



Alberta Health Services

Section of Clinical Pharmacology and Toxicology

Strategic Plan 2021-25

Mid-Cycle Review and Update

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Message from the Section Chief

On behalf of the Alberta Health Services (AHS) Section of Clinical Pharmacology and Toxicology (CPT), it is my pleasure to share our revised Strategic Plan for the years 2021-2025.

Updated in 2023-24, this plan represents the culmination of months of effort and dedication. We are very grateful for the excellent participation and contributions from our stakeholders.

To complete our plan, we utilized the AHS 5-step Strategic Planning approach (Who are we, where are we, what are we trying to achieve, how are we going to do it, how will we know when we've done it) along with user satisfaction surveys, SWOT analyses, and SMART goals.

Our previous strategic plan began in 2016 and ended in 2019. Many features of that plan remain relevant today, including our commitments to education, research, and service to society.

Our plan has been designed to be aspirational. We have charted a vision of what is important for the long-term success of the Section. This plan moves us forward in several ways.

The first is by aligning ourselves more closely with both the AHS and the Cumming School of Medicine's Strategic Plans, including the AHS 'Quadruple Aim'.

The second is through enhancing our reputation as educators by expanding our educational mandate into undergraduate medical education. Not only will this serve to educate future physicians, but also to attract future leaders in CPT.

The third is advancing our research mission. This plan builds around the research expertise of the Section to position us as a world leader in CPT research, including precision medicine, medication safety, and care of the CPT patient.

Finally, our role as patient care providers offers the opportunity to expand our care of CPT patients across the entire care continuum.

Thanks for reading our plan. We look forward to working with you.

Mark Yarema, MD FRCPC
Section Chief
Clinical Pharmacology and Toxicology
Alberta Health Services
March 2024

Introduction

Clinical Pharmacology translates the basic science of Pharmacology into clinical science of Therapeutics, focusing on the application of pharmacological principles and methods in the real world. It is based on in-depth knowledge of human pharmacology, pharmacokinetics, pharmacogenomics, and toxicology.

Toxicology is the study of adverse effects on living organisms that may result from exposure to natural or human-made substances, including chemicals, physical agents, and energy. It deals with the description of the toxic effects, explanation of the mechanisms of action, and prediction of the degree of the risk posed to organisms exposed to a toxicant.

The Alberta Health Services Section of Clinical Pharmacology and Toxicology (CPT) was created on April 14, 2016 after unanimous approval of our proposal by the AHS-Calgary Zone Medical Advisory Committee. With this approval it set the stage for the creation of a centre of excellence in CPT within Alberta.

We are a diverse group of clinicians, educators, researchers, scientists, and leaders. Our Section amalgamates the clinical, educational, and research expertise of our people and serves as a world-class training environment for those wishing to pursue CPT as a career.

We are privileged to have a close affiliation with the Poison and Drug Information Service (PADIS), one of the five poison centres in Canada. PADIS provides service to the provinces of Alberta, Saskatchewan, and the Northwest Territories.

In 2017 we received approval for a Royal College subspecialty residency training program in CPT. Calgary is now home to the fourth Royal College CPT residency in the country and the first in Western Canada. Entry programs for our CPT residency include Emergency Medicine, Internal Medicine, Pediatrics, Psychiatry and Anesthesia.

Research expertise in our Section includes diverse areas such as pharmacogenomics, acute and intensive care toxicology, adverse drug events, and cardiovascular medicine (hypertension, anticoagulation, and amiodarone kinetics). Section members have also been front and centre in helping to establish Canada's national toll free number for Poison Centre Service, 1-844-POISONX.

Opportunities for physicians interested in CPT as a career are numerous and variable. They include inpatient and outpatient clinical service, teaching, research, medical-legal consulting, occupational toxicology, and regulatory work with agencies such as Health Canada.

This document summarizes our goals, objectives, and related metrics.

Section of Clinical Pharmacology and Toxicology (CPT) Purpose and Goals

Purpose

The AHS Section of Clinical Pharmacology and Toxicology helps create healthy people, healthy lifestyles, and healthy communities. We promote the safe, optimal, and rational use of medications, manage and prevent exposures to poisons and chemicals, and support a harm reduction approach in people affected by substance use.

Goals

CPT Goal 1: Provide quality, optimized, and timely evidence-based care for all patients who come into contact with drugs and chemicals that pose a threat to their well-being.

CPT Goal 2: Position the Section as a global leader in research related to the discipline of Clinical Pharmacology and Toxicology.

