

Competency Profile

Entry-to-Practice competencies for the electroneurophysiology profession of the Alberta College of Medical Diagnostic and Therapeutic Technologists (ACMDTT)

Electroencephalography



Under the *Health Professions Act of Alberta (HPA)*, the ACMDTT is mandated with establishing standards and registering competent and ethical electroencephalography technologists who can provide high quality medical therapeutic and diagnostic care to the public.

This competency profile lists the competencies required of electroencephalography (EEG) technologists at entry-to-practice. Together with the ACMDTT Standards of Practice and Code of Ethics documents it defines the expectations of practitioners on entry to the profession.

The competencies have been validated through broad consultation with the profession in Alberta. They have been validated nationally and adopted by the Canadian Association of Electroencephalography Technologists, Inc. (CAET). ACMDTT has approved the use of the Canadian Board of Registration Electroencephalograph Technologists, Inc. (CBRET) certification examination as a requirement for entry-to-practice in Alberta.

The ACMDTT entry-to-practice competencies were originally developed and approved in 2006. The College is committed to reviewing this documentation on a regular, cyclical basis. An extensive review and revision process took place in 2016 involving provincial and national practitioners, national partners, education providers and provincial and national employers. The new profile was approved on April 7, 2016.

The competency profile will be reviewed regularly with an aim to reflect current standards for high quality patient services within an evolving work environment.

Instructions for educational institutions

The ACMDTT entry-to-practice competencies identify the minimum learning outcomes required of the electroencephalography technologists at graduation. The College recognizes that achievement of entry-level proficiency in each competency requires unique cognitive, psychomotor and affective learning. This entry-to-practice competency profile is not considered a curriculum guide. The educational institution should itself determine the level of education and learning activities required to meet the minimum entry-to-practice standard at the expected level of proficiency as set out by the College.

Structure

The entry-to-practice competencies for all professions of the ACMDTT are uniformly structured under the following areas of practice:

Professional Responsibilities

- 1.1 Legislation, Standards and Ethics
- 1.2 Collaborative Practice
- 1.3 Professionalism
- 1.4 Workplace Health and Safety

Clinical Procedures

- 2.1 Patient Care Fundamentals
- 2.2 Patient Assessment
- 2.3 Equipment
- 2.4 Standard Recordings
- 2.5 Customization and Adaptation of Recordings
- 2.6 Analysis, Reporting and Information Management

Definitions

Competency

The ability to perform a specific practice task with a defined level of proficiency

Competency statement

A job task in which an entry-level technologist is expected to demonstrate a prescribed level of proficiency

Cognitive learning

Learning involving knowledge and thinking skills

Psychomotor learning

Learning involving practical skills

Affective learning

Learning of attitudes and values that affect cognitive and psychomotor activities

Level of proficiency

The degree of mastery that a practitioner demonstrates in a job task. Levels of proficiency range on a continuous scale from learner, to entry-level, to mastery, to expertise, to leadership

Entry-level proficiency

The production of results consistent with generally accepted standards in the profession which involves:

- responding to commonly-occurring practice situations independently, within a reasonable timeframe, and obtaining results consistent with the generally accepted standards in the profession
- recognizing unusual, difficult to resolve and complex situations which are beyond the technologist's independent ability. Demonstrating the ability to handle these situations through:
 - consultation,
 - referral to a more experienced technologist,
 - consulting, or
 - research.

Assumptions

Several assumptions have underscored the development of the entry-to-practice competencies. These are:

1. A strong foundation of cognitive, psychomotor and affective learning is a pre-requisite for success in achieving the competencies; this learning is initially developed through participation in an ACMDTT-approved educational program.
2. Graduation from an ACMDTT-approved educational program, together with successful completion of the CBRET certification examination, is indicative of success in achieving the competencies.
3. Learning is expanded through active participation in the provision of high quality medical diagnostic and therapeutic services. This results in levels of proficiency beyond entry-level.

Resources

Alberta Queen's Printer. (2000). *Health Professions Act: Revised Statutes of Alberta 2000*. Alberta: AQP.

Alberta Queen's Printer. (2009). *Medical Diagnostic and Therapeutic Technologists Profession Regulation*. Alberta: AQP.

