Background: Current guidelines recommend to consider tapering treatment in rheumatoid arthritis (RA) patients who are in sustained remission but the optimal approach to de-escalate conventional synthetic and biological DMARDs (respectively csDMARDs and bDMARDs) remains unknown. The benefits of tapering are a decreased risk of long-term adverse events and a reduction of health care costs, especially when bDMARDs are tapered. However, tapering treatment may lead to more transient or persistent disease flares, which have a direct impact on patients’ lives and societal costs.

Objectives: To evaluate the two-year cost-utility ratio between tapering the csDMARD first followed by the TNF-inhibitor, and tapering the TNF-inhibitor first followed by the csDMARD.

Methods: The TARA trial is a multicenter single-blinded randomized controlled trial. RA patients that used a csDMARD(s) plus a TNF-inhibitor and who had a well-controlled disease for at least 3 months, defined as a DAS≤2.4 and a swollen joint count (SJC)≤1, were included. Patients were randomized into gradual tapering their csDMARD followed by the TNF-inhibitor or vice versa. Medication was tapered in three steps over the course of 6 months. Gradual tapering was done by cutting the dosage into half, a quarter and thereafter it was stopped. Data on QALYs (measured with the Dutch EuroQol [EQ5D]), direct and indirect costs were used to calculate the Incremental Cost Effectiveness Ratio (ICER). The incremental cost-effectiveness ratio (ICER) and the incremental net monetary benefit (INMB) were used to assess cost-effectiveness between both tapering strategies. Direct costs comprises costs for treatment and medical consumption, while indirect costs comprises costs due to loss of productivity (i.e. sick leave and unemployment).

Results: Of the 189 included patients, 94 started tapering their TNF-inhibitor first, while the other 95 tapered their csDMARD first. QALYs (sd) were, respectively, 1.64 (0.22) and 1.65 (0.22). Medication costs were significantly lower in the patients who tapered the csDMARD first, but indirect cost were higher due to more productivity loss. Therefore, total costs per QALY were similar for both tapering strategies (p=0.62). The ICER between tapering csDMARDs and the TNF-inhibitor was €184534 (-€417314, €48245; 95% CI)(figure 1). The mean INMB was €2831 at a willingness-to-pay (WTP) level of €80000. At all WTP levels the probability of being cost-effective was higher (62% vs. 28%) for tapering the csDMARD first than the TNF-inhibitor first (figure 2)

Conclusion: Medication costs are lower when the TNF-inhibitor is tapered first, but this is counterbalanced by higher indirect costs due to loss of productivity. Therefore, overall cost savings are similar for both tapering strategies. However, tapering the TNF-inhibitor first has a higher chance of being cost-effective at all WTP thresholds. For this reason we advise to taper the TNF-inhibitor first when tapering medication is considered.