



**Core Entry-to-Practice Competencies  
For the Profession of  
Electroencephalography Technology**

**The Framework**

The overarching rationale in the development of the competency documents was the need to define the *entry-to-practice standards* for electroneurophysiology technologists as recognized by the Canadian Association of Electroneurophysiology Technologists (CAET).

The profession specific documents on Core Entry-to-Practice Competencies, in addition to the CAET Minimum Technical Standards and Code of Ethics documents, collectively describe the characteristics, behaviours and traits necessary for effective job performance (Abraham, Karns, Shaw & Mena, 2001).

The aforementioned documents support the goal of registering competent and ethical practitioners who provide high quality medical diagnostic and therapeutic care to the public.

**The Structure**

The Core Entry-to-Practice Competencies are presented under the following broad headings:

1. Professional Accountability and Responsibility
2. Workplace Health and Safety
3. Patient-Centered Care
4. Operation of Equipment
5. Clinical Procedures
6. Interpretation and Analysis

Within each of the broad category headings, several sub-headings are evident.

### **Assumptions**

Several assumptions underscored the development of the Core Entry-to-Practice Competencies. These are itemized here:

1. A strong foundation of knowledge, skill and attitude is a pre-requisite for success in achieving the stated competencies.
2. The requisite knowledge, skill and attitude is developed through the formal structure of accredited education programs.
3. The requisite knowledge, skill and attitude is expanded through active participation in provision of high quality medical diagnostic and therapeutic services.
4. Each stated competency can be independently executed within the context of the specified profession.

### **Working Definitions**

Professional Competence	öThe habitual and judicious use of communication, knowledge, technical skills, clinical reasoning, emotions, values, and reflection in daily practice for the benefit of the individual and community being servedö(Epstein & Hundert, 2002, p.226).
Knowledge	Competent demonstration of facts and information as acquired through learning, experience, and reflection.
Skill	Competent demonstration of abilities which have been acquired through knowledge translation, training, and experience.
Attitude	A complex mental state involving beliefs, feelings, and values required to communicate and act in certain ways.

### **Currency**

The Core Entry-to-Practice Competencies were originally developed in 2005 with the assistance of practicing EEG technologists in Alberta. An extensive validation process involved provincial members, national partners, education providers, and provincial employers. The document was finalized on March 9, 2006 and adopted by CAET on December 7, 2007.

### **Resources**

Abraham, S.E., Karns, L.A., Shaw, K., and Mena, M.A. (2001). Managerial competencies and the managerial performance appraisal process. *Journal of Management Development.*, 20, pp. 842 ó 852.

Canadian Association of Electroneurophysiology Technologists. (2001). *Minimal Technical Standards.*

Canadian Association of Medical Radiation Technologists. (2002, 2005) *Competency profiles.* Ottawa: CAMRT

Canadian Medical Association (2005). *Requirements for accreditation.* Ottawa: CMA

Cate, O. (2005). Entrustability of professional activities and competency-based training. *Medical Education*, 39, pp. 1176 ó 1177.

Epstein, R.M., Hundert, E.M. (2002). Defining and assessing professional competence. *JAMA*, 287, pp. 226 ó 235.

## COMPETENCY CATEGORIES

### 1. Professional Accountability and Responsibility

<b>1.1 Legislation, Standards, and Ethics</b>	
1.1 a	Follow regulations as set out by provincial and federal legislation governing the practice of electroencephalography technologists. (Appendix 1)
1.1 b	Engage in practice which adheres to the national association's / provincial regulatory body's Standards of Practice.
1.1 c	Engage in practice which adheres to the national association's / provincial regulatory body's Code of Ethics.
1.1 d	Provide care which supports the patient's rights to accept or refuse medical services.
1.1 e	Provide care which supports the patient's rights to fair and unbiased health care services.
1.1 f	Provide patient services which uphold the principles of abuse prevention policies.
1.1 g	Interact with other health care providers in a manner that upholds a "zero tolerance" approach to harassment.
1.1 h	Comply with institutional protocols and policies.
1.1 i	Maintain complete and secure records.
<b>1.2 Teamwork</b>	
1.2 a	Cooperate and communicate professionally as a member of the multidisciplinary health care team.
1.2 b	Distinguish between the scopes of practice for various health care providers.
1.2 c	Demonstrate respect for the diversity of opinions and values.
1.2 d	Acknowledge how cultural, social, and religious diversity impacts collaboration in the health care setting.
1.2 e	Manage personal workload to contribute to team work productivity.
1.2 f	Demonstrate professional written and verbal communication techniques.
1.2 g	Negotiate resolutions to conflicts and problems.
1.2 h	Apply the principles of constructive feedback in delivering feedback and / or receiving feedback.
<b>1.3 Profession Advocacy</b>	
1.3 a	Interact with, and monitor students in the clinical environment.
1.3 b	Provide feedback on student performance in clinic.
1.3 c	Promote the profession to the general public and other health care professionals.
1.3 d	Portray a positive and confident demeanor and appearance while presenting information.
1.3 e	Participate in quality improvement initiatives.
<b>1.4 Professional Competence</b>	
1.4 a	Self-evaluate own capabilities in clinical practice.
1.4 b	Develop clear performance goals to enhance personal and professional growth.

