circumstances.
  - E.** A passing score is required for credentialing in all instances.
- 6. Continuing Compliance.** I understand and agree that it is my responsibility to maintain and demonstrate continuous compliance with all ABRET policies and procedures.
- 7. Certification Marks.**
  - A.** The Long-Term Monitoring credential and the stylized “CLTM” logo are the sole and exclusive property of ABRET and are subject to all applicable trademark and other rights of ABRET as owner under United States intellectual property law and international conventions. I agree to abide by ABRET’s instructions regarding use of its intellectual property, and to not use this intellectual property in any way without the express prior written consent of ABRET.



# Application Agreement (continued)

**B.** I agree to correct at my own expense any inaccurate or unauthorized use by me of ABRET’s credential and logo. I agree that if I refuse to make corrections, then ABRET is entitled to obtain all relief permitted by law, including but not limited to injunctive relief to enforce its rights with respect to the protection of its name, credential, logo, and other intellectual property.

**8. Information Release.** I agree that ABRET may release information regarding my application and certification record to state and federal authorities, licensing boards, employers, and others. This information includes (but is not limited to) ABRET’s findings regarding review of my application, fraudulent statements made by me, information indicating noncompliance with laws or regulations or with policies of other organizations, and the pendency or outcome of disciplinary proceedings.

**9. Duration of Credential.** This Application Agreement will become effective as of the date of acknowledgment upon submitting my application and will remain in effect for the duration of my application review. If I am granted certification, the terms of this Application Agreement will automatically continue in effect for the duration of my credential. I acknowledge and agree that initial credential is awarded only for a five (5) year period, and that completion of recertification requirements, recertification applications, and reviews will be required to maintain my credential.

**10. Waiver of Claims & Indemnification.**

**A.** I hereby waive all claims against ABRET arising out of my application and my participation in the certification program, including (but not limited to) claims arising out of (i) any release of information to state and federal authorities, licensing boards, employers, and others, and (ii) any investigation and review of my application and certification by ABRET. If ABRET is required by law to disclose confidential information, the individual(s) whose information is released will be notified to the extent permitted by law.

**B.** I agree to indemnify ABRET for any third-party claims arising out of any action taken pursuant to the policies and procedures of ABRET with regard to my application, the examination, or my certification. In addition, I agree to indemnify ABRET for any third-party claims arising out of my professional practice and related activities.

**C.** The provisions of this Waiver of Claims & Indemnification section do not extend to claims based on the gross negligence or willful misconduct of ABRET.

**D.** My obligations and rights and those of ABRET under this Waiver of Claims & Indemnification section will survive beyond the termination or expiration of my certification and remain in full force and effect.

**11. Governing Law & Venue.** This Agreement is governed exclusively by the laws of the State of Texas, without reference to its choice of law doctrine. The parties agree that the sole jurisdiction and venue for any litigation arising from this Agreement is the appropriate federal court for the Eastern District of Texas or state court located in Denton County, Texas. If a dispute arises, the parties shall make a good faith attempt to resolve the dispute through dialogue and negotiation prior to pursuing court action.

Upon submitting the application for “CLTM” you will be asked to acknowledge that you have read and understand this Application Agreement and agree to its terms in consideration for the opportunity to seek certification from ABRET.

**Information Release:** If granted certification, you will be authorizing ABRET to release your name and the fact that you have been granted certification to newspapers and other publications, and to release your name, employment information, address, and email address in ABRET’s online directory and mailing list. You may opt out of this process by notifying the ABRET office in writing.

# Examination Administration

The Certification Examination for Long-Term Monitoring professionals is administered on a daily basis, Monday through Saturday, excluding holidays, at computer-based testing facilities managed by Prometric.

In the event of inclement weather, check the [Prometric website for site closures](#).

Prometric's website provides information on what you can expect on your test day, including a walkthrough of check-in and security procedures: [www.prometric.com](http://www.prometric.com).

## Rules for Examination

**Please read the information below carefully.**

You are responsible for adhering to the examination rules while at the testing center.

