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

Clinical Pharmacology and Toxicology Competencies

2025
VERSION 2.0

Effective for residents who enter training on or after July 1, 2025.

DEFINITION

Clinical Pharmacology and Toxicology is the branch of medicine with the ultimate goal of achieving optimal therapeutics and reduction of the harms of drug and toxin exposure.

CLINICAL PHARMACOLOGY AND TOXICOLOGY PRACTICE

Clinical pharmacologists/toxicologists provide medical expertise for individual patients and patient populations ranging in age from infancy to older adults, including antenatal care. This includes pharmacotherapeutics, clinical toxicology, population therapeutics, and pharmacogenomics.

Clinical pharmacologists/toxicologists apply knowledge of human pharmacology, pharmacotherapeutics, and toxicology to clinical patient care as well as to research and drug development. For individual patients, clinical pharmacologists/toxicologists provide consultation and recommendations regarding specialized testing and care, including patients with complex co-morbidities or pharmacotherapeutics, with adverse drug reactions, and with intentional or accidental poisoning. At a population level, clinical pharmacologists/toxicologists provide expertise on drug trials and drug development, pharmacovigilance, medication safety, prevention of poisonings, allocation of antidotes, and pharmacoeconomics. They are an educational resource for drug therapy and toxicity.

Clinical pharmacologists/toxicologists work in many settings including hospitals, research institutes, poison centres, government agencies and the pharmaceutical industry. They collaborate broadly in multidisciplinary teams in clinical and non-clinical settings.

ELIGIBILITY REQUIREMENTS TO BEGIN TRAINING

For entry from Internal Medicine:

These training requirements apply to those who began training in Internal Medicine prior to July 1, 2023:

Royal College certification in Internal Medicine

OR

Eligibility for the Royal College examination in Internal Medicine

OR

Registration in a Royal College-accredited residency program in Internal Medicine (see requirements for these qualifications)

Three years of Internal Medicine must be completed prior to entry into the Clinical Pharmacology and Toxicology program. A maximum of one year of training may be undertaken during concurrent training for certification in Internal Medicine.

These training requirements apply to those who began training in Internal Medicine on or after July 1, 2023:

Royal College certification in Internal Medicine

OR

Successful completion of the Core stage of training in a Royal College accredited residency program in Internal Medicine (see requirements for these qualifications)

Training in Clinical Pharmacology and Toxicology may overlap with completion of requirements for certification in Internal Medicine (see requirements for the Overlap Training and Alternative Pathway to Internal Medicine Certification).

For entry from Pediatrics:

Royal College certification in Pediatrics

OR

Successful completion of the Transition to Practice stage of training in a Royal College

accredited residency program in Pediatrics[1]

For entry from other clinical disciplines:

Royal College certification in Anesthesiology, Emergency Medicine, or Psychiatry

OR

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

OR

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

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

1. For those entering from Emergency Medicine: Three years of Emergency Medicine 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[2]

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.

CLINICAL PHARMACOLOGY AND TOXICOLOGY COMPETENCIES

Medical Expert

Definition:

As *Medical Experts*, clinical pharmacologists/toxicologists integrate all of the CanMEDS Roles, applying medical knowledge, clinical skills, and professional values in their provision of high-

[1] Some programs in Quebec may permit eligible trainees to begin subspecialty training before completion of the Pediatrics Transition to Practice stage. However, as with all jurisdictions, trainees in Quebec must achieve all generalist competencies of the Pediatrics specialty prior to certification in Pediatrics. To learn more about the entrance requirements for a specific Clinical Pharmacology and Toxicology program, speak to the relevant postgraduate medical education office.
[2] These eligibility requirements do not apply to Subspecialty Examination Affiliate Program (SEAP) candidates. Please contact the Royal College for information about SEAP.

quality and safe patient-centred care. Medical Expert is the central physician Role in the CanMEDS Framework and defines the physician's clinical scope of practice.

