Clinician Investigator Program

CIP Handbook
College of Medicine
University of Saskatchewan

Clinician Investigator Program
c/o Vice-Dean, Research
College of Medicine
University of Saskatchewan
2D01 Health Science Building
107 Wiggins Road
Saskatoon SK S7N 5E5
Phone: (306) 966-4342

Program Admin Assistant:
Samantha Chymy
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Program Director:
Dr. Gary Groot
Email: gary.groot@usask.ca

Clinician Investigator Program (CIP) Application
College of Medicine, University of Saskatchewan

Name _____
(Surname) (First Name) Initial. Maiden Name (if applicable)

SIN _____ U of S Student # _____

Country of Citizenship: _____

Status in Canada (if not Canadian Citizen):
L Permanent resident L Student Visa
L Employment Authorization Other

Current address _____

_____

_____

_____

Phone #: Work ( ) _____ Home ( ) _____
Pager ( ) _____

E-mail address: _____

Permanent mailing address: _____

_____

_____

_____

Send complete application to:

Clinician Investigator Program
College of Medicine
University of Saskatchewan
2D01 Health Science Building
107 Wiggins Road
Saskatoon SK S7N 5E5

Please attach a letter of support from your Specialty/Subspecialty Program Director and Department Head with whom you have discussed this application, verifying the following:

- your status and year of training in your postgraduate medical education program
- endorsement of your registration in the Clinician Investigator Program

Expected completion date of clinical training: _____

Signature of Program Director: _____

Signature of Department Head: _____

A. M.Sc./PhD. Stream Applicants

CIP applicants who do not already hold a Ph.D. degree are expected to spend a minimum of two years engaged in full-time study in a research program leading to a M.Sc. degree or a minimum of 3 years leading to a Ph.D. degree.

What is the status of your enrolment in graduate studies? (Please check one):

- L Have applied to graduate unit(s) (specify)
- L Have been accepted into graduate unit (specify)
- L Have already commenced graduate studies in (specify graduate unit)

Students should attach an outline of their proposed research project, a listing of graduate school courses to be taken, if known, suggested mentor, if known, and Advisory Committee members.
List of current sources of student funding (including the amount and duration). A letter from the Chairman of the Graduate Program to be enrolled in outlining acceptance of the student to their program is required.

Proposed start date of graduate studies: _____

Signature of Chair of Graduate Department to be enrolled: _____

B. Postdoctoral Fellow Stream Applicants

Students who already hold a PhD degree can receive post-doctorate clinical experience.

Please attach the following:
L curriculum vitae (including a summary of previous research experience)
L letter of reference from your previous research supervisor(s)
L copies of publications
L outline of your research project, including start and end dates (minimum of 2 years)
L courses to be completed (if required), research proposal, suggested mentor and Advisory Committee members, proposed source and duration of funding.

THE ROYAL COLLEGE OF PHYSICIANS AND SURGEONS OF CANADA
CLINICIAN INVESTIGATOR PROGRAM
REGISTRATION INFORMATION

Date: _____

Name of Resident: _____ RCPSC ID#: _____

Year & School of Medical Graduation: _____

Specialty/subspecialty in which the research resident is enrolled: _____

Current Year of Training: PGY _____

Faculty of Medicine in which specialty residency is taking place: _____

Expected date of commencement of full time research component of CIP: _____

Source of Funding: _____

PROPOSED RESEARCH PROGRAM FORMAT

Postdoctoral Stream ☐

Graduate Stream ☐ → Indicate degree awarded: MSc ☐ PhD ☐ Other ☐ (specify) _____

Date _____ at _____
(University)

Pathway: Continuous Training ☐ Distributive Curriculum Training ☐ Fractionated Training ☐

Expected date of completion of CIP research component (mm/dd/yy): _____

Research Supervisor (please print): _____

Department: _____

University: _____

Location of Research: _____

Project Title (please print): _____

SIGNATURE OF RESIDENT: _____

VERIFICATION OF REGISTRATION IN CIP _____ (CIP Director)

VERIFICATION OF REGISTRATION IN THE GRADUATE STREAM BY THE GRADUATE SCHOOL AUTHORITY (DEAN or DELEGATE) OR VERIFICATION OF REGISTRATION IN THE POSTDOCTORAL STREAM BY THE ASSOCIATE DEAN, RESEARCH, FACULTY OF MEDICINE

Name (please print): _____

Position: _____

Signature: _____

ENDORSEMENT OF CONCURRENT CLINICAL/CIP PROGRAMS BY RESIDENCY PROGRAM DIRECTOR

Name (please print): _____

Signature: _____

FACULTY APPROVAL

_____

Timelines for Completion of a M.Sc. Degree in CIP

Below are suggested timelines and expectations for successful completion of a M.Sc. degree in the Clinician Investigator Program at the University of Saskatchewan.

