including new treatments, and integrating health economic considerations is of importance to the decision-making process as it incorporates the societal perspective in the longer run.

Objectives: To compare the cost-effectiveness of the previously evaluated DREAM T2T strategy csDMARD combination therapy (csDMARDs)→ first bDMARD (adalimumab)→ next bDMARD (TNFi/non-TNFi) with the comparable strategy in which baricitinib is placed instead of adalimumab in csDMARDs IR using a Markov model. All analyses were performed from the societal perspective. Costs and effects over five years were compared between the two strategies to provide insight into the differences in economic considerations between treating patients with strategies including either JAK1/JAK2-inhibitor (baricitinib) or 1st bDMARD (adalimumab).

Methods: A Monte Carlo microsimulation model was developed to conduct cost-utility analysis from the societal perspective over 5 years. Health states were based on the DAS28-ESR categories. Effectiveness of baricitinib was retrieved from clinical trials (1) and corrected for differences between RCT and real-world setting. Effectiveness of all other treatments, health state utilities, medical costs, and productivity loss were retrieved from DREAM cohorts (2) and the Dutch Institute for Health. Annual discount rates of 1.5% for utility and 4% for costs were used, as advised in Dutch guidelines. All analyses were run using probabilistic sensitivity analysis (PSA) to incorporate uncertainty around all parameters and assess result robustness.

Results: PSA results showed the baricitinib strategy yielded lower costs and higher utility over a 5-year period and is cost-effective and dominant over the DREAM T2T strategy. Scenario analyses showed the baricitinib strategy to be cost-effective in both the moderate and severe at baseline RA populations analysed together and separately.

Table 1. Probabilistic Sensitivity Analysis Results

	Costs (€) (CI)	Effects (QALY) (CI)	ΔC	ΔE	ICER
DREAM T2T	14288.36 (10104.68-19053.39)	3.5607 (2.4028-4.7236)			
Baricitinib strategy	13430.57 (9475.10-17848.92)	3.5643 (2.4042-4.7315)	-857.79	0.0036	Dominant

CI= 95% Confidence Interval, QALY = Quality-Adjusted Life Year, ΔC = Cost difference, ΔE = Effect Difference, ICER = Incremental Cost-Effectiveness Ratio

Conclusion: Results suggest the use of a JAK1/JAK2-inhibitor (baricitinib) instead of a 1st bDMARD (adalimumab) in a T2T strategy is cost-effective in treating RA patients.

REFERENCES:

- [1] Taylor, P. C., Keystone, E. C., van der Heijde, D., Weinblatt, M. E., del Carmen Morales, L., ... & Arora, V. (2017). Baricitinib versus placebo or adalimumab in rheumatoid arthritis. *New England Journal of Medicine*, 376 (7), 652-662.
- [2] M., Versteeg, G. A., Vonkeman, H. E., Ten Klooster, P. M., Kuper, H. H., ... & van de Laar, M. A. (2016). Initial combination therapy versus step-up therapy in treatment to the target of remission in daily cl. Steunebrink, L. Initial practice in early rheumatoid arthritis patients: results from the DREAM registry. *Arthritis Research & Therapy*, 18(1), 60.

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Primary and secondary fibromyalgia; are they different?

OP0314

LONG TERM TRAJECTORIES OF CHRONIC WIDESPREAD PAIN: A 21-YEAR PROSPECTIVE COHORT LATENT CLASS ANALYSIS

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Background: Chronic widespread pain (CWP) is common (population prevalence of approximately 10%) and has a significant impact on the individual, health-care, and society. Currently little is known about the actual course of CWP over time, in particular the pathways to the development and maintenance of CWP. One useful way to understand these pathways is to identify common clusters of people who share pain trajectories. Such information is clinically useful to identify factors that predict development, persistence, and resolution of CWP.

Objectives: To identify different longitudinal pain trajectories over a period of 21 years.

Methods: A 21-year longitudinal open-population cohort of n=1858 adults (aged 20-74) who completed surveys relating to their pain status in at least three of the five time points 1995, 1998, 2003, 2007, and 2016. Pain status (presence of persistent pain) was ascertained from a report of painful regions (0-18) on a pain mannequin and categorised into: NCP (No chronic pain), CRP (Chronic regional pain) and CWP (chronic widespread pain). Latent Class Growth Analysis (LCGA) was carried out based on these categories. Participants were assigned to a trajectory cluster where the posterior probability was the highest. Model fit was assessed by statistical indices and clinical interpretations of clusters.

Results: LCGA identified five clusters describing different pathways of NCP, CRP and CWP over the 21 years. The cluster "Persistent NCP" was the most common pathway (n = 1052, 57%) representing those with no chronic pain over the whole time period. The "Persistent CRP or Migration from CRP to NCP" cluster included 411 individuals (22%) representing a group with stable or improving regional pain. In the groups who were shown to increase pain status, the "Migration from NCP to CRP or CWP" cluster included 92 individuals (5%), and there were 184 individuals (10%) in the cluster "Migration from CRP to CWP" representing a group with regional pain who developed CWP. The final cluster "Persistent CWP" included 119 individuals (6%) representing those with stable CWP throughout the time period. Figure 1 presents the mean number of pain sites over time by cluster.

Figure 1. Mean pain sites for each cluster for each point in time.

Conclusion: This study showed that whilst half of adults report no chronic pain over 21 years, a substantial proportion develop CWP or have persistent CWP over this time period. Whilst a common trajectory was movement from chronic regional pain to no chronic pain, a pattern of improving CWP was not seen suggesting this is an uncommon trajectory. This is the first study to show long-term trajectories for CWP, and further work is now required to understand factors that may identify individuals at risk of worsening pain status and factors that might promote improvement. These identified pathways of chronic pain over a lifespan improve the understanding of long-term development of chronic pain and chronic widespread pain.