Key and Enabling Competencies: Clinical pharmacologists/toxicologists are able to…

1. Practise medicine within their defined scope of practice and expertise

1.1. Demonstrate a commitment to high-quality care of their patients

1.2. Integrate the CanMEDS Intrinsic Roles into their practice of Clinical Pharmacology and Toxicology

1.3. Apply knowledge of the clinical and biomedical sciences relevant to Clinical Pharmacology and Toxicology

1.3.1. Pharmacology

1.3.1.1. Pharmacological concepts and molecular mechanisms

1.3.1.1.1. Dose response and related concepts, including antagonism, agonism, potency, and efficacy

1.3.1.1.2. Drug metabolism

1.3.1.1.3. Drug transport

1.3.1.1.4. Drug targets

1.3.1.1.5. Main regulation mechanisms of drug metabolism, drug transport and drug targets

1.3.1.1.6. Mechanisms of drug action

1.3.1.2. Pharmacokinetics (PK) and pharmacodynamics (PD)

1.3.1.2.1. PK parameters and concepts, and their physiological bases

1.3.1.2.1.1. First-pass effect and bioavailability

1.3.1.2.1.2. Volume of distribution

1.3.1.2.1.3. Protein binding and its impact on PK parameters and effects

1.3.1.2.1.4. Clearance

1.3.1.2.1.4.1. Total body clearance

1.3.1.2.1.4.2. Extraction ratio

1.3.1.2.1.5. Half-life, including context sensitive half-time

1.3.1.2.1.6. Rate constants

1.3.1.2.1.7. First- and zero-order processes, including saturation kinetics

1.3.1.2.2. PK parameter estimation methods

1.3.1.2.2.1. Model-dependent analyses, including compartmental models

1.3.1.2.2.2. Model-independent analyses

1.3.1.2.3. Physiology-based PK, PD and PK/PD models, and population PK

1.3.1.2.4. Effects of biologic factors on PK/PD

1.3.1.2.4.1. Age, including development and aging

1.3.1.2.4.2. Sex

1.3.1.2.4.3. Body mass and nutritional status

1.3.1.2.4.4. Pregnancy

1.3.1.2.4.5. Renal dysfunction

1.3.1.2.4.6. Liver dysfunction

1.3.1.2.5. Receptor concepts

1.3.1.2.6. Molecular basis of PD variations

1.3.1.2.7. Bioequivalence

1.3.1.3. Adherence

1.3.1.3.1. Risk factors for poor adherence

1.3.1.3.2. Adherence measurement

1.3.1.3.3. Approaches to improve adherence

1.3.2. Pharmacogenetics and pharmacogenomics

1.3.2.1. Genetic factors influencing individual differences in PK/PD

1.3.2.1.1. Race-associated pharmacogenetic variations

1.3.2.1.2. Polymorphisms of key drug metabolizing enzymes and transporters

1.3.2.1.3. Genetic variation of therapeutic targets

1.3.2.2. Ontogeny of expression and function of key PK/PD genes

1.3.2.3. Genomic research methodologies

1.3.2.4. Pharmacogenetics-based personalized medicine

1.3.2.5. Databases available for pharmacogenetics research, including Pharmacogenomics Knowledge Base (PharmGKB)

1.3.3. Applied therapeutics

1.3.3.1. Indications for and adverse effects of drugs commonly used within Anesthesiology, Emergency Medicine, Internal Medicine, Pediatrics, and Psychiatry

1.3.3.2. Role of commonly used complementary and alternative medicine (CAM), including safety and efficacy

1.3.3.3. Drug accessibility, including coverage and special access programs

1.3.3.4. Principles of optimization of individual therapy based on intrinsic patient variability, including in the following populations

