

THE ADDED VALUE OF REAL-WORLD EVIDENCE TO CONNECT DISCONNECTED NETWORKS FOR NETWORK META-ANALYSIS: A CASE STUDY IN RHEUMATOID ARTHRITIS

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Background: There are many circumstances under which networks of evidence may be 'disconnected' and network meta-analysis (NMA) cannot be conducted, unless additional assumptions are made. However, real-world evidence (RWE) which is becoming a more widely used source of clinical data to complement randomised evidence for relative effectiveness assessment, could help inform missing 'connections' within a network. We consider the impact of RWE on NMA to compare existing biologic DMARDs in rheumatoid arthritis (RA) for second-line therapy in a disconnected network.

Methods: A literature search was undertaken to identify RCTs evaluating second-line biological therapies in RA. Patient data from two European registries were also accessed. Standard Bayesian NMA and naïve pooling of standard of care were applied and evaluated. Alternatively, RWE and RCT data were combined in an NMA to connect the RA network of studies.

Results: Only 4 RCTs were identified for second-line biologics with one treatment (Golimumab) disconnected from the network. All methods applied were effective in allowing for the comparison of Golimumab against all other treatments. For example, Golimumab had increased probability of achieving remission by 7.6% (CI: 2.3% to 13.6%) compared to standard of care, an estimate that would not have been possible to obtain if using RCT data alone. The addition of RWE to the RCT data led to a decrease in the level of uncertainty of the probability of remission in Rituximab compared to standard of care from 8.3% (CI: 4.9% to 12%) to 7.2% (CI: 4.1% to 10.7%).

Conclusion: The use of RWE was a useful approach here. By bridging disconnected networks of RCT evidence, RWE allowed evaluation of treatment options otherwise not comparable via a standard NMA of RCTs alone. In addition, estimates of effect of treatments already included in the RCT network were obtained with higher precision when including the RWE.