1. You must present your current driver's license, passport, or US Military ID at the testing center. Candidates without valid ID will NOT be permitted to test. Temporary or paper copies of your ID will not be accepted.
2. No Electronic devices that can be used to record, transmit, receive, or play back audio, photographic, text, or video content, including but not limited to, cell phones, laptop computers, tablets, Bluetooth devices; wearable technology (such as smart watches), MP3 players (such as iPods), pagers, cameras, and voice recorders are permitted to be used and cannot be taken in the examination room. Prometric provides lockers for your personal items.
3. No papers, books, calculators, rulers, or reference materials may be taken into or removed from the testing room.
4. No questions concerning examination content may be asked during the examination session. The candidate should read carefully the directions that are provided on screen at the beginning of the examination session.
5. Candidates are prohibited from leaving the testing room while their examination is in session, with the sole exception of going to the restroom.
6. Bulky clothing, such as sweatshirts (hoodies), jackets, coats, and hats (except hats worn for religious reasons), and most types of jewelry may not be worn while taking the examination. Proctors will ask you to remove such items and place them in your locker. Please see [Prometric's statement on Test Center Security](#) for more information.
7. All watches and Fitbit type devices cannot be worn during the examination.
8. No food/beverages are permitted inside the testing room. Leave these items in your assigned locker.

**Accessing cell phones and electronic devices at any time while you are taking the exam is prohibited.** You can only remove snacks, drinks, medicine, or personal health care items from your locker. No backpacks, bags, purses, or clothing can be removed while your exam is in session.

Contact PTC at (212) 356-0660 or [www.ptcny.com/contact](http://www.ptcny.com/contact) with any questions about the Examination Rules.

**VIOLATION OF ANY OF THE RULES LISTED ABOVE MAY RESULT IN FORFEITURE OF FEES, DISMISSAL FROM THE TESTING ROOM, AND CANCELLATION OF YOUR TEST SCORES.**

## Quick Tips Before Examination Day

- \*Hours and days of availability vary at different centers. You will not be able to schedule your exam appointment until you have received a Scheduling Authorization from [notices@ptcny.com](mailto:notices@ptcny.com).
- \*It is highly recommended the candidate becomes familiar with the testing site's location prior to your appointment.
- \*This Handbook provides the Content Outline for the Examination. Use it to help guide your study in preparing for the examination.

## Content of the Examination

1. The Certification Examination in Long Term Monitoring is a computer-based examination composed of multiple choice, objective questions with a total testing time of four (4) hours.
2. The content for the examination is described in the Practice Analysis, available on the ABRET website and outlined for candidates in this handbook.
3. The questions for the examination are obtained from individuals with expertise in long-term monitoring for epilepsy and in the critical care setting, and are reviewed for construction, accuracy, and appropriateness by a separate group of subject matter experts.
4. ABRET, with the advice and assistance of the Professional Testing Corporation, prepares and reviews the examination.

The Certification Examination in Long-Term Monitoring will be weighted in approximately the following manner:

I. Pre-Study Preparation.....	10%
II. Performing the Study.....	49%
III. Post-Study Procedures.....	15%
IV. Data and Equipment Management.....	9%
V. Ethics and Safety Issues.....	17%

## Content Outline

### I. Pre-Study Preparation (10%)

- A. Indications for long-term EEG monitoring.
- B. Plan recording strategy by reviewing long-term monitoring orders, extracting relevant patient health information from medical records, and obtaining additional information from patient/family/bedside caregivers to avoid adverse effects.
- C. Communicate the monitoring plan to patient/family/bedside caregivers in a manner consistent with their ability to understand to reassure the patient, establish rapport, elicit cooperation, and set expectations.

#### I. A–C. Knowledge Areas

- ACNS Guidelines and Critical Care Terminology
- Seizure classification and syndromes
- Structural and functional neuroanatomy
- Principles of neurophysiology
- Medical terminology
- Elements of a patient history, neurological exam, and indications for long-term EEG monitoring (EMU, ICU, AEEG, etc.)

# Content Outline (continued)

## I. A–C. Knowledge Areas (continued)

- Neurological disorders (e.g., epilepsy, tumors, vascular disease); Comorbidities (e.g., cardiac, autoimmune, psychiatric)
- Psychiatric disorders; Cognitive limitations/developmental delay
- Toxic/metabolic disorders and infectious diseases; Head trauma and traumatic brain injury (TBI)
- LTM procedures (e.g., extracranial monitoring, intracranial monitoring, ICU recordings, epilepsy monitoring, functional mapping, ambulatory EEG)
- Other neuro procedures (e.g., EP, MRI, CT scans, SPECT, PET, Wada)
- Surgical treatments (e.g., resection, laser thermal therapy, neurostimulation); Effects of indwelling and external devices
- Relevant medications/treatments; Effects of drugs and stimulators on patients and EEG recordings
- Age-specific criteria (patterns, recording parameters, disorders)