1.3.3.4.1. Pediatric

1.3.3.4.2. Geriatric

1.3.3.4.3. Bariatric

1.3.3.4.4. Maternal-fetal

1.3.3.4.5. Critically ill

1.3.3.5. Principles of de-prescribing

1.3.4. Medication safety

1.3.4.1. Adverse drug reactions (ADR)

1.3.4.1.1. Epidemiology

1.3.4.1.1.1. Biological, behavioural and social risk factors

1.3.4.1.1.2. Biomarkers, including genetic predisposition

1.3.4.1.2. Mechanisms

1.3.4.1.3. Diagnosis

1.3.4.1.4. Clinical management

1.3.4.1.5. Canadian framework and reporting requirements

1.3.4.2. Medication errors

1.3.4.2.1. Epidemiology

1.3.4.2.2. Preventive measures

1.3.4.2.3. Risk management and control

1.3.4.3. Drug-drug, food-drug and natural health product-drug interactions

1.3.4.3.1. Mechanisms

1.3.4.3.1.1. Pharmaceutical

1.3.4.3.1.2. Pharmacokinetic

1.3.4.3.1.3. Pharmacodynamic

1.3.4.4. Pharmacovigilance

1.3.5. Clinical toxicology

1.3.5.1. Epidemiology of poisoning

1.3.5.2. Toxidromes

1.3.5.2.1. Antimuscarinic or anticholinergic

1.3.5.2.2. Beta-blockade

1.3.5.2.3. Calcium channel blockade

1.3.5.2.4. Cholinergic

1.3.5.2.5. Opioid

1.3.5.2.6. Sedative or hypnotic

1.3.5.2.7. Serotonergic

1.3.5.2.8. Sodium channel blockade

1.3.5.2.9. Sympathomimetic

1.3.5.3. Toxicokinetics and toxicodynamics

1.3.5.4. Pathophysiology and clinical features of common and/or clinically significant poisonings

1.3.5.5. Principles of poisoning management, including supportive care, decontamination, antidotal therapy, and enhanced elimination

1.3.5.6. Basic concepts of forensic toxicology

1.3.5.7. Occupational and environmental toxicology and chemical agents of opportunity, including nerve agents and radionuclides

1.3.5.8. Reproductive toxicology

1.3.5.8.1. Clinically relevant human teratogens

1.3.5.8.2. Antenatal and perinatal toxicity of maternal medications

1.3.5.8.3. Drug exposure and toxicity through breastfeeding

1.3.5.9. Substance use disorders, including

1.3.5.9.1. Demographics

1.3.5.9.2. Mental health factors

1.3.5.9.3. Social factors

1.3.5.9.4. Acute toxicity

1.3.5.9.5. Withdrawal

1.3.5.9.6. Tolerance

1.3.5.9.7. Novel psychoactive agents

1.3.5.10. Drug withdrawal and abstinence syndromes, including:

1.3.5.10.1. Cannabis

1.3.5.10.2. Ethanol

1.3.5.10.3. Gabapentin and pregabalin

1.3.5.10.4. Nicotine

1.3.5.10.5. Opioids

1.3.5.10.6. Sedative hypnotics

1.3.5.10.7. Selective serotonin reuptake inhibitors (SSRI)

1.3.6. Laboratory methodologies

1.3.6.1. Quality control measures in the research versus clinical laboratory

1.3.6.2. Good Laboratory Practice (GLP)[3]

1.3.6.3. Drug analyses

1.3.6.3.1. Basic concepts of analytical methodologies, including immunoassays, liquid chromatography, and mass spectrometry

1.3.6.4. Therapeutic drug monitoring (TDM)

1.3.6.4.1. Principles of TDM

1.3.6.4.2. TDM target drugs

1.3.7. Drug trials, clinical studies, and drug regulation

1.3.7.1. Fundamentals of study methodology

1.3.7.1.1. Study designs and their characteristics: randomized trials; observational studies, including case control and cohort; and case series and reports

1.3.7.1.2. Principles of sample size estimation and power calculation

1.3.7.1.3. Definition and significance of key statistical parameters, including relative and absolute risks, odds ratios, and numbers needed to treat or harm

1.3.7.1.4. Principles of descriptive and analytical statistics

1.3.7.1.5. Meta-analysis methodology

[3] Good Laboratory Practice covers the organizational process and the conditions under which non-clinical laboratory and field studies are planned, conducted, monitored, recorded, and reported. It is intended to promote the quality and validity of test data and improve the international acceptance of data generated in adherence to its principles.