1.4 c Demonstrate personal commitment to continuing professional development.

**2. Workplace Health and Safety:**

2.1 Electrical Safety	
2.1 a	Take appropriate actions to ensure electrical safety, including CSA standards which address grounding issues, lab wiring, and leakage current.
2.2 Occupational Health and Safety	
2.2 a	Apply the standards of WHMIS in the handling, use, storage, and disposal of hazardous workplace materials. (see Appendix 1)
2.2 b	Adhere to the workplace standards as described for Occupational Health and Safety (OHS). (see Appendix 1)
2.2 c	Follow appropriate reporting procedures for incidents, injuries, and potential safety issues.
2.2 d	Apply OHS principles to work environment practices, including: <ul style="list-style-type: none"> <li>o Maintenance of work areas free from potential hazards</li> <li>o Use of proper body mechanics during work routines to prevent injury to self</li> <li>o Reporting and action protocols in the event of any workplace injury</li> </ul>
2.2 e	Apply the standards of Health Canada (see Appendix 1) to prevent contamination of person, equipment and environment with inclusion of: <ul style="list-style-type: none"> <li>o Principles of transmission prevention</li> <li>o Universal precautions</li> <li>o Isolation techniques</li> <li>o Reverse-isolation techniques</li> </ul>
2.3 Emergency / Disaster Plans	
2.3 a	Comply with institutional policies in responding appropriately to emergency incidents.

**3. Patient-Centered Care:**

3.1 Patient Environment	
3.1 a	Administer first aid / basic life support in emergency situations.
3.1 b	Perform CPR according to the standard of CPR-Level C as specified by the Heart and Stroke Foundation of Canada.
3.1 c	Ensure safe functionality of equipment in the recording environment.
3.1 d	Ensure functioning of ancillary patient equipment.
3.1 e	Demonstrate care when working around IV lines, and other diagnostic & therapeutic tubes / lines.
3.1 f	Ensure a safe environment for the patient by: <ul style="list-style-type: none"> <li>o engaging equipment locking mechanisms</li> <li>o removing or securing physical obstacles</li> <li>o providing support and restraint as appropriate</li> <li>o removing known contact irritants and allergens</li> </ul>

3.1 g	Transfer patient safely.
3.1 h	Provide as comfortable an environment for the patient as reasonably possible.

**3.2 Patient Assessment and Intervention**

3.2 a	Verify patient's identity.
3.2 b	Ensure informed consent.
3.2 c	Communicate with the patient in a manner consistent with patient's ability to understand.
3.2 d	Assess patient's mobility and stability for procedure.
3.2 e	Recognize and respond appropriately to changes in patient's physical condition, behaviours, and level of consciousness.
3.2 f	Maintain patient's dignity.
3.2 g	Provide basic assistance to patient.

**3.3 Communication and Education**

3.3 a	Identify self, and explain provider role.
3.3 b	Respond to patient's family / representative questions within the parameters of patient confidentiality.
3.3 c	Respond to patient questions with clear and relevant information.
3.3 d	Recognize when patient concerns require interventions by other health care practitioners, and facilitate these interventions.

**3.4 Recording and Documenting**

3.4 a	Use standard medical terminology.
3.4 b	Record relevant information.
3.4 c	Maintain confidentiality of patient records.
3.4 d	Ensure that procedure requisitions contain valid information.
3.4 e	Prepare written technical impression for interpreting physician.
3.4 f	Archive data.