CPT Goal 3: Enrich the education, training and knowledge translation experience for faculty, staff, fellows, residents, nurse practitioners, students, and the general public as it relates to the discipline of Clinical Pharmacology and Toxicology.

CPT Goal 4: Establish the Section as a consultative resource to help prevent the morbidity, mortality and costs associated with adverse drug events, and reduce unnecessary use of medications.

CPT Goal 1:

Provide quality, optimized, and timely evidence-based care for all patients who come into contact with drugs and chemicals that pose a threat to their well-being.

Objectives:

1. We will recruit physicians trained in CPT or Medical Toxicology to staff the Clinical Pharmacology (CP) and the PADIS Medical Toxicology consult services.
2. We will create an outpatient clinic in Calgary for patient referrals for adverse drug events, polypharmacy and deprescribing advice.
3. We will increase the number of consults to the Clinical Pharmacology physician consultation service, particularly through the Calgary Primary Care Network Specialist Link and Alberta Netcare e-referral services.

Annual metrics:

1. Number of Clinical Pharmacology consults from inpatient services, Specialist Link, and Netcare e-referral system.
2. Number of inpatient Medical Toxicology consults.
3. Number of outpatient Medical Toxicology Clinic consults.
4. Number of outpatient consults for patients referred for adverse drug events, polypharmacy and deprescribing advice.
5. Number of physicians on staff for PADIS and Clinical Pharmacology consult services.

CPT Goal 2:

Position the Section as a global leader in research related to the discipline of Clinical Pharmacology and Toxicology.

Objectives:

1. We will create three overarching research themes for the Section:
 - a. Precision Medicine
 - Precision medicine considers individual variability in genes, environment, and lifestyle for each person.
 - Pharmacogenomics is the study of how genes affect a patient's response to drugs. Pharmacogenomic testing seeks to identify patients who are at risk for clinically significant differences in their genome that can result in altered pharmacokinetic, pharmacodynamic, or immune responses to a medication.
 - Specific research areas: Pharmacogenomics
 - b. Care of the CPT Patient
 - Our unique relationship with PADIS allows for collaborations on the diagnosis and management of acute and chronic poisonings.
 - PADIS receives over 45,000 calls a year from residents of Alberta, Saskatchewan, and the Northwest Territories, and well over 1 million calls since its inception in 1986.
 - The patient data from telephone calls and bedside consultations serves as a rich opportunity for research into the epidemiology, diagnosis, and management of the poisoned patient.
 - Specific research areas: Acetaminophen, Toxic alcohols, Substance use, Poison Centres
 - c. Prescription Medication Safety and Adverse Drug Events
 - In Canada, adverse drug events to outpatient medications cause over two million emergency department visits, 700,000 admissions, and \$1 billion in healthcare costs annually.
 - Specific research areas: Recognition, reporting and prevention of adverse drug events, deprescribing
2. We will collaborate with other departments within and outside the University of Calgary, such as the Cumming School of Medicine research institutes, the University of Calgary Precision Medicine Program, other Canadian poison centres, and the Canadian Association of Poison Centres and Clinical Toxicology.
3. We will mentor fellows, residents, and medical students interested in CPT research.
4. We will participate in industry-sponsored research, where appropriate.

Annual metrics:

1. Number of Section members who are University of Calgary research institute members.
2. Number of research projects involving a Section member.
3. Number of publications (abstracts or manuscripts) involving Section members.
4. Number of publications (abstracts or manuscripts) with CPT residents as authors.
5. Number of residents and students mentored by Section members.

CPT Goal 3:

Enrich the education, training and knowledge translation experience for faculty, staff, fellows, residents, nurse practitioners, students, and the general public as it relates to the discipline of Clinical Pharmacology and Toxicology.

Objectives:

1. We will assist the University of Calgary UME department in the creation of a comprehensive undergraduate pharmacology curriculum.
2. Our staff will function as preceptors for the University of Calgary Postgraduate Medical Education Clinical Pharmacology and Toxicology series of lectures.
3. We will contribute lectures to the University of Calgary Faculty of Graduate Studies Precision Health Program graduate courses.
4. We will contribute to local, national, and international Continuing Medical Education & Professional Development educational offerings.
5. We will ensure that Section members are available for media inquiries.
6. We will recruit and retain CPT residency program academic leads to continue to develop and grow our CPT training program.