1.3.7.2. Laws and regulations governing drug trials in human subjects

1.3.7.2.1. Health Canada Food and Drug act and regulations: Division 5 of the Regulations: Drugs for Clinical Trials involving Human Subjects

1.3.7.2.2. International Conference on Harmonization (ICH) of Technical Requirements for Pharmaceuticals for Human Use

1.3.7.2.3. Good Clinical Practice (GCP)

1.3.7.3. Study reporting standards, utilizing guidelines, including

1.3.7.3.1. Consolidated Standards of Reporting Trials (CONSORT)

1.3.7.3.2. Standards for the Reporting of Diagnostic accuracy studies (STARD)

1.3.7.3.3. Quality of Reports of Meta-analyses of randomized controlled trials (QUOROM)

1.3.7.4. Clinical trial registration

1.3.7.4.1. Current frameworks and processes

1.3.7.4.2. Scope and limitations

1.3.7.5. Ethical issues in drug studies

1.3.7.6. Ethics and privacy principles that guide the research ethics board approval process

1.3.7.7. Drug development processes

1.3.7.7.1. Development phases

1.3.7.7.2. Trial simulation

1.3.7.7.3. Challenges in drug development

1.3.7.8. Regulation of natural health products in Canada

1.3.7.9. Regulation and legalization framework for cannabis products

1.3.8. Pharmacoeconomics

1.3.8.1. Health technology assessment

1.3.8.2. General principles of cost utility analysis, including quality-adjusted life year and incremental cost-effectiveness ratio

1.4. Perform appropriately timed clinical assessments with recommendations that are presented in an organized manner

1.5. Carry out professional duties in the face of multiple competing demands

1.6. Recognize and respond to the complexity, uncertainty, and ambiguity inherent in clinical pharmacology and toxicology practice

2. Perform a patient-centred clinical assessment and establish a management plan

2.1. Prioritize issues to be addressed in a patient encounter

2.2. Elicit a history, perform a physical exam, select appropriate investigations, and interpret their results for the purpose of diagnosis and management, disease prevention, and health promotion

2.2.1. Gather information about medications, use of complementary and alternative medicines, environmental exposures and the underlying conditions and co-morbidities

2.2.2. Gather information about a toxicologic exposure, including extent of exposure, timing, and any concomitant exposures or ingestions

2.2.3. Assess physiological and pathophysiological factors and the implications for the patient on drug therapy

2.2.4. Assess adherence

2.2.5. Select and/or interpret the results of the following investigations:

2.2.5.1. Drug concentration

2.2.5.2. PK and PD testing

2.2.5.3. Pharmacogenomic and phenotypic testing

2.2.5.4. Toxicological testing

2.3. Establish goals of care in collaboration with patients and their families,[4] which may include slowing disease progression, treating symptoms, achieving cure, improving function, and palliation

2.4. Establish a patient-centred management plan, including

2.4.1. Rational prescribing and management based on individual patient and drug characteristics

2.4.2. Personalized care plans based on results of pharmacological and/or genomic testing

2.4.3. Optimization of adherence

2.4.4. Therapeutic drug monitoring and surveillance

2.4.5. De-prescribing

2.4.6. Poisoning management plans

[4] Throughout this document, references to the patient's family are intended to include all those who are personally significant to the patient and are concerned with his or her care, including, according to the patient's circumstances, family members, partners, caregivers, legal guardians, and substitute decision-makers.

3. Provide expertise and guidance for the purpose of assessment and/or management

3.1. Determine the most appropriate procedures or therapies

3.1.1. Measurement of pharmacologic, therapeutic and adverse drug effects by non-invasive and invasive techniques

3.1.2. Management plans for poisonings, including supportive care, decontamination, antidotal therapy, and enhanced elimination, as appropriate

3.2. Obtain and document informed consent, explaining the risks and benefits of, and the rationale for, a proposed procedure or therapy

3.3. Prioritize procedures or therapies, taking into account clinical urgency and available resources

3.4. Provide recommendations for assessment and/or management of pharmacologic and toxicologic issues

3.4.1. Apply pharmacological principles to guide therapeutic management

3.4.1.1. Interpret clinical and experimental data of drug effects in relation to relevant drug metabolism and transport mechanisms