**4. Operation of Equipment**

**4.1 Maintain equipment**

4.1 a	Ensure appropriate preventative maintenance schedule and log are maintained.
4.1 b	Calibrate recording equipment, as per manufacturer's specifications.
4.1 c	Perform check of cable and component integrity.
4.1 d	Ensure calibration of stimulating equipment, as per manufacturer's specifications.
4.1 e	Ensure completion of leakage current check.
4.1 f	Perform basic equipment troubleshooting; correct or report as necessary.

4.1 g	Identify availability of software upgrades; implement as appropriate.
4.1 h	Verify filter and sensitivity control operation; report as necessary.
4.1 i	Disinfect non-disposable surface electrodes.
4.1 j	Verify electrode integrity and condition; replace as necessary.
4.1 k	Clean and sterilize non-disposable needle electrodes.
4.1 l	Dispose of used electrodes as appropriate.

**4.2 Operate Equipment**

4.2 a	Maintain current and comprehensive knowledge of equipment operation.
4.2 b	Operate equipment as per manufacturer's specifications.
4.2 c	Describe components of EEG equipment, including their functioning and integration.
4.2 d	Describe characteristics and properties of EEG recording electrode types including surface, subdermal and intracranial electrodes.

**5. Clinical Procedures**

**5.1 Obtain and record patient information**

5.1 a	Obtain relevant patient history.
5.1 b	Recognize patient's physical, mental, behavioural, medication, and medical devices status as relevant to participation in EEG procedures.
5.1 c	Recognize clinical signs relevant to EEG assessments as listed in Appendix 2.

**5.2 Obtain standard recordings**

5.2 a	Take precautions relative to patient's physical, mental and behavioural status.
5.2 b	Position patient.
5.2 c	Measure and mark head using International 10/20 Electrode Placement System.
5.2 d	Identify and mark sites for placement of digital reference and ground electrodes.
5.2 e	Identify sites for placement of EOG electrodes.
5.2 f	Identify sites for placement of ECG electrodes.
5.2 g	Prepare electrode sites.
5.2 h	Apply electrodes using conductive paste, or collodion and electrolyte.
5.2 i	Verify electrode impedances are balanced and between 100 and 5000 ohms, and check during recording.
5.2 j	Obtain a minimum 20-minute recording, including simultaneous ECG and EOG channels, not including activation procedures.
5.2 k	Utilize longitudinal bipolar, transverse bipolar and referential montages.
5.2 l	Ensure use of appropriate filter and time base settings.

5.2 m	Select appropriate sensitivity settings for optimal recording.
5.2 n	Utilize additional physiological monitors where appropriate, including respiration and EMG.
5.2 o	Perform activation procedures including hyperventilation, photic stimulation, eye opening / closing, sleep.
5.2 p	Identify physiological and non-physiological artefacts; correct as possible, or monitor.
5.2 q	Annotate relevant information throughout recording.
5.2 r	Remove electrodes and clean areas of application.

### 5.3 Customize / adapt recording procedures

5.3 a	Adapt standard recording procedures relevant to patient's history, physical, mental and behavioural status; and medications and medical devices.
5.3 b	Adapt standard recording procedures for neonatal patients.
5.3 c	Adapt standard recording procedures for pediatric patients.
5.3 d	Adapt standard recording procedures for ICU patients.
5.3 e	Adapt standard recording procedures for burn patients.
5.3 f	Adapt standard recording procedures for trauma patients.
5.3 g	Adapt standard recording procedures for ECS recording.
5.3 h	Perform reactivity tests for patients with impaired levels of consciousness including visual, auditory, somatosensory, painful stimulation.
5.3 i	Modify recording procedures based on observations made during recording.
5.3 j	Recognize and react appropriately to seizures.

## **6. Interpretation and Analysis**

### 6.1 Analyze recording

6.1 a	Recognize critical abnormalities listed in Appendix 3, and alert appropriate staff.
6.1 b	Integrate knowledge of the medications listed in Appendix 4 in order to analyze recording.
6.1 c	Integrate knowledge of clinical conditions listed in Appendix 5 in order to analyze recording.
6.1 d	Recognize normal and normal variant EEG patterns according to age and state of patient.
6.1 e	Recognize abnormal patterns according to patient's age and level of consciousness.
6.1 f	Recognize effect of physical, clinical, and non-physiological parameters on results.
6.1 g	Localize focal waveform.
6.1 h	Correlate EEG with clinical seizure.