Annual metrics:

1. Medical student pharmacology satisfaction scores on annual Cumming School of Medicine exit survey.
2. Number of decks of 'Cards' developed for UME curriculum by Section members.
3. Number of plays and replays of CPT decks of Cards.
4. Number of CPT lectures given by Section members within University of Calgary UME courses.
5. Number of CPT lectures given by Section members to the University of Calgary PGME programs.
6. Number of applicants to our CPT residency program.
7. Number of CPT residents in our program.
8. Percentage of our CPT residents passing the Royal College certification exam.

9. Number of Section members teaching at CPT academic half day.
10. Number of residents and students rotating on PADIS and CP consult services.
11. Number of CME&PD presentations given by Section members.

CPT Goal 4:

Establish the Section as a resource to help prevent the morbidity, mortality and cost associated with adverse drug events, and reduce unnecessary use of medications.

Objectives:

1. We will work with Alberta Precision Laboratories and researchers at the University of Calgary and University of Alberta to develop and implement pharmacogenomic testing in Alberta.
2. We will collaborate with Health Canada on the Canadian Association of Poison Centres and Clinical Toxicology to obtain data on national costs associated with poisonings.

Annual Metrics:

1. Number of pharmacogenomics consultations to the Clinical Pharmacology consult service.
2. Number of adverse drug event consultations to Clinical Pharmacology consult service.

Implementation

Our strategic plan presents an ambitious vision for the future of Clinical Pharmacology and Toxicology in Alberta.

Developed through consultation with faculty, trainees, staff, partners and stakeholders, this plan paves a path to success.

Successful implementation of the plan will require full endorsement from leadership, partners, and collaborators. Section members will take ownership of aspects of this plan, drive its activity, and ensure its ongoing progress.

On behalf of the Section, thanks for reading our Strategic Plan. For more information, for opportunities to collaborate, or for more information about CPT as a career, please contact us.

Dr. Mark Yarema
Poison and Drug Information Service
Foothills Medical Centre
1403 – 29th St NW
Calgary, Alberta, Canada T2N 2T9
403-944-6900

<https://cumming.ucalgary.ca/departments/emergency-medicine/programs/clinical-pharmacology-and-toxicology>

Appendix 1: Metrics to Date

Variable	2020	2021	2022	2023
Number of PADIS Medical Toxicologists	6	7	8	5
Number of Medical Toxicology bedside consults	41	51	33	46
Number of Outpatient Toxicology Clinic patients seen	20	22	26	27
Number of Physicians on Clinical Pharmacology consult service	4	3	4	5
Number of Clinical Pharmacology consults	51	133	151	130
Number of Section of CPT members	8	8	10	8
Number of publications (abstracts or manuscripts) by Section members	11	26	13	4
Section members who are also members of University of Calgary research institutes	3	3	3	2
Number of residents and/or students mentored by Section members	19	24	28	15
Number of CPT lectures given by Section members to Undergraduate Medical Education students	27	9	17	3
Number of plays of Anticoagulant “Cards” developed by Section members for UME students	92	104	52	TBD
Number of plays of Acetaminophen “Cards” developed by Section members for UME students	171	327	524	TBD
Number of CPT lectures given by Section members at Postgraduate Medical Education academic half days	38	65	42	38
Number of CPT lectures given by Section members at CME events	8	4	15	19
Number of inquiries about Calgary CPT program	6	18	15	11
Number of applicants to Calgary CPT program	2	4	7	0
Number of CPT residents in the Calgary CPT program	2	1	2	4
Number of publications (abstracts or manuscripts) by CPT residents	2	3	0	2
Percentage of Calgary CPT residents passing CPT exam	n/a	100	100	n/a
Number of residents rotating at PADIS	75	61	72	63
Number of residents rotating on CP consult service	4	2	4	6

Appendix 2: Comparison of Initial Plan and Revised Plan

The mid-cycle revision resulted in changes to some of our original goals, objectives, or metrics. This may be because of changes in priorities, feasibility, or completion. The following items have been **completed**, **modified**, or **cancelled**:

CPT Goal 1:

Objectives:

We will expand the Clinical Pharmacology physician consultation service by joining the Calgary Primary Care Network Specialist Link and Alberta Netcare e-referral services.

We will strengthen relationships within the University of Calgary, specifically, the Cumming School of Medicine (CSOM) research institutes (Big Data initiative in the O'Brien IPH), the Physician Learning Program, and the University of Calgary Precision Medicine Initiative.

We will expand the discipline of Clinical Pharmacology into the outpatient clinic setting to include patients under 65 years of age referred for follow up for adverse drug events, polypharmacy and deprescribing advice.