Before starting

- Meet with CIP Director to discuss CIP.
- Select and apply to graduate unit.
- Inform Program Director, Graduate Coordinator and CIP Office of intended start and end dates of CIP research component.
- Seek approval of Clinical Program Director and respective Department Head (need signatures).
- Apply and register with CIP Committee (November in any year before the usual start time of July of the following year).

Starting Research Project

- Register with the College of Graduate Studies and Research and enroll in courses.
- Select Thesis/Research Advisory Committee.
- Ensure all research and clinical fee/insurance issues are resolved.

Six Months

- First In Training Evaluation Reports (ITERs) completed and progress meeting with CIP Director held.

Twelve Months

- Written evaluation of Research Program by CIP trainee submitted to CIP Director.
- Second ITERs completed and progress meeting with CIP Director held.

Eighteen Months

- Complete third Progress ITERs and progress meeting with CIP Director. Research Supervisor, Thesis/ Research Advisory Committee and trainee must agree on a proposed schedule for degree completion with permission to write thesis.
- Publication of research (if applicable) should be initiated by this time.

Twenty-four Months

- Complete degree requirements. Write and defend thesis. Second (final) evaluation of CIP completed by CIP trainee and submitted to CIP Director.

Timelines for completion of a Ph.D. Degree in the CIP

Below are suggested timelines and expectations for successful completion of a Ph.D. degree in the Clinician Investigator Program at the University of Saskatchewan. Students wishing to embark on a Ph.D. degree program will enroll as Master's student and transfer to the Ph.D. degree after the first year of study, if successful progress has been made as agreed to by the trainee, Research Supervisor, Thesis/Research Advisory Committee and CIP Director, and with approval by the Clinical Program Director.

Before starting

- Meet with CIP Director to discuss CIP.
- Select and apply to graduate unit.
- Inform Clinical Program Director, Graduate Coordinator and CIP Office of intended start and end dates of CIP research component.
- Seek approval of Clinical Program Director (need signature).
- Apply and register with CIP Committee (November of any given year before the usual start time of July of the following year).

Starting Research Project

- Register with the College of Graduate Studies and Research and enroll in courses.
- Select Thesis/Research Advisory Committee.
- Ensure all research and clinical fee/insurance issues are resolved.

Six Months

- First In Training Evaluation Reports (ITERs) completed and progress meeting with CIP Director held.

Twelve Months

- Written evaluation of Research Program by CIP trainee submitted to CIP Director.
- Second ITERs completed and progress meeting with CIP Director held.
- If the Research Supervisor, trainee, Thesis/Research Advisory Committee, and CIP Director approve a transfer to the PhD program then this recommendation goes forward to the College of Graduate Studies.

Eighteen Months

- Third ITERs completed and progress meeting with CIP Director held. Publication of research (if applicable) should be initiated by this time.

Twenty-four Months

- Fourth ITERs completed and progress meeting with CIP Director held. Second annual written evaluation of CIP Program completed by CIP trainee and submitted to CIP Director.

Thirty Months

- Fifth ITERs completed and progress meeting with CIP Director held. All coursework should be completed by this time. Research Supervisor, trainee, Thesis/Research Advisory Committee members and CIP Director should determine dates for submission and defense of PhD thesis.

Thirty-six Months

- Sixth ITERs completed and progress meeting with CIP Director held. Write and defend thesis. Final evaluation of CIP completed by CIP trainee and submitted to the CIP Director.

Overall Goals and Objectives of the Program

At the University of Saskatchewan, the Clinician Investigator Program (CIP) is available to residents enrolled in residency programs accredited by the Royal College that have demonstrated interest and potential for a career as a clinician investigator. The program accommodates training in diverse research areas ranging from basic and correlative science studies of disease pathogenesis to epidemiological investigations of social/population determinants of health.