3.4.1.2. Predict effects of changes in plasma protein binding, organ blood flow, intrinsic clearance or interacting drugs on PK parameters and blood/tissue drug concentrations

3.4.1.3. Estimate PK parameters from a data set

3.4.1.3.1. Data-intensive research settings

3.4.1.3.2. Data-scarce clinical settings

3.4.1.4. Modify dosing schedules based on PK parameter changes

3.4.1.5. Determine the clinical implications of PK/PD parameter changes

3.4.2. Provide guidance on selection and use of laboratory analytic methodologies

3.4.2.1. Evaluate drug and toxin assay methodologies for their advantages and disadvantages in research and clinical practice settings

3.4.2.2. Select appropriate analytical technique(s) for measurement of drug concentrations

3.4.2.3. Interpret TDM data and provide clinical recommendations

3.4.2.4. Develop TDM sampling schedules

3.4.3. Provide guidance on medication safety

3.4.3.1. Predict and provide advice on drug interactions

3.4.3.2. Recognize and advise on teratogenic drugs and substances

3.4.3.3. Recognize risk factors, including genetic and other biomarkers, for ADR

3.4.3.4. Evaluate data from pharmacovigilance and ADR reporting mechanisms

3.4.3.5. Provide advice on prevention and management of drug-food/ drug-drug interaction

3.4.3.6. Adhere to reporting requirements for ADR and file reports of ADR

3.4.3.7. Identify risks of drug re-challenging following an ADR

3.4.3.8. Provide advice on continuation/discontinuation of drugs in patients with ADR

3.4.3.9. Recognize risk factors for medication errors

3.4.3.10. Recognize social determinants impacting medication safety

3.4.4. Provide guidance regarding management of poisonings

4. Establish plans for ongoing care and, when appropriate, timely consultation

4.1. Implement a patient-centred care plan that supports ongoing care, follow-up on investigations, response to treatment, and further consultation

4.1.1. Formulate follow-up plans for testing and/or procedures performed

4.1.2. Determine the need and timing for referral to another health care professional

5. Actively contribute, as an individual and as a member of a team providing care, to the continuous improvement of health care quality and patient safety

5.1. Recognize and respond to harm from health care delivery, including patient safety incidents

5.1.1. Recognize and diagnose ADR

5.2. Adopt strategies that promote patient safety and address human and system factors

Communicator

Definition:

As *Communicators*, clinical pharmacologists/toxicologists form therapeutic relationships with patients and their families that facilitate the gathering and sharing of essential information for effective health care.

Key and Enabling Competencies: Clinical pharmacologists/toxicologists are able to…

1. Establish professional therapeutic relationships with patients and their families

1.1. Communicate using a patient-centred approach that encourages patient trust and autonomy and is characterized by empathy, respect, and compassion

1.2. Optimize the physical environment for patient comfort, dignity, privacy, engagement, and safety

1.3. Recognize when the perspectives, values, or biases of patients, patients' families, physicians, or other health care professionals may have an impact on the quality of care, and modify the approach to the patient accordingly

1.3.1. Demonstrate a constructive approach to patients who are using CAM

1.4. Respond to a patient's non-verbal behaviours to enhance communication

1.5. Manage disagreements and emotionally charged conversations

1.6. Adapt to the unique needs and preferences of each patient and to his or her clinical condition and circumstances

2. Elicit and synthesize accurate and relevant information, incorporating the perspectives of patients and their families

2.1. Use patient-centred interviewing skills to effectively gather relevant biomedical and psychosocial information

2.2. Provide a clear structure for and manage the flow of an entire patient encounter

2.3. Seek and synthesize relevant information from other sources, including the patient's family, with the patient's consent

3. Share health care information and plans with patients and their families

3.1. Share information and explanations that are clear, accurate, and timely, while assessing for patient and family understanding

3.1.1. Convey evidence-based information regarding risks and benefits of proposed drug therapy and/or exposures, including pharmacogenetics, ADR profiles and their probability estimates

