McGill Faculty of Medicine Faculté de Médecine

PHARMACOEPIDEMIOLOGY

Pharmacoepidemiology is one of the primary fields of study in the Department of Epidemiology and Biostatistcs at McGill University. This area of epidemiological research is regrouped around the McGill Pharmacoepidemiolgy

Research Unit that involves faculty members, graduate students and research assistants. The Unit conducts research into the uses, risks and benefits of medications from a population perspective. The Department of Epidemiology and Biostatistics offers programs for PhD and MSc degrees with special emphasis in pharmacoepidemiology methods and applications. In the context of this training program, **six courses** are offered during the summer session and described within this pamphlet, **including three new specialized courses**. These courses are offered to regular students registered in a program, as well as to special students or simply for professional interest.

GENERAL STUDENT INFORMATION

STUDENTS SEEKING PROFESSIONAL INTEREST CERTIFICATE

Health professionals and others not seeking academic credits are considered for enrolment as Professional Interest Student in the Summer Session. Students are expected to participate fully in course work, including assignments and examinations. The results will be available to students, but will not be officially recorded by the university and no formal university transcript will be issued. These students will receive a certificate of attendance from the Department of EBOH. Courses taken for Professional Interest cannot subsequently be applied to an academic programme. Unfortunately, there are no exceptions.

STUDENTS FROM OTHER QUEBEC UNIVERSITIES

Degree students from other Quebec universities wishing to take course(s) in our department must:

- ✓ Email the instruction for permission. Please include your degree program and university at which are enrolled, and provide reason for wishing to take the course(s). Also include a cc to andre.yves.gagnon@mcgill.ca
- ✓ Student need to apply online to CREPUQ and should check their university website or www.crepuq.qc.ca for procedures.

VISITING STUDENTS

Students from universities outside of Quebec (but from within Canada must:

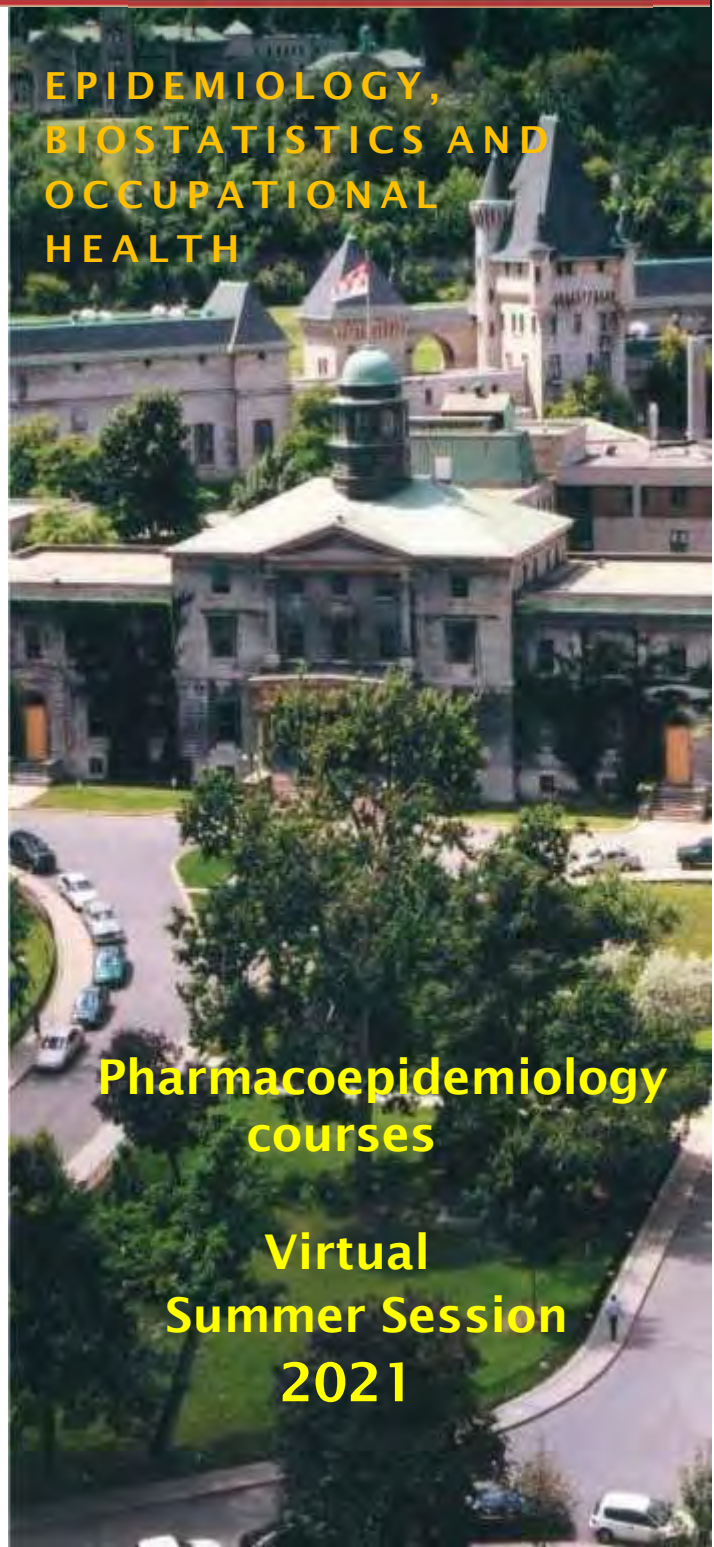
- ✓ Email the instruction for permission. Please include your degree program and university at which are enrolled, and provide reason for wishing to take the course(s). Also include a cc to andre.yves.gagnon@mcgill.ca
- ✓ Obtain Canadian Universities Graduate Transfer Agreement form from www.cags.ca/agreements.php and follow instructions indicated on the form.