It is expected that each CIP trainee will develop the specific skills and scholarly attitudes required to perform high quality health research. Scholarship implies an in-depth understanding of the area of research and the application of current knowledge to clinical practice. The quality of scholarship in the program will, in part, be demonstrated by a spirit of enquiry during clinical discussions, at the bedside, in clinics or in the community, and in seminars, rounds, and conferences.

Two CIP training streams are offered:

In the **Graduate Stream**, applicants enroll in graduate (M.Sc. or Ph.D.) programs at the University of Saskatchewan and must meet all requirements of the College of Graduate Studies and Research (CGSR). CIP trainees in the Graduate Stream must fulfill all the course and thesis requirements of their graduate degree program for successful completion of CIP research component. These trainees will also be required to complete a web-based training curriculum offered by the Canadian Child Health Clinician Scientist (CCHCS) program.

The **Postdoctoral Stream** is designed for residents who already hold a PhD and are interested in undertaking a structured research program. The program of research training may be individualized, but must be similar in content and rigor to a graduate school degree program. For Postdoctoral Stream trainees, completion of the research component means successfully attaining the specified research goals and objectives to the satisfaction of residents Research Program Advisory Committee and completion of a web-based CCHCS training curriculum.

Specific Objectives

The academic and scholarly content of the individual research programs are designed to be appropriate for university postgraduate education, and to adequately prepare CIP trainees to fulfill all of the CanMEDS Roles of the Clinician Investigator. In order to help CIP trainees achieve these goals, in their chosen area of study, the following specific objectives have been developed for each of the CanMEDS roles:

MEDICAL RESEARCH EXPERT

The Key and Enabling Competencies of a Medical Research Expert include:

Integrating all CanMEDS Roles to function as a clinician and to conduct ethical research

Seeking appropriate consultation from others as required, recognizing the limits of one's own clinical research expertise

This competency for the CIP trainee is primarily addressed through the conduct of their research itself, along with required course work.

RESEARCH COMMUNICATOR

The Key and Enabling Competencies of a Research Communicator include:

Developing rapport, trust, and ethical relationships with research subjects, peers and other professionals

During their research activities, CIP trainees are expected to present their research at lab meetings, various seminars, and at local, national and international conferences. Other forms of communication include the writing of manuscripts, as well as grant applications. The following topics of relevance to this competency are also covered under the Communication module in the CCHCS curriculum:

- Presentations: How to Successfully Communicate Your Research Story
- Writing a Manuscript: Planning, Drafting, and Publishing
- Writing a Research Grant: Strategies for a Successful Outcome
- Writing a Report: From Planning, to Drafting, to Publishing Your Report
- Policy Research: How to Communicate Your Research Story to Influence Health Policy
- Knowledge Translation and Exchange

COLLABORATOR

Key and Enabling Competencies of the Collaborator include:

Participating effectively and appropriately in interprofessional research teams

Effectively working in research teams to prevent, negotiate and resolve interprofessional conflicts

This competency is primarily addressed through active involvement of the CIP trainee in a research project directed by their Research Supervisor, participation in multidisciplinary research teams, and attendance at local, national, and international conferences. The following topics of relevance to this competency are covered under the Person-to-Person module in the CCHCS curriculum:

- Your Academic Home: Mentoring and Navigating Your Career Path
- Person to Person Management: Tips on Hiring and Collaborating

RESEARCH MANAGER

Key and Enabling Competencies of the Research Manager include:

Managing activities for research skill and career development effectively

Managing research project and resources appropriately, effectively and efficiently

Managing experimental data recording and result interpretation appropriately in research endeavors

serving in administration and leadership roles, as appropriate to their research career

Managing time and resources are both necessary to become a successful clinician investigator. Managing resources is a skill that is acquired through working on and particularly leading a research project, but is also addressed through seminars, including those on technology transfer and on establishing a career as a clinician investigator. Managing time is important both within the context of the conduct of ongoing research, as well as dealing with simultaneous clinical and research responsibilities. The following topics of relevance to this competency are covered under the Essential Toolkit and Person-to-Person modules in the CCHCS curriculum:

- Research Design: Quantitative Analysis: A General Overview
- Research Design: Qualitative Research: Basic Principles
- Basic Biology: The ABCs of Modern Biological Technologies
- Good Clinical Practice
- Commercialization
- Setting up a Research Program: Short- and Long-term Needs
- Your Academic Home: How to Find Your First Appointment
- Your Academic Home: Mentoring and Navigating Your Career Path
- Person-to-Person Management: Tips on Hiring and Collaborating
- Managing Time

HEALTH ADVOCATE

Key and Enabling Competencies of the Health Advocate include:

Participating in ethical research, with appreciation for the importance of research to the social, economic and biologic factors that impact health

Participating in activities that demonstrate advocacy for subjects, patients, communities and populations, as appropriate to further health and the research enterprise

Promoting dissemination of research knowledge to patients, communities and populations

In the involvement of clinical research, and in particular clinical trials, being an advocate for the patient or patient population studied is an important component of the work. This not only includes advocating for individual participants, but also for the ethical conduct of research.