3.2. Disclose harmful patient safety incidents to patients and their families

3.2.1. Provide or facilitate appropriate disclosure of medication errors

4. Engage patients and their families in developing plans that reflect the patient's health care needs and goals

4.1. Facilitate discussions with patients and their families in a way that is respectful, non-judgmental, and culturally safe

4.2. Assist patients and their families to identify, access, and make use of information and communication technologies to support their care and manage their health

4.3. Use communication skills and strategies that help patients and their families make informed decisions regarding their health

5. Document and share written and electronic information about the medical encounter to optimize clinical decision-making, patient safety, confidentiality, and privacy

5.1. Document clinical encounters in an accurate, complete, timely, and accessible manner, in compliance with regulatory and legal requirements

5.1.1. Document adverse drug reactions

5.2. Communicate effectively using a written health record, electronic medical record, or other digital technology

5.3. Share information with patients and others in a manner that enhances understanding and that respects patient privacy and confidentiality

Collaborator

Definition:

As *Collaborators*, clinical pharmacologists/toxicologists work effectively with other health care professionals to provide safe, high-quality, patient-centred care.

Key and Enabling Competencies: Clinical pharmacologists/toxicologists are able to…

1. Work effectively with physicians and other colleagues in the health care professions

1.1. Establish and maintain positive relationships with physicians and other colleagues in the health care professions to support relationship-centred collaborative care

1.2. Negotiate overlapping and shared responsibilities with physicians and other colleagues in the health care professions in episodic and ongoing care

1.2.1. Convey the role and responsibilities of the clinical pharmacologist/toxicologist to other health professional services

1.2.2. Work effectively with other members of the therapeutics/toxicology interprofessional team, applying knowledge of their role, expertise and limits

1.2.3. Demonstrate awareness of the most responsible physician-patient relationship and the boundaries applicable to the consultant role

1.3. Engage in respectful shared decision-making with physicians and other colleagues in the health care professions

1.3.1. Contribute effectively at interprofessional team meetings

1.3.2. Provide advice to clinical colleagues regarding indications, procurement and handling of samples for specialized therapeutic drug monitoring, and pharmacogenetics and toxicologic testing

1.3.3. Convey information from the consultation in a manner that enhances patient management

1.3.4. Encourage discussion, questions, and interaction relevant to the case

1.3.5. Support clinical colleagues in the development and implementation of a management plan, when appropriate

1.3.6. Use telehealth and other communication strategies effectively

2. Work with physicians and other colleagues in the health care professions to promote understanding, manage differences, and resolve conflicts

2.1. Show respect toward collaborators

2.2. Implement strategies to promote understanding, manage differences, and resolve conflict in a manner that supports a collaborative culture

3. Hand over the care of a patient to another health care professional to facilitate continuity of safe patient care

3.1. Determine when care should be transferred to another physician or health care professional

3.2. Demonstrate safe handover of care, using both oral and written communication, during a patient transition to a different health care professional, setting, or stage of care

Leader

Definition:

As *Leaders*, clinical pharmacologists/toxicologists engage with others to contribute to a vision of a high-quality health care system and take responsibility for the delivery of excellent patient care through their activities as clinicians, administrators, scholars, or teachers.

Key and Enabling Competencies: Clinical pharmacologists/toxicologists are able to…

1. Contribute to the improvement of health care delivery in teams, organizations, and systems

1.1. Apply the science of quality improvement to systems of patient care

1.1.1. Participate in systematic quality process evaluation and improvement, including patient safety initiatives and pharmacy and therapeutics committees

1.2. Contribute to a culture that promotes patient safety

1.3. Analyze patient safety incidents to enhance systems of care

1.3.1. Analyze adverse drug events to guide process improvement

1.4. Use health informatics to improve the quality of patient care and optimize patient safety

1.4.1. Analyze and interpret population level data to identify drug safety concerns

2. Engage in the stewardship of health care resources

2.1. Allocate health care resources for optimal patient care

2.1.1. Engage in the development and maintenance of local, provincial, and national drug formularies

2.1.2. Provide expertise on appropriate pharmacologic alternatives or mitigation strategies in the setting of drug shortages

