Workshop

"Bayesian methods in the development and assessment of new therapies"

University of Göttingen, 06.12.2018

Sibylle Sturtz (IQWiG, Köln)

Meta-analysis using Bayesian methods: Applications in systematic reviews

Meta-analysis is the method of choice in systematic reviews to summarize data quantitatively. According to the methods paper of the Institute for Quality and Efficiency in Health Care (IQWiG), version 5.0 (IQWiG, 2017), the Knapp-Hartung method is used to conduct meta-analyses with random effects (Veroniki et al., 2015). However, if few studies are to be pooled (i.e., less than five studies), heterogeneity cannot be reliably estimated leading to broad confidence intervals. In such situations, Bayesian methods are an option to conduct meta-analyses.

For Bayesian methods, the choice of prior distributions for the overall mean and the between-study variance is required and sensitivity analyses are indicated. Several distributions are possible, in recent publications different choices are given (e.g., Friede et al., 2017, Turner et al., 2015, Rhodes et al., 2018). Within this presentation, we will discuss the influence of these alternatives in the context of health technology assessment.

References

Friede, T., et al. (2017). "Meta-analysis of few small studies in orphan diseases." Research Synthesis Methods **8**(1): 79-91.

Institut für Qualität und Wirtschaftlichkeit im Gesundheitswesen (2018, 10.07.2017). "General methods: version 5.0." Retrieved 06.06.2018, from https://www.iqwig.de/download/General-Methods_Version-5-0.pdf.

Rhodes, K. M., et al. (2018). "Between-trial heterogeneity in meta-analyses may be partially explained by reported design characteristics." Journal of Clinical Epidemiology **95**: 45-54.

Turner, N. L., et al. (2015). "A Bayesian framework to account for uncertainty due to missing binary outcome data in pairwise meta-analysis." Statistics in Medicine **34**(12): 2062-2080.

Veroniki, A. A., et al. (2015). "Recommendations for quantifying the uncertainty in the summary intervention effect and estimating the between-study heterogeneity variance in random-effectsmeta-analysis." Cochrane Database of Systematic Reviews(1): 1-72.