Kolloquium „Statistische Methoden in der empirischen Forschung“

Wann: 27. Oktober 2015, 17:00 – 18:30 Uhr

Wo: Robert Koch-Institut | Nordufer 20 | 13353 Berlin (Wedding),
S41, S42, U9 Westhafen | U9, Bus 142 Amrumer Str

Antje Jahn (Institute of Medical Biostatistics, Epidemiology and Informatics (IMBEI), University Medical Center of the Johannes Gutenberg-University Mainz)

Analyse rekurrenter Hospitalisierungen und Tod: von zusammengesetzten Endpunkten zu Mehrstadienmodellen

Many cardiovascular diseases as heart failure or artrial fibrillation are characterized by recurrent non-fatal events (hospital admissions) and delayed death. There is an ongoing debate to reflect this in the primary endpoint of clinical trials by moving from the commonly applied time-to-first-combined-endpoint to models that also consider recurrent hospital admissions [1].

In this talk it will first be investigated how recurrent events affect the power of a study using examples from cardiovascular research. It will be shown, that usually the power of a study increases by including recurrent events into the analysis, but that also the opposite can be true. For a deeper understanding of these results, the connection between time-to-composite-endpoint-models and multistate models for recurrent hospitalizations and competing death will be illustrated. Multistate modeling allows for a potentially more adequate interpretation of risk factors or treatment effects, but raises multiplicity issues. Sequentially rejective test procedures have been proposed to simultaneously test hypotheses on composite and single endpoints [2]. It will be demonstrated that these test procedures are also useful to address multiplicity within multistate modeling with potential improvements by using logical dependencies.

Simulation studies will show that combined-endpoint models that do not require multiplicity adjustments are superior with respect to power only if treatment similarly affects all endpoints. For more realistic situations as observed in large clinical trials on systolic heart failure a multistate approach with multiplicity correction increases power and allows a more thorough interpretation of results.

[1] Anker S, Murray J: Time to move on from ‘time-to-first’: should all events be included in the analysis of clinical trials? European Heart Journal 2012

[2] Huque M, Alosh M, Bhore R: Addressing multiplicity issues of a composite endpoint and its components in clinical trials. Journal of Biopharmaceutical Statistics 2011