2.1.3. Optimize appropriate use of specialized pharmacologic and toxicologic testing

2.2. Apply evidence and management processes to achieve cost-appropriate care

3. Demonstrate leadership in health care systems

3.1. Demonstrate leadership skills to enhance health care

3.1.1. Apply knowledge of the structure, financing, and operation of the Canadian health system as it relates to drugs, including drug regulation

3.1.2. Apply knowledge of the role of the medical director in the supervision of protocolized care, such as at the poison control centre

3.2. Facilitate change in health care delivery to enhance services and outcomes

3.2.1. Participate in institutional processes that relate to the discipline, such as pharmacy and therapeutics committees and research ethics boards

3.2.2. Participate in institutional or national processes that contribute to medication safety

4. Manage career planning, finances, and health human resources in personal practice(s)

4.1. Set priorities and manage time to integrate practice and personal life

4.2. Manage personal professional practice(s) and career

4.3. Implement processes to ensure personal practice improvement

Health Advocate

Definition:

As *Health Advocates*, clinical pharmacologists/toxicologists contribute their expertise and influence as they work with communities or patient populations to improve health. They work with those they serve to determine and understand needs, speak on behalf of others when required, and support the mobilization of resources to effect change.

Key and Enabling Competencies: Clinical pharmacologists/toxicologists are able to…

1. Respond to an individual patient's health needs by advocating with the patient within and beyond the clinical environment

1.1. Work with patients to address determinants of health that affect them and their access to needed health services or resources

1.1.1. Facilitate access to medications

1.1.2. Facilitate access to services in the health and social systems

1.2. Work with patients and their families to increase opportunities to adopt healthy behaviours

1.2.1. Work with patients and their families to address and improve adherence

1.3. Incorporate disease prevention, health promotion, and health surveillance into interactions with individual patients

1.3.1. Promote harm reduction and education surrounding the use of substances, including opioids, nicotine, ethanol, stimulants, cannabis, natural health products, anxiolytics, and solvents

2. Respond to the needs of the communities or populations they serve by advocating with them for system-level change in a socially accountable manner

2.1. Work with a community or population to identify the determinants of health that affect them

2.1.1. Identify at risk groups within a given population, applying the available knowledge about prevention and contributing group data for better understanding of health problems within that population, including

2.1.1.1. Malnourished populations

2.1.1.2. Financially disadvantaged populations

2.1.1.3. Socially or geographically isolated populations

2.1.1.4. Substance use/dependent populations

2.1.1.5. Occupations with toxin exposures

2.2. Improve clinical practice by applying a process of continuous quality improvement to disease prevention, health promotion, and health surveillance activities

2.3. Contribute to a process to improve health in the community or population they serve

2.3.1. Promote harm reduction and education surrounding the use of substances, including opioids, nicotine, ethanol, stimulants, cannabis, natural health products, anxiolytics, and solvents

Scholar

Definition:

As *Scholars*, clinical pharmacologists/toxicologists demonstrate a lifelong commitment to excellence in practice through continuous learning, and by teaching others, evaluating evidence, and contributing to scholarship.

Key and Enabling Competencies: Clinical pharmacologists/toxicologists are able to…

1. Engage in the continuous enhancement of their professional activities through ongoing learning

1.1. Develop, implement, monitor, and revise a personal learning plan to enhance professional practice

1.2. Identify opportunities for learning and improvement by regularly reflecting on and assessing their performance using various internal and external data sources

1.2.1. Evaluate one's abilities, knowledge, and skills continually, and recognize one's own limits of professional competence

1.3. Engage in collaborative learning to continuously improve personal practice and contribute to collective improvements in practice

