

Bayesian MCPMod

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Multiple comparison procedures and modeling (MCPMod) has established itself as a standard method for dose finding under model uncertainty [1,2]. One of the few downsides of MCPMod is that due to its frequentist / statistical testing nature in particular with respect to the multiple comparison part it is tough to incorporate historical information in a systematic fashion. A typical situation where such historical information is available is existing data for the placebo group from previous studies. There are multiple Bayesian concepts for integrating historical data in a systematic and even dynamic fashion like the meta-analytic prior or the power prior approach [3,4]. In this presentation, we define Bayesian MCPMod (BMCPMod) that is built upon these two aspects. BMCPMod is able to mimic the results of the classical MCPMod for non-informative priors. At the same time, it allows for inclusion of historical data in a systematic fashion. After the definition of BMCPMod related characteristics for a Bayesian approach similar to the MCP testing part are derived. The BMCPMod is compared to classical MCPMod / non-informative priors via simulations. Aspects of mixture priors, optimal contrast vectors and impact of allocation ratios are discussed and an example for designing a BMCPMod trial is given. Finally, we will hint at extending BMCPMod to data scenarios for generalized linear models.

References:

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