## **II. Performing the Study (49%)**

- A. Select appropriate equipment pertinent to the study being performed
- B. Securely apply and/or connect electrodes
- C. Select and/or create montages and recording parameters
- D. Initiate recording, calibrate equipment, check impedances, troubleshoot equipment, and perform electrode integrity and signal quality tests, as per facility protocols
- E. Maintain integrity of study by documenting all stimulations performed (including provocation methods and bedside care), addressing technical and nontechnical issues that arise, identifying potential sources of artifacts, and conducting regular impedance checks
- F. Modify the recording strategy and/or instrument parameters as needed based on the assessment of data to ensure a complete and comprehensive study
- G. Document potential sources of effects on EEG (including medications in use and dosages, alternative electrode placement, skull defects, and/or modifications to hook up)
- H. Document established critical values and communicate with reading physician and/or care team, providing technical description of events to ensure patient safety
- I. Document communication, events, EEG changes and abnormalities, neuro assessments, and skin assessments, as per monitoring protocols
- J. Annotate EEG during monitoring/review

## II. A–J. Knowledge Areas

- Electrode types (disc, web, needle, grids/strips, depth)
- International 10-20 and 10-10 System for Electrode Placement and verification; Barriers to and modifications of electrode placement
- Invasive and non-invasive electrode application or connection techniques (e.g., paste, collodion, needle electrodes, grids/strips, stereo-EEG; securing, providing strain relief)
- Skin safety (e.g., application techniques, allergies, and sensitivities)
- Intraoperative ECoG /stereo-EEG recording (including integrity, reliability and safety procedures, ground, and reference electrode positions)
- Impedance checks and their contraindications
- Computer knowledge related to LTM devices, databases, and networks; Audio-video technology

# Content Outline (continued)

## II. A–J. Knowledge Areas (continued)

- Digital analysis (trending, spike and seizure detection, etc.)
- Differential amplifier (e.g., gain, polarity, CMRR); Effects of instrument settings (e.g., filters, display gain, epoch) on EEG recording
- Activation procedures; Medical contraindications to activation procedures
- Artifact monitoring, identification, and mitigation
- Seizure semiology and clinical events (e.g., changes in level of consciousness, body movements, and episodes)
- Electrographic correlates to clinical entities; Electrographic changes requiring provider notification (including critical values)
- Extracranial EEG waveform identification (interictal and ictal patterns, normal variants, etc.)
- Intracranial EEG waveform identification (interictal and ictal patterns, normal variants, etc.)
- Montage modifications
- Localization principles and techniques; Functional and motor sensory mapping (homunculus)
- Troubleshooting techniques
- Basic cardiac rhythms and rhythms associated with EEG changes

## **III: Post-Study Procedures (15%)**

- A. Analyze, prepare, and process patient data and prepare technical report for physician review, as per facility protocols and ACNS Guidelines
- B. Remove and clean electrode sites and assess patient scalp, as per facility protocols
- C. Follow ASET Guidelines concerning proper infection prevention procedures for all equipment and supplies (including electrodes and cables)

## III. A–C. Knowledge Areas

- Digital instrument concepts (e.g., reformatting, sampling rate, post-acquisition review)
- Infection prevention

## **IV: Data and Equipment Management (9%)**

- A. Ensure that scheduled maintenance of equipment is performed
- B. Prepare data files for pruning/clipping and archive as per facility protocols/state regulations
- C. Ensure appropriate storage and disposal of equipment and supplies

## IV. A–C. Knowledge Areas

- Data management and storage (including clipping, pruning, archiving)
- SDS/OSHA standards

## **V: Ethics and Safety Issues (17%)**

- A. Practice in a manner consistent with the ABRET Code of Ethics, ASET position statements, HIPAA/HITECH, and ACNS Guidelines
- B. Safeguard patient safety and self-safety in all aspects of practice
- C. Utilize appropriate ICD-10 billing codes and ethical billing practices

## V. A–C. Knowledge Areas

- HIPAA/HITECH standards
- ABRET Code of Ethics
- Safety protocols (e.g., electrical, environmental, procedural)
- Current applicable ICD billing codes and ethical billing practices [including waste, fraud, abuse, and monitoring ratios/timing (continuous, intermittent, unmonitored)]

