A Mixed Treatment Comparison analysis of drugs for treating patients with Rheumatoid arthritis

Ingunn Fride Tvete[1]**, Bent Natvig**[2]**, Jørund Gåsemyr**[2]**, Nils Meland**[3]**,Marianne Roine**[3]**,Tor Skomedal**[4] **and Marianne Klemp**[5]

[1] The Norwegian Computing Center, Norway
[2] Department of Mathematics, University of Oslo, Norway
[3] Smerud Medical Research International AS
[4] Department of Pharmacology, University of Oslo, Norway
[5] The Norwegian Knowledge Centre for the Health Services, Norway

Rheumatoid arthritis is a chronic disorder and treatment includes drugs to help control disease and limit joint damage, such as the relatively inexpensive disease modifying anti-rheumatic drugs (DMARDs) and the more expensive biological anti-TNF (Tumor necrosis factor) drugs. The latter drugs have been tested in clinical trials either alone or in combination with DMARDs, against another anti-TNF drug, just DMARDs, placebo or placebo and DMARDs combined.

We have conducted an extensive literature research finding 48 eligible clinical trials containing various comparisons of 9 different anti-TNF drugs, DMARDs and placebo combinations, resulting in a complex structural network of comparisons. We have developed a Bayesian MTC model enabling a comparison and ranking of the anti-TNF drugs with respect to their ACR50 (American College of Rheumatology) effect. Our model takes into consideration relevant factors such as duration of RA disease prior to study start and drug doses given during the trials.

Keywords: ACR50, Anti-TNF drugs, DMARD, Meta-analysis, MTC-analysis, Placebo, Rheumatoid arthritis, WinBUGS

References:

Klemp, M., Tvete, I.F., Skomedal, T., Gåsemyr, J., Natvig, B., Aursnes, I. (2011) A review and Bayesian meta-analysis of clinical efficacy and adverse effects of 4 atypical neuroleptic drugs compared with haloperidol and placebo. J Clin Psychopharmacol, 31, 6, 698-704.