The following topics of relevance to this competency are covered under the Ethics and Integrity and Communication modules in the CCHCS curriculum:

- Basics of Research Ethics, History of Research Ethics and the Concept of Risk
- Policy Research: How to Communicate Your Research Story to Influence Health Policy
- Knowledge Translation and Exchange

SCHOLAR

Key and Enabling Competencies of the Scholar include:

- Establishing and maintaining knowledge, skills and attitudes appropriate to their research practices, with a thorough understanding and appreciation of the components of proper scientific inquiry

- Accurately eliciting and synthesizing relevant research information and perspectives from relevant sources

- Critically evaluating information and its sources and apply this appropriately to research practices and decisions

- Demonstrating proficient and appropriate use of research skills. Perform complete and appropriate assessments of research questions and problems, using effective experimental methodologies to address questions

- Accurately conveying relevant information and explanations to research subjects, peers and other professionals, in research activities, including scientific presentations, grant proposals, publications and other communications

- Consulting appropriately for feedback on knowledge and performance

- Maintaining and enhance professional activities through ongoing learning

- Facilitating the learning of others about research, including patients, families, students, residents, other health and research professionals, the public and others, as appropriate

- Contributing to the creation, dissemination, application and translation of new knowledge and practices

The role of Scholar overlaps considerably with the role of Medical Research Expert. Included in the scholar competency is the role of Communicator. Scholarship also includes learning a broad array of scientific topics and not just those specific to one's individual research. Many aspects of scholarship are addressed through course work. Self-directed learning is also important in meeting this core competency.

PROFESSIONAL

Key and Enabling Competencies of the Professional include:

- Demonstrating a commitment to the profession, society, subjects and patients through ethical and honest research practices

- Demonstrating a commitment, honesty, integrity and compassion in research activities, including participation in profession-led regulation, peer-review activities, and the prevention of academic fraud

Demonstrating a commitment to clinician researcher health and sustainable practice

In order to work effectively in an active research environment, it is critical to be able to conduct oneself in a professional manner. With Research Supervisors and collaborators leading by example, many of these attributes are acquired through working in a successful research environment. Key aspects of professionalism are addressed in the Ethics and Integrity, Essential Toolkit, Person-to-Person and Communication modules in the CCHCS curriculum, including:

- Basics of Research Ethics, History of Research Ethics and the Concept of Risk
- Conflict of Interest and Integrity
- Regulating Research
- Good Clinical Practice
- Setting up a Research Program: Short- and Long-term Needs
- Your Academic Home: Mentoring and Navigating Your Career Path
- Policy Research: How to Communicate Your Research Story to Influence Health Policy
- Knowledge Translation and Exchange

Upon the completion of the CIP training, the resident will have attained the following competencies and will perform effectively as a:
1. Research Expert, integrating all of the Medicine roles to function as a clinician and to conduct ethical research.
2. Speaker, developing understanding, trust and ethical relationships with research subjects, peers and other professionals, and capable to present their work to a different audiences, have an understanding of knowledge translation relative to their research.
3. Collaborator, working effectively and appropriately in interprofessional research teams as well as preventing, negotiating and resolving interprofessional conflicts.
4.Research Leader, managing career development, project resources, experimental data recording and result interpretation, and serve in administration and leadership roles, as appropriate to their research career.
5.Health Promoter, participating in ethical research, with appreciation for the importance of research to the social, economic and biologic factors that impact health, participating in activities that demonstrate advocacy for subjects, patients, communities and populations, and promoting dissemination of research knowledge to patients, communities and populations as appropriate.
6. Scholar, establishing and maintaining knowledge, skills and attitudes appropriate to their research practices, with a thorough understanding and appreciation of the components of proper scientific inquiry.
7. Professional, demonstrating a commitment to the profession, society, subjects and patients through ethical and honest research practices, research activities including participation in profession-led regulation, peer-review activities.

