VICTORIAN CENTRE FOR BIOSTATISTICS

ViCBiostat

Victorian Centre for Biostatistics

SEMINAR

Thursday 12th September 2019

9.30am to 10.30am
CEB, University of Melbourne Centre for Epidemiology & Biostatistics,
Melbourne School of Population and Global Health, 207 Bouverie St Carlton

1) A comparison of the beta-geometric model with landmarking for dynamic prediction of time-to-pregnancy

2) Adjusting for selection bias when comparing treated and control cohorts

Dr Rik van Eekelen
Utrecht University

1) Dynamic prediction can be used to not only predict for individual patients over a fixed time period, but also update this prediction later on. Two statistical methods, the beta-geometric model and landmarking in combination with Cox proportional hazards models, have recently been used in clinical literature for the dynamic prediction of time-to-pregnancy in couples who cannot conceive. Due to selection of patients with lower chances as time progresses, the probability of pregnancy decreases over time. The methods take separate approaches on how to incorporate this selection. The advantages, disadvantages and accuracy of these two methods are unknown. We conducted a simulation study in which we compared these two methods and discuss the pros and cons.

2) When evidence for the causal effect of treatment from trials is inaccurate, of uncertain quality or impossible to obtain, we turn to observational data. Data on treatment and control are commonly collected in different studies and/or using different study designs, for instance treatment registries as opposed to prospective cohorts that start at time of diagnosis. The time zero (start of follow-up) in these data sources are different: only patients who survived long enough end up receiving treatment. These two different starts of follow-up suggest possible selection bias that might compromise estimation. I explain what we can do about this selection bias, even if we do not really know what causes the selection in the first place. Some knowledge of selection and dynamic models are crucial for our approach. We show our workings in prospectively collected data on intrauterine insemination.

Dr. Rik van Eekelen is from the Netherlands and was trained as a health scientist, epidemiologist and biostatistician at Utrecht University. He received his doctorate in April this year and is currently a postdoc at the Academic Medical Centre Amsterdam. His research has a strong focus on applied epidemiology in the field of (sub)fertility and survival i.e. time to pregnancy data. During his PhD, he worked on dynamic prediction models to be able to counsel unexplained sub-fertile couples on their chances of pregnancy throughout their stressful journey in reproductive medicine. He also works as a research consultant and is Editor for the Cochrane Collaboration Gynaecology and Fertility group. During Rik's stay in Australia, he will be working with Professor Ben-Willem Mol on the effect of oil-based contrast fluid versus water-based fluid during a diagnostic procedure in sub-fertile women.

www.vicbiostat.org.au

ViCBiostat *is a Centre of Research Excellence in biostatistics initially funded by Australia's National Health & Medical Research Council (NHMRC). The Centre is a collaboration between biostatistical researchers at the Murdoch Children's Research Institute, the Department of Epidemiology & Preventive Medicine at Monash University, and the Centre for Epidemiology & Biostatistics (CEB) at The University of Melbourne.*

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