

Research Fellowship in Critical Care Medicine

Institution: McGill University

Location: McGill University Health Centre

Type of Fellowship: Fellowship in research skills in Critical Care including clinical and basic science.

Number of positions: Maximum 3

Length: one year

Program Information

The McGill University adult critical care program at the McGill University Health Centre, offers an adult Critical Care Medicine (CCM) Fellowship to “qualified” CCM physicians who desire specialized training in anticipation of an academic career. This fellowship is aimed at fully trained adult CCM physicians who have completed their basic specialty training in critical care medicine. The program will accept 1 to 3 candidates per year and the minimum time spent in the program must be one year. Up to 2 months will be spent in clinical CCM and another 10 to 22 months will be spent on academic work or more if required for completion of graduate studies. The clinical and academic components will be coordinated between the Fellowship and Clinical program directors and individualized to the trainee’s needs. The proposed program should facilitate future recruitment to a faculty position at an academic institution.

Background

This program is separate from the Adult Critical Care Training program that is geared to Royal College certification. Fellows must be beyond basic training and seeking advanced studies. The program, though, acts under the umbrella of the McGill Critical Care Training committee. The activities of the Fellows in the program are parallel to those of the trainees in the adult Critical Care Training program and will not interfere with the activities of the clinical trainees for the emphasis of the Fellowship is on research. Potentially, research projects of the Fellows could include trainees from the clinical program and thus enrich the experience and training of the clinical residents.

The Critical Care Division has a very active research program. There are three tenure tract or tenured clinician scientists and two of these hold Canada Chairs. There are also two basic scientists in the division. A number of the clinicians are actively involved in research and all members oversee patients who are enrolled in the trials performed in the ICU’s of the MUHC. Basic research interests of members include vascular biology, muscle biology, pulmonary defenses and immune responses. Clinical research includes hemodynamics, heart-lung interactions, ventilatory function, muscle function, sepsis, nutrition and coagulation. Our program is ideally set up to include basic science and translational components to clinical research projects. Many of the clinical studies are performed as part of the Canadian Critical Care trials group and trainees will be encouraged to go to at least one of the three annual meeting of the Canadian Critical Care Trials group, which is a highly successful Canadian organization that performs multicentre trials.

McGill offers a number of epidemiology courses over the summer and it is possible for Fellows to enroll in these courses. It may also be possible for trainees to enroll in graduate studies during their Fellowship. The McGill Critical Care division held a post-graduate course this year and also runs courses in Critical Care skills. Trainees will take part in these courses and depending on their expertise they may also be involved in running the courses, which will give them supervisory and teaching experience.

Mission Statement

The objective of the critical care research fellowship program is to encourage the development of academic critical care physicians who can obtain an academic appointment at a University-based critical care program and establish their own independent research program or be able to at least collaborate in multicentre program with MUHC investigators and other Canadian investigators.

Program Director

Sheldon Magder, Professor of Medicine and Physiology, Senior physician MUHC

Faculty

All of the MUHC critical care physicians will be expected to interact with the Fellows. Faculty will include the fellows in clinical rounds when the fellows attend rounds. The program director will be responsible for establishing the individualized program for the Fellows and will supervise the progress of their research activities. The director must also approve all research projects. A faculty member will be assigned to supervise each individual research project. Faculty who are eligible to supervise fellows must have research experience and a publication record.

Duties

The Fellows will spend from 1-2 months in the ICU's of the RVH and MGH sites. For the first two to four weeks Fellows will act as part of the team including taking call so that they can adapt to our system. This is especially important for foreign trained physicians and potentially can be waived by the program director. Trainees will then do from 2 to 4 weeks as the senior in the ICU at one of the two sites. The objective of this rotation is to allow the trainee to understand the clinical approach at the MUHC, the case mix, and to help the trainees develop reasonable expectations for recruitment into clinical trials that they will be involved in. They will also be required to do 2 to 4 nights on call per month during the year. Trainees will be encouraged to do morning clinical rounds with the teams at the RVH or MGH when their schedule permits. During these rounds they will be expected to contribute to the academic discussion around the management of the patients. These sessions will hopefully also help them develop new research questions and will give trainees the opportunity to be involved in teaching residents, which is an important part of the role of an academic physician.