CIP Resident Clinical Activities

The CIP must also provide an opportunity to integrate research and clinical experience. During the research components of the CT and FT pathways, sometime may be spent in clinical activity related to the research; however, the majority of time (at least 80%) must be devoted to research.

The CIP promotes opportunities to integrate clinical and research experiences. During the research component some time may be spent in clinical activity related to the research; however, the majority of time (at least 80%) must be devoted to research.
Participating in clinical activities are governed by the following principles:

1. Clinical activities should not interfere with their CIP academic and/or research program
2. Clinical activities should not exceed 20% of their research time
3. The objectives of the clinical activity should be consistent with an emerging clinician investigator career and approved by the CIP Director

CIP Resident Office Assignments

CIP Resident Faculty Supervisors may apply and receive office space for their CIP Resident using the Council of Health Sciences Dean's online application form on their website at http://www.healthsciences.usask.ca/

The Instructions for completing the online form are:

1. Choose "Facility Services" at the top and then "Building Operations"
2. Log in with your NSID and then choose "Graduate/PDF Office Space Application Form"

The Council of Health Sciences Dean's Office administration will contact the faculty supervisor regarding suitable office space to meet the CIP Resident's needs.

Trainees in the CIP Graduate Stream at the College of Medicine at the University of Saskatchewan must have a minimum but preferred and suggested course level of nine credit units (or three, 3 credit courses) to complete the College of Graduate Studies and Research requirements for completion of a thesis Masters program. It is envisioned that one, 3 credit course will be deemed "core" (i.e. mandatory) for all CIP trainees. Other courses will be determined by the Thesis/Research Advisory Committee and Research Supervisor as determined by the background of the student for the proposed research project and other possible course requirements as regulated by the particular Departmental graduate program of enrollment. All trainees must also complete the web based Canadian Children's Health Clinician Scientist (CCHCS) course.

Core Course Clinical Research Methods CIP 800.3

This course is designed based on the book entitled "Designing Clinical Research", 2nd edition, by Hulley et al., 2001, Lippincott, Williams and Wilkins Publishers, Philadelphia, PA.

Topics to be included in this Core Course include:

1. Developing the research question and study plan.
2. Characteristics of a good research question: feasibility, interest, novelty, ethics, relevancy.
3. Choosing the study subjects for the proposed question: selection criteria, clinical vs community populations, recruitment of subjects.
4. Planning the measurements: measurements scales, variables, precision and accuracy.
5. Estimation of the sample size: building the hypothesis, underlying the statistical principles for that hypothesis, power, and statistical significance.
6. Designing an observational study: cohort studies, prospective vs retrospective studies, cross-sectional vs case controlled studies.
7. Designing an experiment with clinical trials: participants, measuring variables, randomizing, interventions, measuring the outcomes, analysis, mentoring.
8. Designing studies regarding the involvement of medical tests.
9. Designing and analyzing qualitative methodologies
10. Addressing ethics issues: principles, regulations, responsibilities.
11. Designing questionnaires: designing good questions, instruments.
12. Data measurements: defining the variables, creating the data base, entering the data and correcting errors, backing up experimental data.
13. Basic biostatistics.
14. Advanced statistics.
15. Managing clinical and research duties.
16. Writing skills for scientific journals, for thesis writing, presentations for oral and

poster communications.
17. Authorship towards the publication of work.
18. Career Development as a Clinical Scientist.

Criteria for Choosing Graduate Supervisors for the Clinician Investigators Program

1. Potential supervisor must be an approved member of the College of Graduate Studies and Research at the University of Saskatchewan.
2. Potential supervisor should have established research funding that would last through the successful completion by the CIP trainee (two years for Masters and three-four years for a PhD training).
3. Potential supervisor must show evidence of research productivity by way of manuscripts, invited presentations.
4. Potential supervisor should have a national reputation in the chosen area.
5. Potential supervisor should have experience in supervising graduate students.
6. Potential supervisor should be part of an enriched research environment through which the CIP trainee can associate with journal clubs and seminar series and interact with a critical mass of students, research associates, and trained personnel on a daily basis.
7. Potential supervisor should show an eagerness to promote clinical translational aspects of the chosen field of research.
8. Most importantly, the supervisor must agree to adhere to the terms and conditions required by the CIP program (eg. knowledge development, skill development and development of scientific attitudes need to be acquired by the CIP resident during the M.Sc. or Ph.D. program) for the proposed research.