

# Effectiveness and cost-effectiveness of biologic vs synthetic disease-modifying antirheumatic drugs in rheumatoid arthritis

## Summary

**Objectives:** To compare the effectiveness and cost-effectiveness of biologic vs synthetic disease-modifying antirheumatic drugs (bDMARDs and sDMARDs) in rheumatoid arthritis (RA) patients with active inflammation.

**Methods:** Literature reviews were carried out for effectiveness and cost-effectiveness evidence. Searches were performed in PubMed, the Cochrane Database of Systematic Reviews and the International Network of Agencies for Health Technology Assessment database. A manual search was done for the European RA treatment guidelines' reference list. Studies were selected using predefined selection criteria. For effectiveness, 77 randomized controlled trials, 23 observational studies and 4 studies from reference list met the inclusion criteria. For cost-effectiveness 16 studies met the criteria. From these another selection was done to choose studies containing the most valuable information for answering specific research questions.

**Results:** In clinical studies 30-40% of patients achieved a good treatment outcome using MTX, which is considered the first line agent. For non-responsive patients, adding glucocorticosteroids to MTX is recommended by EULAR, and adding another sDMARD by ACR. Using combination therapy ~50% of patients achieved a good treatment response.

In patients with poor prognostic markers and who are non-responsive to sDMARD combination therapies (containing MTX), it is recommended to use bDMARD in combination with sDMARD. With this combination a good treatment response is achieved for ~60% of patients.

It is also important to take into account that using sDMARD combinations is related to higher risks of adverse events than using bDMARDs in combination with MTX, and although more aggressive treatment brings on treatment response faster, the advantage does not last long term (2 years).

In cost-effectiveness analyses carried out from the health care funder perspective, the incremental cost-effectiveness ratio using bDMARDs compared to sDMARDs is approximately 100 000€/QALY (22 000-300 000€/QALY). Including indirect costs (societal perspective) cost-effectiveness estimates are significantly lower (14 000-24 000€/QALY).

**Conclusions:** According to scientific literature, using more expensive bDMARDs is primarily justified for sDMARDs non-responsive or intolerant patients. There is no clear evidence for how many sDMARDs or their combinations should be used before trying bDMARDs. The important advantage of bDMARDs is their ability to slow joint damage progression, which adds to patients' quality of life. Because of patients' highly individual responses to different drugs, the most important factor in achieving treatment goals is careful patient monitoring.

**Reference:** Liiv K, Otsa K, Kiiwet R-A. Reumatoidartriidi bioloogilise ravi efektiivsus ja kulutõhusus võrreldes sünteetiliste ravimitega. Tartu: Tartu Ülikooli tervishoiu instituut; 2012.