IMPORTANT NOTE TO INTERNATIONAL APPLICANTS

Individuals coming to Canada to study for less than a six-month period do not have to obtain a Study Permit (student visa). Please check with Immigration Canada to ensure that you will be able to enter and remain in Canada to pursue your studies. PROFESSIONAL INTERST STUDENTS may come to Canada on a Visitor or Tourist Visa, since our Summer Session is of less than three months duration.

CONTACT DETAILS

Student Affairs Office, EBOH, McGill University
Tel: (1) 514-398-6258
Email: andre.yves.gagnon@mcgill.ca
Website: https://www.mcgill.ca/epi-biostat-occh/academic-programs/summer



PHARMACOEPIDEMIOLOGY COURSES

EPIB-633 PE I:
INTRODUCTION TO PHARMACOEPIDEMIOLOGY
DATE: MAY 10 - MAY 21

This course is designed to introduce concepts and principles of pharmacoepidemiology in the context of drug evaluation and therapeutic decision-making. Topics to be covered include history of pharmacoepidemiology, choice of study design, sources of bias and their prevention and control, the importance of prescribing and drug taking behaviours, sources and use of exposure and outcome data, assessing causality, and measures of association. Examples will be drawn from published pharmacoepidemiologic studies. Participants will have an opportunity to design and critique a study that addresses a current therapeutic controversy.

Prof. Christel Renoux, MD, PhD
Associate Professor, Neurology & Neurosurgery,
Associate member, Epidemiology, Biostatistics and Occupational Health,
McGill University, Montreal, Canada
christel.renoux@mcgill.ca

Professor Renoux *is a neurologist and epidemiologist whose research interests center on neuroepidemiology and pharmacoepidemiology. Using large health databases, she evaluates the safety of medications, particularly related to neurological diseases, while applying advanced epidemiological methods. She also studies the epidemiology of cerebrovascular diseases.*

EPIB-631 PE II:
INTERMEDIATE PHARMACOEPIDEMIOLOGY
DATE: MAY 31 - JUNE 11

This course will address methodological issues in pharmacoepidemiology through didactic lectures, group discussions, and the examination of examples from the medical literature. Topics covered include themes related to exposure definitions, use of active drug comparators, latency, reverse causality, detection bias, new-user designs, healthy-user effects, and non-traditional study designs. In addition, the role of confounding and methods used to minimize its effects, such as propensity scores, are discussed in detail. This course will be of interest to researchers, clinicians, regulators, and other knowledge users of pharmacoepidemiology and drug safety research.
Prerequisites: EPIB-633, or permission of instructor

Prof. Laurent Azoulay, PhD
Associate Professor,
Epidemiology, Biostatistics and Occupational Health and Gerald Bronfman Dept of Oncology, McGill University, Montreal, Canada
laurent.azoulay@mcgill.ca

Professor Azoulay *is a cancer pharmacoepidemiologist with expertise in the design and analysis of large pharmacoepidemiologic studies. His research aims to provide much needed information on the long-term effects of commonly-prescribed drugs on the incidence of cancer, while also assessing the safety of cancer treatments in the real-world setting.*

Prof. Kristian B. Filion, PhD FAHA
Associate Professor,
Departments of Medicine and of Epidemiology, Biostatistics & Occupational Health, McGill University, Montreal, Canada
kristian.filion@mcgill.ca

Professor Filion *obtained his PhD from McGill University and completed post-doctoral training at the University of Minnesota. His research program focuses on pharmacoepidemiology and drug safety, with substantive interests in cardiovascular disease and diabetes. He is a Steering Committee member of the Canadian Network for Observational Drug Effect Studies (CNODES).*