# Sample Questions

1. What is the most common cause for temporal lobe seizures in adults?
  - A. Diffuse axonal injury
  - B. Hippocampal sclerosis
  - C. Glioblastoma multiforme
  - D. Venous angioma
2. In a one-year-old child with West Syndrome, episodes of neck flexion and arm extension are **MOST** likely to be associated with which of the following EEG patterns?
  - A. 3 Hz spike and wave discharges
  - B. Fast polyspike and wave discharges
  - C. Generalized paroxysmal fast activity
  - D. Polymorphic theta and delta activity
3. During brain mapping, which of the following techniques is commonly used to localize the central sulcus?
  - A. Median nerve SEPs
  - B. Intracarotid amobarbital test
  - C. Wake up test
  - D. Implantation of depth electrodes

ANSWERS TO SAMPLE QUESTIONS: 1. B, 2. C, 3.A

# References

The following references, or most recent editions of the following, may be useful in preparing for the examination. Currently there exists no single textbook to cover all aspects of EEG, EP and other neurophysiological and neurodiagnostic studies for Long-Term Monitoring (Epilepsy, ICU, and Ambulatory). The list does not attempt to include all acceptable references, nor is it suggested that the Certification Examination in Long-Term Monitoring is necessarily based on these references or sources.

## Recommended Resources:

1. ACNS Guidelines & Consensus Statements: <https://www.acns.org/practice/guidelines>
2. Hirsch et al. (2021). ACNS Standardized Critical Care EEG Terminology: 2021 Version. *J. Clin. Neurophys.* Vol. 38(1).
3. Engel J. Jr. and Moshé S. (2023). *Epilepsy: A Comprehensive Textbook*, 3rd Edition. Wolters-Kluwer, Philadelphia, PA. ISBN: 9781975105525.
4. Fisch BJ. (2009). *Epilepsy and Intensive Care Monitoring: Principles and Practice*. Demos Medical, New York, NY. ISBN: 9781933864136.
5. Fisch BJ. (2000). *Fisch and Spehlmann's EEG Primer*, 3rd Edition: Basic Principles of Digital and Analog EEG. Elsevier, Amsterdam, NL. ISBN: 9780444821485.
6. Hirsch LJ, Fong MWK, Brenner RP. (2022). *Hirsch and Brenner's Atlas of EEG in Critical Care*. John Wiley & Sons Ltd. Hoboken, NJ. ISBN online: 9781118752883; ISBN print: 9781118752890
7. LaRoche S. and Haider H. (2018). *Handbook of ICU EEG Monitoring*, 2nd Edition. Demos Medical, New York, NY. ISBN ebook: 9780826168627; ISBN print: 9780826168610.
8. Tyner FS, Knott JR, Mayer Jr. WB. Knott. (1989). *Fundamentals of EEG Technology*, Vol. II, Clinical Correlates. Wolters-Kluwer. ISBN: 9780890049099.
9. Wyllie E. (2020). *Wyllie's Treatment of Epilepsy Principles and Practice*, 7th Edition. Wolters Kluwer: Philadelphia, PA. ISBN: 9781496397690.

# References (continued)

## Additional Resources:

- ABRET Code of Ethics & Standards of Practice. <https://abret.org/about/ethics-professional-conduct/>
- ASET Position Statement on Skin Safety during EEG Procedures – A Guideline to Improving Outcome – Jan 2017. <https://www.aset.org/wp-content/uploads/2022/01/Skin-Safety-During-EEG-Procedures-%E2%80%93-A-Guideline-to-Improving-Outcome.pdf>
- Bonner AM, Davidson P. Infection prevention: 2020 review and update for neurodiagnostic technologists. *Neurodiagnostic J.* 60(1): 11–35. <https://doi.org/10.1080/21646821.2020.1701341>
- Bonner AM, Davidson P. Technical Tips: Keeping it clean during COVID-19. *Neurodiagnostic J.* 60(3):195–207. <https://doi.org/10.1080/21646821.2020.1805267>
- Centers for Medicare Services (CMS). Billing and Coding: Electroencephalography. A56771. <https://www.cms.gov/medicare-coverage-database/view/article.aspx?articleid=56771&ver=24&>
- United States Department of Health and Human Services, Office for Civil Rights-HIPAA. [www.hhs.gov/ocr/hipaa](http://www.hhs.gov/ocr/hipaa)
- Joint Commission on Accreditation for Healthcare Organizations. Hospital National Patient Safety Goals. <https://www.jointcommission.org/standards/national-patient-safety-goals/>

Additional reference materials may be obtained by contacting ASET – The Neurodiagnostic Society, [www.aset.org](http://www.aset.org).

