DEPARTMENT OF MEDICINE, SOLNA

K2F6033, Pharmacoepidemiology: Drug Exposure Definitions and Study Design Approaches in Register-Based Data, 1.5 credits (hec)

Läkemedelsepidemiologi: läkemedelsexponering och studiedesign baserat på registerdata , 1,5 högskolepoäng

Third-cycle level / Forskarnivå

Approval

This syllabus was approved by The Committee for Doctoral Education on 2024-09-13, and was last revised on 2025-04-25. The revised course syllabus is valid from spring semester 2025.

Responsible department

Department of Medicine, Solna, Faculty of Medicine

Prerequisite courses, or equivalent

Knowledge corresponding to the intended learning outcomes of the KI doctoral courses Epidemiology I: Introduction to Epidemiology and Biostatistics I: Introduction for epidemiologists.

Purpose & Intended learning outcomes

The purpose of this course is to introduce the students to 1) methods and publicly available data for drug utilization studies, and 2) issues typically encountered in pharmacoepidemiology, specifically exposure misclassification and confounding by indication.

After completing this course, the student should be able to:

- Describe common drug utilization methods and use publicly available data to examine and interpret drug utilization patterns in Sweden
- Describe various approaches to define drug exposure and compare different assumptions made when constructing treatment episodes in Swedish national register data
- Explain the concept of "confounding by indication" in pharmacoepidemiologic studies and identify appropriate study design elements and analytic approaches to reduce this type of

confounding
- Interpret and critically evaluate the results of published pharmacoepidemiologic studies based on the strengths and limitations of the exposure definitions used and methodological approaches to reduce confounding by indication

Course content

The steps for building drug treatment episodes will be explained and demonstrated, and the assumptions used tested. Study design and analytic approaches for reducing confounding by indication will be explained and strengths/limitations compared. Interactive lectures, small group discussion, critical review of published studies and guided hands-on data analysis will provide knowledge and experience using Swedish register-based data. An individual assignment will provide the opportunity for the students to apply the knowledge gained. The course is example-driven with discussion that encourages active participation.

Forms of teaching and learning

Different strategies for teaching and learning, such as interactive lectures, hands-on data analysis, and small group discussion, will be used. Daily formative assessments are used to support the students' learning processes.

Language of instruction

The course is given in English

Grading scale

Pass (G) /Fail (U)

Compulsory components & forms of assessment

Compulsory components

The individual written examination (summative assessment).

Forms of assessment

The examination (summative assessment) is an individual assignment with tasks corresponding to the learning outcomes of the course to be submitted after course completion. Students who do not pass the examination will be offered the opportunity to re-submit within two months.

Course literature

Strom, B. L., Kimmel, S. E., & Hennessy, Sean. (2021). Textbook of Pharmacoepidemiology. (3rd ed.[CC1]). John Wiley & Sons, Incorporated.

Peer-reviewed articles and relevant websites will be distributed during the course.