EPIB-661 PE III:
ADVANCED PHARMACOEPIDEMIOLOGY

This course is designed to develop skills necessary in the critical appraisal of pharmacoepidemiological studies with a particular focus on advanced methodological issues, study design, analysis and interpretation of results. The course will cover cohort, case-control, nested case-control and within-subject designs, along with various sources of information and selection bias, focussing more specifically on time-risk functions and time-related biases. These issues will be addressed through a review of several published pharmacoepidemiological studies, focussing particularly on studies using computerized health databases.
Prerequisites: EPIB-633, EPIB-631 or permission of instructor

NOT OFFERED IN 2021

Prof. Samy Suissa, PhD
Director, Centre for Clinical Epidemiology, Jewish General Hospital
Professor, Epidemiology and Biostatistics,
McGill University, Montreal, Canada
samy.suissa@mcgill.ca

Professor Suissa *holds a James McGill Professor award at McGill University and heads the Canadian Network for Observational Drug Effect Studies (CNODES). A fellow of the Royal Society of Canada, he received the FC Donders Award from Universiteit Utrecht, Netherlands, and has published extensively on methods and studies of drug effects.*

Prof. Antonios Douros, MD, PhD
Assistant Professor, Department of Medicine (Division of Clinical Epidemiology)
McGill University, Montreal, Canada
antonios.douros@mcgill.ca

Professor Douros *is an Assistant Professor at McGill University. He obtained his MD in 2009 and his doctorate degree in 2012, and was trained in Clinical Pharmacology from 2012 to 2016 at Charité in Berlin, Germany. Prof. Douros studies drug effectiveness and safety in vulnerable populations, including patients with liver disease or patients subjected to polypharmacy and at risk of drug-drug interactions.*

SPECIALIZED COURSES

EPIB 654 – PHARMACOECONOMICS FOR HEALTH TECHNOLOGY ASSESSMENT
DATE: JUNE 14 - JUNE 18

As pharmaceutical prices climb ever higher, determining what is a reasonable price for a given benefit has become crucial. This course introduces the basic economic problem and ways of addressing it; including cost per QALY approach and newer alternatives. Methods for deriving required inputs–costs, effectiveness, utilities–and modeling structures for putting them together, including newly-developed DICE simulation are covered. Students will learn model construction and validation, analytic techniques and how to deal with uncertainty. Unresolved challenges and possible solutions, such as efficiency frontier and multi-criteria decision analysis, are explored.
Prerequisites: Introductory Epidemiology or permission of instructor

Prof. Jaime Caro, MDCM, FRCPC, FACP
Adjunct Professor, Epidemiology & Biostatistics and Medicine, McGill University, Montreal, Canada
jaime.caro@mcgill.ca

Professor Caro*, Chief Scientist at Evidera, leads development of novel techniques in pharmacoeconomics. He created a new modeling method—DICE simulation; leads its application in epidemiology, health technology assessment, and virtual clinical trials; and is working on an alternative to the QALY and on better approaches for economic evaluations.*

CONFOUNDING CONTROL in PHARMACOEPIDEMIOLOGY
DATE: MAY 25 - MAY 28

This course covers modern methods to control confounding, one of the primary sources of bias in pharmacoepidemiology. Recent years have seen several important developments in methods for confounding control. Most of these methods are based on the propensity score. This course will review the foundations of the propensity score, the high-dimensional propensity score and inverse probability weighting, and the disease risk score. Machine learning methods will be discussed. Worked examples using SAS and R will be discussed.

Prof. Robert Platt, PhD
Professor, Epidemiology, Biostatistics & Occupational Health and of Pediatrics, McGill University, Montreal, Canada
robert.platt@mcgill.ca

Professor Platt *is a professor in the departments of Pediatrics, and of Epidemiology, Biostatistics, and Occupational Health (EBOH) at McGill University. He holds the Albert Boehringer I endowed chair in Pharmacoepidemiology. Dr. Platt is the Executive Co-Lead and leader of the Methods team of the Canadian Network for Observational Drug Effect Studies.*

DIGITAL PHARMACOEPIDEMIOLOGY

The increasing availability of new digital resources, such as online media and ontologies, coupled with advances in computing and analytics, create new opportunities for pharmacoepidemiology. We explore through case studies two such opportunities, along with some associated challenges. First, we examine the application of natural language processing and machine learning methods to online media to measure drug exposures and adverse events. We then explore the semi-automated use of ontologies (i.e., computable models of knowledge), together with dynamically parameterized statistical models to enable large-scale monitoring for adverse events in large databases.

NOT OFFERED IN 2021

Prof. David Buckeridge, MD, PhD, FRCPC *Professor, Epidemiology, Biostatistics and Occupational Health, McGill University, Montreal, Canada*
david.buckeridge@mcgill.ca

Professor Buckeridge *uses methods from biomedical informatics, computer science, epidemiology, biostatistics, and behavioral science to develop and evaluate the impact of computational technologies that use large data sets to monitor population health and health systems and to feedback information to guide the actions of consumers, health professionals, and decision-makers.*