## Scoring

The Board set the passing standard as the number of test questions it determines to be necessary for candidates to answer correctly in order to be considered at least minimally competent. This method focuses on the particular test that is being administered. Different forms of an examination are matched for difficulty and content coverage. This comprehensive approach makes use of information about the performance of similar groups in the past.

ABRET is concerned with reporting only valid scores. On rare occasions, misconduct or circumstances beyond the individual's control may render a score invalid. If doubts are raised about a score because of these or other circumstances, ABRET reserves the right to cancel any examination score if, in the sole opinion of ABRET, there is adequate reason to question its validity.

## Report of Results

At the end of the examination, candidates will receive an email with a link to retrieve an **UNOFFICIAL** test result prior to leaving the testing center. If you do not receive this email, please check your spam folder first, then call 800-741-0934.

Approximately 4 – 6 weeks following examination date, candidates will receive an email when the **OFFICIAL** test result has been uploaded into their ABRET Certemy account.

Candidates will be notified by PTC via email when score reports are available online. Scores on the major areas of the examination and on the total examination will be reported and available online for only 30 days. Save a copy of your score report.

Candidates may request a score verification report of their exam results by completing the [PTC Exam Score Verification Request Form](#) and paying a \$35 fee.

- \* Please do not contact the ABRET office about your results until you receive your **OFFICIAL** test results. You will not be able to reapply until the OFFICIAL test results are in.



## Examination Challenges

Candidates may comment in the appropriate section at the end of the examination about any test question or questions, test procedure, and/or the test itself. Alternatively, a candidate may submit a complaint in writing to the ABRET Executive Director no later than fourteen (14) calendar days after taking the examination. All challenges and complaints will receive ABRET's full attention. Comments regarding examination validity will be reviewed by the ABRET examination committee. Examination materials shall not be available for review by candidates.

## Confidentiality

1. ABRET will release the individual test scores ONLY to the individual candidate.
2. From time to time, it may be necessary for the ABRET Executive Office and Board of Directors to disclose candidate information and/or scores. No material or information disclosed will be released to any unauthorized person.
3. Any questions concerning test results should be referred to ABRET or the Professional Testing Corporation.
4. ABRET provides ASET – The Neurodiagnostic Society with the names, addresses, and emails of passing candidates. Candidates may opt out by contacting ABRET.

## Attainment of Credential

Eligible candidates who pass the Certification Examination in Long-Term Monitoring will be certified in long-term monitoring for a period of five years and will be authorized to use the CLTM designation, subject to compliance with ABRET's Code of Ethics, rules, policies, and procedures, and standards of practice of ABRET. They will receive a time-limited Certificate and be eligible for recertification after five years. If not recertified, they will no longer be permitted to use the CLTM designation.

## Purpose of Standards

ABRET has developed the *Code of Ethics* and the Grounds for Disciplinary Action to articulate standards of conduct required for eligibility of ABRET credentials, microcredentials, and continued credentialing of EEG, EP, CNIM, CLTM, CAP, CMEG, and NA-CLTM technologists. Maintenance of board certification will require adherence to these and other ABRET rules. Individuals who fail to meet these requirements may have their certification suspended or revoked.

ABRET does not guarantee the job performance of any individual.

## Code of Ethics & Standards of Practice

ABRET is a nonprofit credentialing board for Electroencephalographic (EEG) Technologists, Evoked Potential (EP) Technologists, Neurophysiologic Intraoperative Monitoring (CNIM) Technologists, Long Term Monitoring (CLTM) Technologists, Autonomic Professionals (CAP) and Magnetoencephalography (CMEG), NeuroAnalyst Long Term Monitoring (NA-CLTM) Technologist, and related microcredentials, and seeks to encourage, establish, and maintain the highest standards, traditions and principles of these technologies. ABRET Registered and Certified Technologists should recognize their responsibilities, not only to their patients, but also to society, to other healthcare professionals, and to themselves.

The following principles have been adopted by the Board of Directors in order to encourage personnel to aspire to the highest possible professional practice. An ABRET Registered or Certified neuroprofessional shall:

1. Do everything in his or her power to ensure that the current Guidelines of the American Clinical Neurophysiology Society are complied with in the department in which he or she works.

