

# WORKSHOP

## Causal inference with competing events

Date: Tuesday 22nd November 2022, 13.00-17.00

Place: Zoom (details will be provided nearer the time)

Programme: Arranged within the doctoral programme in Epidemiology

Sign-up: [https://bit.ly/competingevents\\_ki](https://bit.ly/competingevents_ki)

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### Overview

A competing risk event is any event that ensures the outcome of interest cannot subsequently occur. For example, in a study where prostate cancer death is the primary outcome, a fatal stroke is a competing event because an individual cannot die of cancer once they have died of stroke. When competing events are present, many possible definitions of a causal effect may be considered. Choosing a causal effect of practical interest requires understanding the interpretation of different counterfactual contrasts and the assumptions needed to identify them using the study data and subject matter knowledge. This workshop will introduce participants to a counterfactual framework for causal inference in the face of competing events. Participants will learn how to articulate and interpret different types of causal effects when competing events are present, and approaches to estimating them under transparent assumptions with the aid of causal diagrams. In part I, we cover counterfactual contrasts of popular parameters from the competing risks literature, including contrasts of cause-specific and subdistribution hazards, and cause-specific cumulative incidences and their relation to total and controlled direct effects from the mediation literature. In part II, we introduce the separable effects, new causal effect definitions that may be of particular clinical relevance in competing events settings. Theoretical concepts will be illustrated via practical examples and R code provided.

### Target group

This workshop is of relevance to doctoral and postdoctoral students, as well as junior and senior researchers, interested in expanding their epidemiological study design and analysis toolkit. It is recommended to have at least an elementary understating of causal inference and causal directed acyclic graphs (DAGs).

### Instructors:

- Jessica Young, Associate Professor, Department of Population Medicine at the Harvard Medical School and the Department of Epidemiology at the Harvard Chan School of Public Health
- Mats Stensrud, Assistant Professor of Statistics, Department of Mathematics, École polytechnique fédérale de Lausanne

### Contact:

- Anthony Matthews, PhD, Assistant Professor, Institute of Environmental Medicine, Karolinska Institutet ([anthony.matthews@ki.se](mailto:anthony.matthews@ki.se))



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