

Partner status for CRIC, Innovation Fond Denmark project, April 2016:

Short resume

(max 2 pages)

Title: *Statistics methods wp*

Partner (name/institution): *Section of Biostatistics, University of Copenhagen*

Timeline (i.e. midt 2016 through end 2018): *1st half of 2016.*

Senior(s) (name): *Assoc. Prof. Theis Lange (PI) & post.doc Aksel Jensen*

PhD student(s) (name): *Liis Starkorpf*

Program progression:

Liis Starkorpf was hired as a PhD student on the 31st of December 2015. She has subsequently started her work on mapping the different methods and associated software implementations for conducting mediation analysis (ie. statistical methods for disentangling causal pathways from exposure to clinical outcome). This work is progressing well and a draft paper is expected before the summer. She has simultaneously applied one of the mediation methods to a project aiming to establish the causal pathways leading determining to youths who fail to enroll in secondary school. While this is not strictly within the CRIC project's research area it demonstrated the versatility and usability of the methods developed with the statistical methodology work package. Theis Lange and Liis Starkorpf have in collaboration written a commentary on methods for conducting statically mediation analysis, which has just been accepted for publication in the journal Epidemiology.

Aksel Jensen has been working on enrichment designs in connection with RTCs. These designs promise to deliver more efficient RCT studies in particular for studies aiming at finding optimal dosage strategies when several treatments are happening simultaneously (eg. multi drug treatments of cancers). In addition Aksel Jensen has been finalizing his work on methods for estimating the causal effect of time-varying treatments with applications to vaccine studies. This work is expected to become important in CRIC in the second stage of data analysis of the conducted RCTs when focus will (among others) shift from intention-to-treat to actual received treatment.

On top of the methodological work described above Theis Lange and Aksel Jensen have made their statistical expertise available to the rest of the CRIC project. This has included:

- *Participation (Aksel Jensen) in the DSMBs being setup within CRIC.*
- *Observational studies on oxygen therapy practice with the aim of ensuring a good design for the subsequent CRIC RCT on oxygen therapy (HOT-ICU). Aksel Jensen is finishing the main statistical report as this progress report is being written.*
- *Statistical guidance to Marie Collet in connection with her descriptive AID-ICU substudy.*
- *Theis Lange has, after consulting with the CRIC leadership, accepted to sit on the DSMB of a New Zealand based oxygen therapy trial.*

Deviations from the planned program and their consequences:

Assoc. Prof. Theis Lange has taken up a 50% affiliation with the Center for Statistical Science at Peking University, China. The added affiliation and the associated time spent in China will not in any way hinder his participation in CRIC in general or the statistical work package in particular. On the contrary his new affiliation might open up collaborations and future funding options otherwise not available to CRIC.

Financial challenges: *None*