Annual metrics:

Number of in-person and virtual consults for patients under the age of 65 referred for adverse drug events, polypharmacy and deprescribing advice.

CPT Goal 2:

Objectives:

We will create four overarching research themes for the Section, under which all CPT-related research activity is welcomed and supported: Quality Improvement

We will join the University of British Columbia's ActionADE research initiative to improve recognition, diagnosis, management and reporting of adverse drug events.

Annual metrics:

Number of research mentorship initiatives attended (e.g. annual University of Calgary Internal Medicine research 'speed dating' event).

Number of abstracts submitted and accepted by Section members and CPT residents.

Number of scientific research talks (local, national, and international) given per year by Section members and CPT residents.

Number of internal and external grant reviews performed by Section members.

Number of external Research Days participated in by Section Members and CPT residents (e.g. Emergency Medicine, Pathology and Laboratory Medicine, HBI, ACHRI, O'Brien).

CPT Goal 3:

Enrich the education, training and knowledge translation experience for faculty, staff, students, fellows, residents, and the general public as it relates to the discipline of Clinical Pharmacology and Toxicology.

Objectives:

We will implement the new Royal College Competency by Design (CBD) educational initiative for CPT residents in July 2021.

We will ensure that the Royal College CPT residency entry programs (Emergency Medicine, Internal Medicine, Pediatrics, Psychiatry, and Anesthesia) are aware of the Section of CPT and strengthen our relationships with these programs.

We will ensure that Section members contribute to the planning and hosting of the triennial PADIS conference.

We will establish the University of Calgary Clinical Pharmacology and Toxicology residency program as the go-to program for trainees interested in CPT as part of their career.

Annual metrics:

Completion of '50 drugs to know before clerkship' document for University of Calgary UME curriculum by July 2021.

Number of CPT lectures given by Section members within each of the eight University of Calgary UME core courses.

Number of Section members lecturing in University of Calgary graduate level courses in Individualized Therapy Medicine.

Number of presentations given by Section members to the general public.

CPT Goal 4:**Objectives:**

We will work with Alberta Precision Laboratories and researchers at the University of Calgary and University of Alberta to develop and implement pharmacogenomic testing in Alberta.

We will strengthen our relationship with the University Of Calgary O'Brien Institute Of Public Health and the Institute of Health Economics to collaborate on provincial costs associated with adverse drug events and poisonings.

We will join UBC's ActionADE initiative to improve recognition, diagnosis, management and reporting of adverse drug events (ADE's).

We will strengthen the relationship with AHS Pharmacy Services, the Strategic Clinical Networks (SCN) and the Physician Learning Program (PLP) regarding provincial collection of ADE data.

Annual metrics:

Number of dollars saved by calling PADIS or CP consult service (effect on length of stay, use of antidotes, and hospital visit versus staying at home).

Number of ADE reports through AHS Report on Learning and Safety system before and after initiation of pharmacogenomic testing in Alberta.

Number of ADE hospitalizations in Alberta before and after initiation of pharmacogenomic testing in Alberta.

Annual cost of hospitalizations for ADE's before and after initiation of pharmacogenomic testing in Alberta.

Number and cost of prescriptions for select medications (e.g. antidepressants, antipsychotics) in Alberta before and after initiation of community physician educational initiatives with the SCN's and PLP.

Appendix 3: AHS Vision, Mission, Values, Strategies and Goals

Our Vision

Healthy Albertans.
Healthy Communities.
Together.

Our Mission

To provide a patient-focused, quality health system that is accessible and sustainable for all Albertans.

Our Values



Strategies

1. Patient first strategy
 - Strengthen AHS' culture and practices to ensure patients and families are at the centre of all healthcare activities, decisions, and teams, enhancing their experience.
2. Our people strategy
 - Support each other through the creation of an engaged culture in which we all feel safe, healthy, and valued, and can reach our full potential.
3. Clinical Health Research, Innovation & Analytics Strategy
 - Generate, share, and use evidence in the delivery of care to improve patient and population health outcomes and to solve the complex challenges affecting the health system.
4. Information Management / Information Technology Strategy
 - Enable the efficient flow of health information between and among healthcare providers and teams inclusive of the patient, wherever the patient receives care.

Quadruple Aim Goals

1. Improve Patients' and Families' Experiences
2. Improve Patient and Population Health Outcomes
3. Improve the Experiences and Safety of Our People
4. Improve Financial Health and Value for our Money