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OP0315

ACHIEVING A LOW DISEASE STATE WITHIN FIRST 3 MONTHS IN EARLY RHEUMATOID ARTHRITIS RESULTS IN LOWER FATIGUE OVER 5 YEARS

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Background: Up to 80% of rheumatoid arthritis patients report clinically relevant fatigue.¹ Fatigue is complex multi-factorial process that can result in adverse affects on patients' physical and emotional well-being.²

Objectives: To examine the relationship between disease activity and fatigue over time in early rheumatoid arthritis (ERA).

Methods: Data were from patients with ERA (symptoms $\leq$ 12 months) enrolled in the Canadian Early Arthritis Cohort (CATCH). CATCH participants completed repeat clinical assessments, laboratory investigations and self-reported questionnaires including rating their fatigue over the past week using a 10 point numerical rating scale (NRS). Fatigue severity was classified as low (≤ 2); moderate (>2 but <5) and high (≥ 5) based on other published RA studies. Bivariate relationships between disease activity measures and fatigue over 5 years of follow-up were estimated using the Pearson correlation coefficient. T-tests and repeated measures anova were used to compare differences in fatigue ratings in patient who did vs. did not achieve a low disease state (DAS28 <3.2) within 3-months of cohort entry.

Results: Of the 1864 patients included, 1640 (88%) met criteria for RA, 1342 (72%) were women and most had moderate-high baseline disease with a mean (SD) DAS28 of 4.9 (1.5). Fatigue was common with 19% reporting moderate and 59% severe fatigue at baseline. Fatigue was positively and strongly correlated with pain and patient global ratings (r 0.56-0.67, $p<0.001$), positively and moderately correlated with DAS28 (r 0.35-0.49, $p<0.001$), and positively but more weakly correlated with tender/swollen joint count, physician global assessment, ESR and CRP (r 0.10-0.39, $p<0.01$) throughout the first year of follow-up. Patients who reported low fatigue severity by three months continued to have significantly lower fatigue throughout follow-up compared to those with moderate or high fatigue ($p<0.001$). Patients who achieved DAS28 REM or LDA within 3-months of cohort entry had significantly lower mean fatigue compared to those with more active disease throughout 5 years of follow-up ($p<0.001$) (Figure 1).

Figure 1. Mean patient fatigue scores based on NRS of 1-10 over subsequent visits, split based on DAS28 score at 3 months.

DAS28: disease activity score in 28 joints; REM: remission; LDA: low disease activity; MDA: moderate disease activity; HDA: high disease activity.

Conclusion: Fatigue is common in ERA and is most strongly correlated with pain and disease activity. Early treatment response within 3-months was associated with short and long-term improvements in fatigue over time. Further longitudinal research examining the time-varying effects of both clinical and psychosocial factors on fatigue is needed.

REFERENCES:

- [1] Pollard, LC., Choy, HE., Gonzalez, J., Khoshaba, B., and Scott, DL. Fatigue in rheumatoid arthritis reflects pain, not disease activity. *Rheumatology*. 2006;45:885-889.
- [2] Nikolaus, S., Bode, C., Taal, E., and Van De Laar, MA. Fatigue and Factors Relating to Fatigue in Rheumatoid Arthritis: A systematic Review. *American College of Rheumatology*. 2013;65:1128-1146.

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Optimizing the access to new treatments for RMD patients

OP0316

COST EFFECTIVE INTERVENTION TO IMPROVE QUALITY OF CARE MEASURES FOR RHEUMATOID ARTHRITIS PATIENTS IN AN UNDERSERVED COMMUNITY

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Background: Quality of care measures for rheumatoid arthritis (RA) have been endorsed by the American College of Rheumatology and the CDC. Similar quality indicators have been studied and recommended by the European League Against Rheumatism. Improving quality metrics in an underserved community is a problem given the lack of resources.

Objectives: To identify quality metrics for RA patients with need for improvement in our underserved urban public hospital, and to establish an effective intervention.

Methods: An initial retrospective chart review established baseline data from patients with RA seen in our clinic (July 2015 - July 2016), they were identified by ICD-9/10 coding. We identified 3 RA measures needing improvement: (a) tuberculosis screening (TBsc) 12 months prior to starting a new biologic agent, b) documentation of clinical disease activity index (CDAI) in $\geq 50\%$ of encounters, c) appropriate pneumococcal vaccination. We then planned an intervention by placing index cards at computer stations to remind providers to check these measures. We collected data on these 3 variables prior to the intervention (December 2016 - July 2017) and 30+ days after (August 2017 - December 2017). We also compared these results by provider type (attending and fellows). For statistical analysis we used Chi-Square test and SPSS 24.

Results: Baseline data included 240 patients, analysis prior to the intervention included 86 patients, and after the intervention included 131 patients. CDAI documentation was improved from 72.1% to 86.3% (Figure 1, $p=0.01$), however when stratifying the analysis by provider type, this improvement was only significant in attendings ($p=0.005$) and not in fellows ($p=0.43$). Further analysis by including only the same fellows in both pre and post intervention moments (some fellows graduated) showed a significant difference in both groups (attendings: $p=0.005$; fellows: $p=0.024$). In terms of TBsc, baseline data showed 73.1% compliance, however we already found a compliance of 100% prior to the intervention (Figure 2, $p=0.002$ when compared with baseline data). Finally, there was no difference in