Canadian Association of Medical Radiation Technologists. (2006, 2008) *Competency profiles*. Ottawa: CAMRT.

Canadian Medical Association (2014). *Requirements for Accreditation*. Ottawa: CMA.

1. Professional Responsibilities

1.1 Legislation, Standards and Ethics

1.1a	Follow regulations as set out by provincial and federal legislation, standards and codes of ethics governing the profession.
1.1b	Recognize and support patient rights.
1.1c	Provide care in a fair and unbiased manner.
1.1d	Maintain patient privacy and confidentiality.
1.1e	Act with honesty and integrity.
1.1f	Take responsibility for personal decisions and actions.
1.1g	Maintain professional boundaries.
1.1h	Comply with employer policies and directives.
1.1i	Maintain comprehensive and secure records, with appropriate access.

1.2 Collaborative Practice

1.2a	Distinguish between the roles of healthcare team members.
1.2b	Interact effectively as a member of a multidisciplinary healthcare team.
1.2c	Provide relevant information to other healthcare providers.
1.2d	Show respect for diversity of opinions and values.
1.2e	Communicate effectively both orally and in writing.
1.2f	Utilize medical terminology in professional communication.
1.2g	Apply basic problem solving and conflict resolution techniques.
1.2h	Provide constructive feedback to colleagues.
1.2i	Respond professionally to feedback received from others.

1.3 Professionalism

1.3a	Provide information about the profession to the general public.
1.3b	Maintain currency in area of practice.
1.3c	Maintain personal wellness consistent with needs of professional practice.
1.3d	Practice within limits of personal knowledge and skills.
1.3e	Manage time and workload efficiently.
1.3f	Manage resources effectively.
1.3g	Portray a professional demeanour in all activities.
1.3h	Respond professionally to changes affecting the workplace.
1.3i	Self-evaluate and develop clear performance goals to enhance professional effectiveness.
1.3j	Undertake continuing professional development.
1.3k	Participate in quality improvement initiatives.
1.3l	Utilize research literature and professional resources.
1.3m	Contribute to research-based initiatives.
1.3n	Contribute to the education of students in the clinical environment.

1.4 Workplace Health and Safety

1.4a	Recognize and address hazards in the workplace.
1.4b	Apply the standards of the Workplace Hazardous Materials Information System (WHMIS) in the handling, use, storage and disposal of materials.
1.4c	Comply with relevant workplace health and safety regulations.
1.4d	Recognize an emergency situation and take appropriate action.

2. Clinical Procedures

2.1 Patient Care Fundamentals

2.1a	Prepare the recording environment for the patient.
2.1b	Apply standard precautions for infection prevention and control.
2.1c	Perform aseptic techniques and maintain sterile fields.
2.1d	Identify self and explain professional role.
2.1e	Transfer patient safely.
2.1f	Adapt communication based upon patient needs.
2.1g	Perform procedures in a manner that maintains the integrity of patient ancillary equipment and services.
2.1h	Perform procedures in a manner that optimizes patient dignity, comfort and safety.
2.1i	Position the patient.
2.1j	Perform CPR.

2.2 Patient Assessment

2.2a	Verify patient identity.
2.2b	Verify procedure ordered.
2.2c	Ensure complete and correct documentation for procedure; address inconsistencies.
2.2d	Obtain relevant patient history; identify aspects that may affect or contraindicate the procedure.
2.2e	Recognize clinical characteristics that may impact EEG procedures, and respond appropriately.
2.2f	Explain procedure to patient; facilitate patient's understanding by encouraging and responding to questions and concerns.
2.2g	Refer patient questions and concerns to other healthcare providers where appropriate.
2.2h	Respond to patient's family and supporters within the parameters of patient confidentiality.
2.2i	Verify patient consent for procedure.

2.3 Equipment

2.3a	Select electrodes, supplies and equipment appropriate to procedure.
2.3b	Disinfect non-disposable electrodes, supplies and equipment.
2.3c	Monitor functionality of equipment, correct or report as appropriate.
2.3d	Ensure equipment quality control is performed.
2.3e	Ensure quality control for leakage current is performed.

