ROYAL COLLEGE
OF PHYSICIANS AND SURGEONS OF CANADA
COLLÈGE ROYAL
DES MÉDECINS ET CHIRURGIENS DU CANADA

Clinical Pharmacology and Toxicology Training Experiences

2021
VERSION 1.0

These training requirements apply to those who begin training on or after July 1, 2021.

ELIGIBILITY REQUIREMENTS TO BEGIN TRAINING

Royal College certification in Anesthesiology, Emergency Medicine, Internal Medicine, Pediatrics, or Psychiatry.

OR

Eligibility for the Royal College certification examination in Anesthesiology, Emergency Medicine, Internal Medicine, Pediatrics, or Psychiatry (see requirements for these qualifications).

OR

Registration in a Royal College-accredited residency program in Anesthesiology, Emergency Medicine, Internal Medicine, Pediatrics, or Psychiatry.

A maximum of one year of training may be undertaken during concurrent training for certification in Anesthesiology, Emergency Medicine, Internal Medicine, Pediatrics, or Psychiatry.

1. For those entering from Emergency Medicine, Internal Medicine, or Pediatrics: Three years of Emergency Medicine, Internal Medicine, or Pediatrics must be completed prior to entry into the Clinical Pharmacology and Toxicology program.

2. For those entering from Anesthesiology or Psychiatry: Four years of Anesthesiology or Psychiatry must be completed prior to entry into the Clinical Pharmacology and Toxicology program.

ELIGIBILITY REQUIREMENTS FOR EXAMINATION[1]

All candidates must be Royal College certified in their primary specialty in order to be eligible to write the Royal College examination in Clinical Pharmacology and Toxicology.

[1] These eligibility requirements do not apply to Subspecialty Examination Affiliate Program (SEAP) candidates. Please contact the Royal College for information about SEAP.

The following training experiences are required, recommended, or optional, as indicated:

TRANSITION TO DISCIPLINE (TTD)

This stage includes orientation to the program, verification of fundamental patient assessment skills in the context of clinical pharmacology and toxicology practice, and introduction to specialized testing relevant to clinical pharmacology and toxicology practice.

Required training experiences (TTD stage):

1. Clinical training experiences:
    - 1.1. Clinical Pharmacology and Toxicology in any setting, including inpatient, clinic or consult service and in any of the following areas
        - 1.1.1. Anesthesiology
        - 1.1.2. Chronic pain
        - 1.1.3. Emergency medicine
        - 1.1.4. Toxicology
        - 1.1.5. Internal medicine
        - 1.1.6. Pediatrics
        - 1.1.7. Maternal-fetal medicine
        - 1.1.8. Psychiatry

2. Other training experiences:
    - 2.1. Orientation to the program, the institution, and the university
    - 2.2. Instruction in
        - 2.2.1. History and physical assessment specific to pharmacological and toxin exposure
        - 2.2.2. Recognition of life-threatening clinical scenarios relevant to Clinical Pharmacology and Toxicology
        - 2.2.3. Role of the clinical pharmacologist and toxicologist in the health care team
        - 2.2.4. Basic consultant skills, including triage, timely response and assessment, and boundaries of the consultant role
        - 2.2.5. Medical pharmacology and toxicology laboratory methods relevant to the training environment

Recommended training experiences (TTD stage):

3. Other training experiences:
    3.1. Critical appraisal activities, such as journal club

FOUNDATIONS OF DISCIPLINE (F)

The purpose of this stage is to add a solid base of knowledge in Clinical Pharmacology and Toxicology to the clinical skills achieved in the primary specialty. This includes a strong basis of skills in critical appraisal and clinical research.

Required training experiences (Foundations stage):

1. Clinical training experiences:
    1.1. Clinical Pharmacology and Toxicology in any setting, including inpatient, clinic or consult service and in at least one of the following areas:
        1.1.1. Anesthesiology
        1.1.2. Chronic pain
        1.1.3. Emergency medicine
        1.1.4. Toxicology
        1.1.5. Internal medicine
        1.1.6. Pediatrics
        1.1.7. Maternal-fetal medicine
        1.1.8. Psychiatry

2. Other training experiences:
    2.1. Formal instruction in
        2.1.1. Pharmacology
            2.1.1.1. Pharmacological concepts and molecular mechanisms
            2.1.1.2. Pharmacokinetics (PK) and pharmacodynamics (PD)
            2.1.1.3. Adherence
        2.1.2. Clinical toxicology
        2.1.3. Medication safety
        2.1.4. Laboratory methodologies
            2.1.4.1. Drug analyses
            2.1.4.2. Therapeutic drug monitoring (TDM)

2.1.5. Drug trials, clinical studies, and drug regulation

2.1.6. Pharmacogenetics and pharmacogenomics

2.1.7. Applied therapeutics

2.1.8. Research methods and applied statistics

2.1.9. Literature search strategies, including PubMed and pharmacology and toxicology databases

2.2. Orientation to databases relevant to the discipline, including Pharmacogenomics Knowledge Base (PharmGKB), Toxnet, and Drug and Lactation Database (LactMed)

2.3. Scholarly activity

Recommended training experiences (Foundations stage):

3. Clinical training experiences:

3.1. Poison Control Centre

3.2. Medical toxicology laboratory

3.3. Pharmacology research laboratory

4. Other training experiences:

4.1. Critical appraisal activities, such as journal club

4.2. Observation of activity at a community pharmacy, including dispensing, patient education and the role of the pharmacist

CORE OF DISCIPLINE (C)

This stage focuses on the breadth of clinical pharmacology and toxicology practice, including clinical experience in a range of clinical domains. This includes application of knowledge and skills to both patient care and discipline-specific research.