2. Teach students, residents, the public, and other health care professionals

2.1. Recognize the influence of role-modelling and the impact of the formal, informal, and hidden curriculum on learners

2.2. Promote a safe and respectful learning environment

2.3. Ensure patient safety is maintained when learners are involved

2.4. Plan and deliver learning activities

2.4.1. Promote the importance of ethical and unbiased presentation of information

2.4.2. Apply the principles of ethics with respect to teaching

2.5. Provide feedback to enhance learning and performance

2.6. Assess and evaluate learners, teachers, and programs in an educationally appropriate manner

3. Integrate best available evidence into practice

3.1. Recognize practice uncertainty and knowledge gaps in clinical and other professional encounters and generate focused questions that can address them

3.2. Identify, select, and navigate pre-appraised resources

3.3. Critically evaluate the integrity, reliability, and applicability of health-related research and literature

3.4. Integrate evidence into decision-making in their practice

4. Contribute to the creation and dissemination of knowledge and practices applicable to health

4.1. Demonstrate an understanding of the scientific principles of research and scholarly inquiry and the role of research evidence in health care

4.2. Identify ethical principles for research and incorporate them into obtaining informed consent, considering potential harms and benefits, and vulnerable populations

4.2.1. Apply the principles of research ethics as formulated in the Tri-Council Policy Statement on the conduct of drug-related research involving human subjects

4.2.2. Evaluate ethical aspects of drug studies and trials

4.3. Contribute to the work of a research program

4.4. Pose questions amenable to scholarly investigation and select appropriate methods to address them

4.4.1. Identify gaps in clinical pharmacology and toxicology knowledge for further research

4.4.2. Identify, consult, and collaborate with appropriate content experts in the development of a research study

4.4.3. Develop a study protocol of research

4.4.4. Conduct scholarly work

4.5. Summarize and communicate to professional and lay audiences, including patients and their families, the findings of relevant research and scholarly inquiry

Professional

Definition:

As *Professionals*, clinical pharmacologists/toxicologists are committed to the health and well-being of individual patients and society through ethical practice, high personal standards of behaviour, accountability to the profession and society, physician-led regulation, and maintenance of personal health.

Key and Enabling Competencies: Clinical pharmacologists/toxicologists are able to…

1. Demonstrate a commitment to patients by applying best practices and adhering to high ethical standards

1.1. Exhibit appropriate professional behaviours and relationships in all aspects of practice, demonstrating honesty, integrity, humility, commitment, compassion, respect, altruism, respect for diversity, and maintenance of confidentiality

1.1.1. Adopt strategies to heighten personal and professional awareness, and explore and resolve interpersonal difficulties in professional relationships

1.2. Demonstrate a commitment to excellence in all aspects of practice

1.2.1. Be an exemplary role model and an advocate of optimal therapy with drugs and other therapeutic maneuvers

1.3. Recognize and respond to ethical issues encountered in practice

1.4. Recognize and manage conflicts of interest

1.5. Exhibit professional behaviours in the use of technology-enabled communication

2. Demonstrate a commitment to society by recognizing and responding to societal expectations in health care

2.1. Demonstrate accountability to patients, society, and the profession by responding to societal expectations of physicians

2.2. Demonstrate a commitment to patient safety and quality improvement

3. Demonstrate a commitment to the profession by adhering to standards and participating in physician-led regulation

3.1. Fulfil and adhere to professional and ethical codes, standards of practice, and laws governing practice

3.1.1. Differentiate professional, legal, and ethical codes to which physicians are bound, and those of the pharmaceutical industry

3.1.2. Fulfil the physician's duty to report

3.2. Recognize and respond to unprofessional and unethical behaviours in physicians and other colleagues in the health care professions

3.3. Participate in peer assessment and standard setting

4. Demonstrate a commitment to physician health and well-being to foster optimal patient care

4.1. Exhibit self-awareness and manage influences on personal well-being and professional performance

4.2. Manage personal and professional demands for a sustainable practice throughout the physician life cycle

4.3. Promote a culture that recognizes, supports, and responds effectively to colleagues in need

This document is to be reviewed by the Specialty Committee in Clinical Pharmacology and Toxicology by December 2027.

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APPROVED – Office of Standards and Assessment (as delegated by the Specialty Standards Review Committee) – December 2024