Fellows will be expected to attend the monthly Critical Care Clinical fellow's core teaching rounds as well as weekly ICU rounds at RVH and MGH and bi-monthly research rounds at the RVH site.

The primary objective of the Fellowship is for the trainee to gain experience in research. It is expected that most of their research activity will be in clinical research but there are also opportunities for fellows to be involved in basic research. There are a number of ongoing trials that are taking place through the Canadian Critical Care trials but focused trials or pilot studies will also be designed by the trainees. The majority of their time is expected to be spent doing research.

Fellows will be expected to prepare at least one abstract for either the Toronto Critical Care meeting or an international meeting and write one paper (which could be a review but preferably a full study on original research) during their training period. The supervisor will be expected to play a major role in the development and preparation of the abstract with the Fellow.

Evaluations will be based on the Critical Care Fellows ITER (in-training evaluation) with potential adaptations to emphasize the research component as given in the appendix and will be performed every three months.

Role of Program Director

- Provide a supportive academic and clinical environment designed to facilitate the professional development of the Fellows and assist them in achieving their academic goals.
- Assure quality of the educational program
- Assure adequate records and performance evaluations on all trainees.
- Keep the director of the clinical training committee informed about the individuals appointed to the program and the impact on the education of the Clinical Critical Care training program.
- Ensure that appropriate communication with the office of the Clinical Critical Care training program occurs.
- Assist the CCM Fellow in obtaining self-funded medico-legal coverage through the CMPA and providing supporting documents to the Clinical Critical Care training program.
- Orchestrate and operationalize any required or requested appeal process.

Curriculum

The primary objective of the program is to develop academic critical care physicians who in the future conduct independent research or at least take part in multicentre trials. As such the central component of the program is getting experience in critical care research. Specific skill will include the following:

- learn how to critically review the literature. As part of this objective the fellows will take part in manuscript and grant reviews with faculty. They will also be required to write a review on a subject of interest.
- learn how to formulate scientific questions
- learn how to create an experimental approach to address the scientific question
- develop proposal for an experimental or observational study

- develop an application for ethical approval for a proposed study (can be in humans or animals)
- take part in grant applications
- learn how to organize data and how to develop a statistical approach to analyzing data
- create an abstract of the results of an experimental study
- create a presentation for the abstract
- learn how to write a manuscript in which the experimental study is presented. It is appreciated that within one year it is unlikely that most trainees will not have completed a study sufficiently to prepare a manuscript but they will be included in ongoing studies and will continue to take part in manuscript preparations after their departure.
- Attend critical care research rounds which are held every second Thursday at the RVH site and the McGill critical care trials meeting which is held once a month.
- As part of the overall program the trainees will also be encouraged to take part on morning clinical rounds. The objective of this component is to encourage the “translational” component of critical care research and to develop and greater appreciation for the strengths and weaknesses of current knowledge.

OBJECTIVES :

MEDICAL EXPERT/CLINICAL DECISION-MAKER

1. Recognize the interface between clinical practice and the clinical research that informs evidence-based clinical practice.
2. Recognize the interface between clinical practice and basic science that informs current translational research goals.
3. To formulate research questions from the uncertainty that exists in the Critical Care Medicine field.

COMMUNICATOR

1. To communicate effectively, both during oral presentation and writing research proposals.
2. To learn how to write grant proposals, abstracts, and research papers.
3. Demonstrate ability to obtain informed consent, or to consider issues pertaining animal use in research, if applicable.
4. To be able to present research at either rounds and/or major conferences.

COLLABORATOR

Work effectively with a research supervisor, biostatistical consultants, research collaborators, and other members of a research team to bring a project to fruition.

