

CAUSAL INFERENCE FOR TIME-VARYING

EXPOSURES IN PREGNANCY OUTCOMES RESEARCH

PRESENTED BY

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Dr. Louisa H. Smith is an expert in epidemiologic methods and causal inference, with extensive teaching experience in causal inference, time-varying exposures, and R programming. She has taught courses at Northeastern, Harvard, and Emory on topics including g-formula, marginal structural models, dynamic regimes, and bias mitigation strategies. Her hands-on workshops combine theory with practical R coding exercises tailored to epidemiologic research challenges.

WORKSHOP DESCRIPTION

When exposures can occur at different times during pregnancy—such as infections, vaccinations, or medication use—traditional analytical approaches can produce misleading results due to immortal time bias and other timing-related issues. Furthermore, selection and competing events during pregnancy can result in biased or uninterpretable estimands. This workshop addresses the methodological challenges of analyzing time-varying exposures in pregnancy outcomes research through a causal inference framework.

The workshop covers :

- study design principles for time-varying exposures, including target trial emulation to clarify research questions and specify appropriate comparisons.
- methods for analyzing exposures that occur at varying gestational ages, with particular attention to avoiding immortal time bias and handling common data complications such as variable enrollment timing and loss to follow-up.

The workshop combines theoretical presentations with R-based coding exercises. Participants will engage in practical exercises using simulated pregnancy data sets, progressing from identification of biases to implementation of rigorous analytical approaches. The hands-on component includes designing and emulating hypothetical randomized trials to improve observational analyses.



**UNIVERSITY
OF OSLO**



Dates: September 17–19, 2025

Time: 09:30 – 15:30 Daily

**Location: Forskningsveien 2B: Klasserom
CU1065, Rikshospitalet, Oslo**

ORGANIZED BY:

Anteneh Desalegn, Maren Olson
*Pharmacoepidemiology and Drug Safety
Research Group, Department of Pharmacy,
University of Oslo, Norway*

PREREQUISITES:

- Basic familiarity with R (code will be provided)
- Understanding of regression and survival analysis concepts

WHY ATTEND?

- Gain experience with causal inference methods specifically tailored to the temporal complexities of pregnancy research.
- Learn hands-on R coding skills for causal inference and time-varying exposures
- Connect with peers focused on improving the rigor of observational studies in pregnancy

REGISTRATION:

Please register by 25th August 2025 via the following link: <https://nettskjema.no/a/537177>

For questions or alternative registration methods, contact: a.a.desalegn@farmasi.uio.no / m.m.olson@farmasi.uio.no