# Einladung zum Biometrischen Kolloquium

Gastgeber: Karl Moder (Universität für Bodenkultur)

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# ARM-BASED NETWORK META-ANALYSIS

## 12. März 2018 um15:00 Uhr

MENH-03/08 (HS VII)
Universität für Bodenkultur
Gregor-Mendel-Straße 33, 3. OG, 1180 Wien

## Abstract:

Network meta-analysis can be implemented using arm-based or contrast-based models. My talk will start by outlining the two approaches and how they are related. I will argue that both approaches are to a large extent exchangeable and that the arm-based approach has a lot of advantages, especially for those accustomed to factorial analysis-of-variance procedures.

The second part of my talk will focus on arm-based models and fit them using generalized linear mixed model procedures. Full Maximum Likelihood (ML) estimation leads to biased trial-by-treatment interaction variance estimates for heterogeneity. Thus, our objective is to investigate alternative approaches to variance estimation that reduce bias compared to full ML. Specifically, we use penalized quasi-likelihood (PQL)/pseudo-likelihood (PL) and hierarchical (h) likelihood approaches.

In addition, we consider a novel model modification that yields estimators akin to the residual maximum likelihood (REML) estimator for linear mixed models. The proposed methods are compared by simulation and two real datasets are used for illustration.

Simulations show that PQL/PL and h-likelihood reduce bias and yield satisfactory coverage rates. Sum-to-zero restriction and baseline contrasts for random trial-by-treatment interaction effects, as well as a REML-like adjustment also reduce bias compared to an unconstrained model when ML is used, but coverage rates are not quite as good. PQL/PL and h-likelihood are therefore recommended.



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