MANAGER

1. Demonstrate time management skills that will permit timely completion of the scholarly requirements of the research objectives.
2. To manage the financial resources of the research project.

HEALTH ADVOCATE

Consider research project from a societal perspective of risk benefit and greater public good.

SCHOLAR

1. The fellow will participate in research and thereby
 - a. Contribute to development of new knowledge.
 - b. Become an expert in the chosen research field.
2. The fellow will:
 - a. Develop an independent research project, or
3. The fellow will:
 - a. Present at the annual Critical Care Resident Research Day and hopefully at a national and/or international meeting (ACCP, ATS, SCCM, TCCMC, SIQ ESICM).
 - b. Ideally the fellow will bring the research to publication.

PROFESSIONAL

1. Recognize the ethical and professional obligations inherent to clinical or basic research.
2. If applicable, interact with an institutional Research and Ethic Review Board or animal use committee to advocate for or defend a research proposal.

Appendix:

EVALUATION

	PHASE	GOALS	OBJECTIVES
Phase I	Select field of interest & meet with preceptor and Fellowship program director.	Fellow translates an idea into a feasible project.	Have a concrete project <u>prior to research period</u>
	Hypothesis development	Hypothesis development Review of literature	Submit <u>a summary proposal</u> or present <u>a conference</u> on their Research topic
Phase II	Methodology Proposal Preliminary Draft	Define hypothesis Write introduction & methodology	<u>Submit to preceptor and fellowship director a research proposal</u> for peer-review with the objective of improving upon original draft
Phase III	Methodology Proposal Final Draft	Improve the methodology with repeated review by research team & preceptor.	<u>Resubmit final proposal to preceptor and director of research fellowship program</u>
	Project implementation	Learn how to prepare implementation of protocol	Prepare logistics of study
Phase IV	Data collection & analysis	Gain experience with data collection and analysis	Submit for publication or presentation



RESEARCH EVALUATION FORM

Fellow Feedback Form

Date: _____

Resident: _____ Year: _____

Project Title: _____

- | | | | |
|----|---|-----|----|
| 1. | Is the Review of Literature satisfactory? | Yes | No |
| 2. | Is the research question appropriately formulated? Focused? | Yes | No |
| 3. | Is the study design scientifically valid? | Yes | No |

Overview of study design

Patient population:

- a) inclusion criteria
- b) exclusion criteria

Measurements:

Intervention:

Outcome variables:

Potential confounding variables:

Planned procedure for collection of information :

Blinding and bias considerations:

- | | | | |
|----|--|-----|----|
| 4. | Does the study consider the appropriate statistical considerations?
<i>(power calculations, sample size, statistical analyses, etc.)</i> | Yes | No |
| 5. | Does the study have the appropriate ethical / legal considerations?
<i>(adverse event reporting, patient consent, responsibilities of the investigator, etc.)</i> | Yes | No |
| 6. | Is the project feasible (time, resources)? | Yes | No |
| 7. | Are there potential obstacles or questions that should be considered? | | |

General comments?

Overall, the project is: **Approved** **Incomplete** **Should be reconsidered**



Fellow Research Project Tracking Sheet

Legend: U=Unsatisfactory; B=Borderline; S=Satisfactory; SP=Superior

Research Evaluator: _____

Date: _____

Research Evaluator: _____

Date: _____

Resident: _____

Date: _____

Fellow: _____

Project Title: _____

	Yes	No	Date
Review of Literature			
Research question formulated			
Preliminary Methodology drafted			
Methodology re-submitted			
Approval by Research Fellowship Director			
Ethics Committee Approval			
Funding Source:			
Data Collection Begun			
Difficulties? <i>(If yes, please explain)</i>			
Data Collection Completed			
Data Analysis Performed			
Project Presented at Resident Research Day			
Abstract/Poster Prepared and Accepted			
Paper Prepared and Submitted Journal: Journal:			
Paper Accepted for Publication Journal:			