2.4 Standard Recordings

2.4a	Measure and mark head using the International 10/20 System of Head Measurement and Electrode Placement.
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2.4b	Identify sites for placement of system reference and ground electrodes.
2.4c	Prepare sites and apply electrodes.
2.4d	Identify sites for, prepare sites, and apply electrooculogram (EOG) electrodes.
2.4e	Identify sites for, prepare sites, and apply electrocardiogram (ECG) electrodes.
2.4f	Maintain electrical safety for patient.
2.4g	Maintain balanced electrode impedances.
2.4h	Obtain technically acceptable recordings on adult, pediatric and neonatal patients according to CAET minimum technical standards.
2.4i	Monitor system integrity and troubleshoot as required.
2.4j	Identify and monitor physiological and non-physiological artefacts, correct as appropriate.
2.4k	Utilize bipolar and referential montages for optimal recording.
2.4l	Utilize sensitivity, filter and time base settings for optimal recording.
2.4m	Utilize additional physiological monitors.
2.4n	Recognize contraindications to hyperventilation.
2.4o	Perform hyperventilation protocol.
2.4p	Recognize contraindications to photic stimulation.
2.4q	Perform photic stimulation protocol.
2.4r	Perform eye opening/closing protocol.
2.4s	Perform spontaneous sleep protocol.
2.4t	Perform sleep deprived protocol.
2.4u	Annotate relevant information throughout recording.
2.4v	Remove electrodes and clean areas of application.

2.5 Customization and Adaptation of Recordings

2.5a	Create and modify montages for optimal recording.
2.5b	Adapt procedures based on patient physical, physiological and psychological presentation.
2.5c	Adapt procedures for long-term monitoring.
2.5d	Adapt procedures for electrocerebral silence (ECS) recording.
2.5e	Perform visual reactivity tests for patients with impaired levels of consciousness.
2.5f	Perform auditory reactivity tests for patients with impaired levels of consciousness.
2.5g	Perform painful stimulation reactivity tests for patients with impaired levels of consciousness.
2.5h	Recognize and respond to changes in patient's physical condition, behaviours and level of consciousness.
2.5i	Recognize critical abnormalities in EEG listed in Appendix 1, and respond as appropriate.
2.5j	Recognize seizures, and respond as appropriate.
2.5k	Recognize and respond to medical emergencies.

2.6 Analysis, Reporting and Information Management

2.6a	Localize EEG waveforms and patterns.
2.6b	Recognize normal and normal variant EEG waveforms and patterns, consistent with patient age and state.
2.6c	Recognize abnormal waveforms and patterns.
2.6d	Analyze recording with respect to the classes of medication listed in Appendix 2.

2.6e	Analyze recording with respect to artifacts and clinical conditions listed in Appendix 3 and critical abnormalities listed in Appendix 1.
2.6f	Analyze recording with respect to patient presentation.
2.6g	Correlate EEG with clinical event occurring during procedure.
2.6h	Prepare recording and technical impression for reporting.
2.6i	Utilize information and archival systems.

Appendix 1

Appendix 1 lists the critical abnormalities that the EEG technologist must recognize in order to comply with Competencies 2.5i and 2.6e

A1.1	ECG changes
A1.2	Electrocerebral silence
A1.3	Epileptiform activity
A1.4	Respiratory changes
A1.5	Seizures
A1.6	Significant EEG changes

Appendix 2

Appendix 2 lists the classes of medication that the EEG technologist must have knowledge of in order to comply with Competency 2.6d

A2.1	Anticonvulsants
A2.2	Antidepressants
A2.3	Antipsychotics
A2.4	Barbiturates
A2.5	Benzodiazepines
A2.6	Narcotics
A2.7	Sedatives

Appendix 3

Appendix 3 lists the clinical conditions that the EEG technologist must recognize in order to comply with Competency 2.6e

A3.1	Cerebral structural abnormality
A3.2	Cerebral vascular disease/injury
A3.3	Dementia
A3.4	Drug toxicity
A3.5	Edema
A3.6	Encephalopathy
A3.7	Epilepsy syndrome
A3.8	Head injury
A3.9	Involuntary movement
A3.10	Level of consciousness
A3.11	Metabolic disorders
A3.12	Migraine
A3.13	Psychogenic non-epileptic seizure
A3.14	Psychosis
A3.15	Seizure disorder
A3.16	Skull and/or facial asymmetry, deformity or anomaly
A3.17	Space occupying lesion



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