Use of Prior Information for Bayesian Evaluation of Bridging Studies

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The ICH E5 guideline defines a bridging study as a supplementary study conducted in the new region to provide pharmacodynamic or clinical data on efficacy, safety, dosage and dose regimen to allow extrapolation of the foreign clinical data to the population of the new region. Therefore, a bridging study is usually conducted in the new region only after the test product has been approved for commercial marketing in the original region based on its proven efficacy and safety. In this paper we address the issue of analysis of clinical data generated by the bridging study conducted in the new region to evaluate the similarity for extrapolation of the foreign clinical data to the population of the new region. Information on efficacy, safety, dosage, and dose regimen of the original region cannot be concurrently obtained from the local bridging studies but available in the trials conducted in the original region. Liu, Hsiao, and Hsueh (2002) have proposed a Bayesian approach to synthesize the data generated by the bridging study and foreign clinical data generated in the original region for assessment of similarity based on superior efficacy of the test product over a placebo control. However, the results of the bridging studies using their approach will be overwhelmingly dominated by the results of the original region due to an imbalance of sample sizes between the regions. Therefore, in this paper we propose a Bayesian approach with the use of a mixture prior for assessment of similarity between the new and original region based on the concept of positive treatment effect. Methods for sample size determination for the bridging study are also proposed. Numerical examples illustrate applications of the proposed procedures in different scenarios.

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