

## **Are there differences of results between Bayesian and Frequentist network meta-analyses**

Juan Ling<sup>1,2</sup>, Long Ge<sup>1,2,3</sup>, JinHui Tian<sup>1,2</sup>, KeHu Yang\*<sup>1,2</sup>

1. Evidence-Based Medicine Center, School of Basic Medical Sciences, Lanzhou University, Lanzhou, China

2. Key Laboratory of Evidence-Based Medicine and Knowledge Translation of Gansu Province, Lanzhou, China

3. First clinical medical college of Lanzhou University, Lanzhou, China

### **Abstract**

**Background:** Frequentist statistical methods rely on traditional notions of statistical significance, it is easy to include and assess the effect of the study design by adding this extra level to the hierarchy of the data structure. Nowadays, Bayesian statistical methods are increasingly popular as a tool for meta-analysis of clinical trial data involving both direct and indirect treatment comparisons. However, appropriate selection of prior distributions for unknown model parameters and checking of consistency assumptions required for feasible modeling remain particularly challenging. Besides, the consistency in network meta-analysis between Bayesian and Frequentist analysis method are unclear, there are very few papers that explicitly discuss and compare the underlying consistency of these two methods.

**Objective:** The objectives of this presentation are to review the differences and consistency in the network meta-analysis between Bayesian and Frequentist analysis method.

**Method:** A comprehensive literature search in the Cochrane Library, PubMed, EMBASE, Chinese Biomedical Database (CBM), China National Knowledge Infrastructure (CNKI), and the Wanfang Database was conducted from inception to February, 2017. We included the network meta-analysis of randomised controlled trials that provided sufficient data for both Bayesian and Frequentist analysis method. We calculated the inconsistency, defined as the difference in log odds ratios between Bayesian and Frequentist analysis method estimates, together with its standard error, and tested whether the inconsistency was statistically significant. The inconsistency between Bayesian and Frequentist analysis method estimates can also be expressed as a ratio of odds ratios by an antilog transformation. We calculated the proportion of trial networks with a statistically significant inconsistency ( $P < 0.05$ ) between the Bayesian and Frequentist analysis method comparisons. The pre-specified subgroup analysis was also undertaken to investigate the association of a significant inconsistency.

**Results and conclusions:** This study is ongoing and results will be presented at the Evidence summit as available.