Required training experiences (Core stage):

1. Clinical training experiences:

1.1. Clinical Pharmacology and Toxicology in any setting, including inpatient, clinic or consult service, and in at least three of the following areas:

1.1.1. Anesthesiology

1.1.2. Chronic pain

1.1.3. Emergency medicine

1.1.4. Toxicology

- 1.1.5. Internal medicine
- 1.1.6. Pediatrics
- 1.1.7. Maternal-fetal medicine
- 1.1.8. Psychiatry

1.2. Poison Control Centre (if not completed earlier)

2. Other training experiences:

2.1. Formal instruction in

- 2.1.1. Pharmacology
  - 2.1.1.1. Pharmacological concepts and molecular mechanisms
  - 2.1.1.2. Pharmacokinetics (PK) and pharmacodynamics (PD)
  - 2.1.1.3. Adherence
- 2.1.2. Clinical toxicology
- 2.1.3. Medication safety
- 2.1.4. Laboratory methodologies
  - 2.1.4.1. Drug analyses
  - 2.1.4.2. Therapeutic drug monitoring (TDM)
- 2.1.5. Drug trials, clinical studies, and drug regulation
- 2.1.6. Pharmacogenetics and pharmacogenomics
- 2.1.7. Pharmacoeconomics
- 2.1.8. Applied therapeutics
- 2.1.9. Substance use disorders

2.2. Participation in committee work relevant to Clinical Pharmacology and Toxicology at the hospital, university, and/or national level

2.3. Planning and provision of teaching for a variety of audiences, including junior learners, peers, and the public

2.4. Critical appraisal activities, such as journal club

2.5. Scholarly activity

Recommended training experiences (Core stage):

3. Clinical training experiences:
    3.1. Clinics in one or more of the following areas:
        3.1.1. Clinical Pharmacology
        3.1.2. Toxicology
        3.1.3. Pharmacotherapeutics

4. Other training experiences:
    4.1. Attendance at a national and/or international scientific meeting relevant to Clinical Pharmacology and Toxicology
    4.2. Participation in scholarly journal peer review activities

Optional training experiences (Core stage):

5. Clinical training experiences:
    5.1. Community-based experiences relevant to Clinical Pharmacology and Toxicology, such as addictions medicine
    5.2. Medical toxicology laboratory
    5.3. Pharmacology research laboratory

6. Other training experiences:
    6.1. Participation in drug regulatory committees or agencies
    6.2. Pharmaceutical industry experience, such as drug development, regulatory affairs, and clinical trials

TRANSITION TO PRACTICE (TTP)

The focus of this stage is the consolidation and integration of knowledge and skills required to be a subject matter expert in Clinical Pharmacology and Toxicology. This stage also focuses on preparation for independent practice with instruction in areas of administrative and professional responsibility, including practice management, and the requirements for lifelong learning and professional development.

Required training experiences (TTP stage):

1. Clinical training experiences:
    1.1. Junior consultant role in any area of Clinical Pharmacology and Toxicology

2. Other training experiences:
    2.1. Formal instruction in
        2.1.1. Medico-legal issues
        2.1.2. Practice management
        2.1.3. Physician wellness in the transition to independent practice
        2.1.4. Continuing professional development

Recommended training experiences (TTP stage):

3. Other training experiences:
    3.1. Critical appraisal activities, such as journal club
    3.2. Instruction in
        3.2.1. Media training, including giving TV or radio interviews
        3.2.2. Providing medical expertise in situations other than patient care

Optional training experiences (TTP stage):

4. Other training experiences:
    4.1. Instruction in
        4.1.1. Provision of expert legal testimony
        4.1.2. Forensic matters related to Clinical Pharmacology and Toxicology

CERTIFICATION REQUIREMENTS

Royal College certification in Clinical Pharmacology and Toxicology requires all of the following:

1. Royal College certification in Anesthesiology, Emergency Medicine, Internal Medicine, Pediatrics, or Psychiatry;

2. Successful completion of the Royal College examination in Clinical Pharmacology and Toxicology; and

3. Successful completion of the Royal College Clinical Pharmacology and Toxicology Portfolio.

NOTES

The Clinical Pharmacology and Toxicology Portfolio refers to the list of entrustable professional activities across all four stages of the residency Competence Continuum, and associated national standards for assessment and achievement.

MODEL DURATION OF TRAINING

Progress in training occurs through demonstration of competence and advancement through the stages of the Competence Continuum. Clinical Pharmacology and Toxicology is planned as a two-year residency program. There is no mandated period of training in each stage. Individual duration of training may be influenced by many factors, which may include the resident's singular progression through the stages and/or overlap training, the availability of teaching and learning resources, and/or differences in program implementation. Duration of training in each stage is therefore at the discretion of the faculty of medicine, the competence committee, and the program director.

Guidance for programs:

The Royal College Specialty Committee in Clinical Pharmacology and Toxicology's suggested course of training, for the purposes of planning learning experiences and schedules, is as follows:

- 1 -2 months in Transition to Discipline
- 4 – 6 months in Foundations of Discipline
- 12 – 14 months in Core of Discipline
- 2 – 4 months in Transition to Practice

Guidance for postgraduate medical education offices:

The stages of the Competence Continuum in Clinical Pharmacology and Toxicology are generally no longer than:

- 2 months for Transition to Discipline
- 6 months for Foundations of Discipline
- 14 for Core of Discipline
- 4 months for Transition to Practice
- Total duration of training – 24 months

This document is to be reviewed by the Specialty Committee in Clinical Pharmacology and Toxicology by December 2022.

APPROVED – Specialty Standards Review Committee – January 2020