# Code of Ethics & Standards of Practice (continued)

2. Preserve human dignity, respect patient's rights, and support the wellbeing of the patient under his or her care. The Registered or Certified technologist shall avoid discrimination against individuals on the basis of race, creed, religion, sex, age, and national origin.
3. Appreciate the importance of thoroughness in the performance of duty, compassion with patients, and the significance of the task he or she performs.
4. Preserve the confidentiality of medical and personal information of a patient.
5. Strive to remain abreast of current technology and to study and apply scientific advances in his or her specialty. Carry out his or her professional work in a competent and objective manner.
6. Abide by laws related to the profession and to general public health and safety and avoid dishonest, unethical, or illegal practices.
7. Refuse primary responsibility for interpretation of testing or monitoring of Electroencephalograms, Evoked Potentials, or Neurophysiologic Intraoperative Monitoring for purposes of clinical diagnosis and treatment. Individuals who are licensed or otherwise authorized by practice standards to provide interpretation are excluded.
8. Be truthful, forthcoming, and cooperative in his or her dealings with ABRET.
9. Be in continuous compliance with ABRET's rules (as amended from time to time by ABRET).
10. Respect ABRET's intellectual property rights.
11. Upon suspension or withdrawal of certification, the certificant shall discontinue the use of all claims to certification that contain any reference to ABRET, and to return any certificates issued by ABRET.

## Quick Tips After Achieving Your Credential

\* It is important for ABRET to maintain your correct name and contact information. Please promptly notify the ABRET Executive Office of an address and/or name change here: [by completing ABRET's name and address change form](#).

Although it is your responsibility to know when your credential expires, we will remind you via email through [your ABRET Certemy account](#) when your credential needs to be renewed.

**Please make sure your ABRET Certemy account is up to date.**

## Violations Reporting Requirements

If conduct has occurred that may be grounds for disciplinary action under the Violations to Standards of Practice and Disciplinary Process policy, then ABRET may place an application on hold while reviewing the matter. These will be reviewed on a case-by-case basis.

A criminal conviction may be grounds to deny or otherwise limit eligibility. Convictions of this nature include (but are not limited to) felonies involving rape, sexual abuse of a patient or child, and actual or threatened use of a weapon or violence. If a conviction resulted in a sentence that includes incarceration, then the individual is ineligible while in confinement (RUL-26).

# Violations Reporting Requirements (continued)

1. **Grounds for Disciplinary Action.** ABRET may deny, suspend, revoke, or take other action regarding an application or certification if an individual is not in compliance with this Disciplinary Policy. Grounds for disciplinary action include (but are not limited to):
  - A. Ineligibility for certification, regardless of when the ineligibility is discovered;
  - B. An irregular event in connection with an ABRET examination including (but not limited to) copying answers, copying examination materials, and causing a disruption in the testing area;
  - C. Providing fraudulent or misleading information;
  - D. Unauthorized possession or misuse of ABRET credentials, examinations, and other intellectual property;
  - E. Misrepresentation of certification status
  - F. Failure to provide requested information in a timely manner;
  - G. Failure to inform ABRET of changes or adverse actions;
  - H. Gross negligence or willful misconduct in professional work;
  - I. Accepting primary responsibility for interpretation of testing or monitoring for purposes of clinical diagnosis and treatment (Individuals who are licensed or otherwise authorized by practice standards to provide interpretation are excluded.);
  - J. Failure to maintain a current professional credential as required by the jurisdiction in which the individual practices (this may include a license, certificate, or registration);
  - K. The conviction of, plea of guilty to, or plea of no contest (“nolo contendere”) to a felony or misdemeanor related to public health and safety or the profession;
  - L. Disciplinary action by a licensing board or professional organization other than ABRET; and
  - M. Other failures to maintain continuous compliance with ABRET standards, policies, and procedures.

## 2. Sanctions.

- A. ABRET may impose one or more of the following sanctions for a violation of this Disciplinary Policy:
  - Denial or suspension of eligibility;
  - Denial of certification;
  - Revocation of certification;
  - Non-renewal of certification;
  - Suspension of certification;
  - Reprimand;
  - Probation;
  - Notification of other legitimately interested parties;
  - Or other corrective action (RUL-8).

Candidates or certificants may appeal the decision of the Ethics and Disciplinary Committee by submitting a written appeals statement within 30 days, according to ABRET’s policies.

Each candidate must affirm that the information provided in the Application is true and correct to the best of their knowledge. Each candidate further agrees to hold ABRET and its sponsoring organizations blameless from any claim for damages as a result of any action it may take in connection with this Application, the credentialing examination, or the results there of.