6.2 Analyze and Enhance Practice	
6.2 a	Utilize problem-solving strategies.
6.2 b	Generate alternate approaches and evaluate effectiveness of application.
6.2 c	Critically evaluate best professional practices.
6.2 d	Identify professional and personal roles in risk management.
6.2 e	Manage resources effectively.
6.2 f	Participate in professional growth opportunities.

## Appendix 1

### Federal Legislation:

1. Health Canada  
*Subsection: Health Care System*  
[www.hc-sc.gc.ca](http://www.hc-sc.gc.ca)
2. Office of the Privacy Commission of Canada  
*Subsection: Resource Centre*  
[www.privcom.gc.ca](http://www.privcom.gc.ca)

### Standards:

1. CAET Minimal Technical Standards
2. CAET Code of Ethics

### Workplace Health and Safety:

1. Canada's National Occupational Health and Safety Website  
[www.canoshweb.org](http://www.canoshweb.org)
2. Canadian Centre for Occupational Health and Safety  
[www.ccohs.ca](http://www.ccohs.ca)
3. Health Canada Infection Control Guidelines (July 1999, Volume 25S4) Routine Practices and Additional Precautions for Preventing the Transmission of Infection in Health Care.  
*Information available through:*
  - o Health Canada (website): search by Index listing

**NOTE:** In addition to knowledge of items listed in Appendix 1, all Alberta graduates must also have sufficient knowledge of provincial legislation & requirements as listed below:

1. The Health Professions Act (2000) **AB**  
*Information available through:*
  - o Alberta Queen's Printer (website)
  - o Alberta Government: Health and Wellness (website)
2. Health Information Act (2000) **AB**  
*Information available through:*
  - o Alberta Queen's Printer (website)
  - o Office of the Information and Privacy Commissioner of Alberta
3. Protection for Persons in Care Act (1998 / 2004 review) **AB**  
*Information available through:*
  - o Alberta Queen's Printer (website)
  - o Alberta Government: Seniors and Community Services (website)

4. ACMDTT Standards of Practice

*Information available:*

- *Member handbook*
- *ACMDTT (website)*

5. ACMDTT Code of Ethics

*Information available:*

- *Member handbook*
- *ACMDTT (website)*

6. Occupational Health and Safety Act (last revision 2002) **AB**

*Information available through:*

- *Alberta Queen's Printer (website)*
- *Human Resources and Skills Development of Canada (website)*

*Key search items:*

*Back care & lifting*

*Ergonomics*

*Storage & handling*

*Use of tools, appliances, etc.*

*Serious injuries & accidents.*

*Biological hazards*

*Chemical hazards*

*Fire / explosion hazards*

*Physical hazards*

*Personal protective equipment*

**Appendix 2**                      **Clinical Signs**

Appendix 2 lists the patient clinical signs that the EEG technologist must recognize, in order to comply with Competency 5.1.c

Ability to follow commands  
Diaphoresis  
Edema  
Eye movements  
Involuntary movements  
Level of consciousness  
Medical devices  
Obvious memory dysfunction  
Skull and / or facial asymmetries or deformities or anomalies  
Speech disturbance

**Appendix 3**                      **Critical Abnormalities**

Appendix 3 lists the critical abnormalities that the EEG technologist must recognize, in order to comply with Competency 6.1.a

ECG changes  
Electro cerebral silence  
Electrographic seizure  
Epileptiform activity  
Status epilepticus  
Unanticipated significant focal EEG changes

**Appendix 4**                    **Medications**

Appendix 4 lists the medications of which the EEG technologist must have knowledge, in order to comply with Competency 6.1.b

Anesthetic agents  
Anti-convulsants  
Anti-depressants  
Antiemetics  
Anti-psychotics  
Barbituates  
Benzodiazepines  
Narcotics  
Sedatives

**Appendix 5**                    **Clinical Conditions**

Appendix 5 lists the clinical conditions of which the EEG technologist must have knowledge, in order to comply with Competency 6.1.c

Cerebral vascular disease  
Dementia  
Drug toxicity  
Encephalopathies / encephalitis  
Head injury  
Metabolic disorders  
Migraine  
Seizure disorders  
Level of consciousness  
Syndromes  
Tumours