Treatment Response, Healthcare Resource Use, and Economic Outcomes Associated With Tumor Necrosis Factor Inhibitor Cycling vs Switching to an Advanced Therapy With Different Mechanism of Action in Rheumatoid Arthritis

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OBJECTIVE

To evaluate the 1-year treatment response, concomitant medication use, costs, and healthcare resource utilization associated with TNF inhibitor (TNFi) cycling vs mechanism of action switching among TNFi-experienced patients with RA

CONCLUSIONS

After a first TNFi, patients with RA who switched to upadacitinib had greater rates of treatment response, less glucocorticoid use, fewer outpatient and rheumatologist visits, similar costs, and lower cost per response when compared with patients who cycled TNFi

Compared with cyclers, switchers to other biologic DMARDs, excluding upadacitinib and other JAK inhibitors, had similar rates of treatment response and glucocorticoid use, and more rheumatologist and outpatient visits

The findings illustrate that switching mechanisms of action, including switching to upadacitinib, after a first TNFi may provide incremental clinical and economic value compared with cycling TNFis

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INTRODUCTION

- Patients with RA frequently experience nonresponse or intolerance to initial therapy with TNF inhibitors (TNFi)[1]
- Guidelines conditionally recommend switching to therapies with different mechanisms of action (MoA) over cycling to another TNFi[2]
- It is important to assess the clinical and economic impact of MoA switching, including to more recently approved therapies such as upadacitinib (UPA),[3] vs cycling TNFi in a real-world setting to help clinicians and patients make an effective next choice of treatment

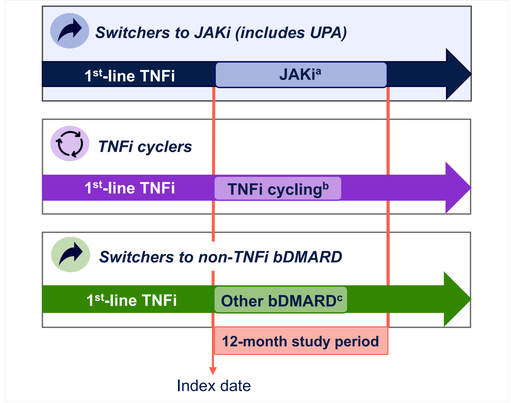
METHODS

- This retrospective study used data from the Merative™ MarketScan® Research Database (August 2018–April 2023)
- Patients ≥ 18 years of age previously treated with a single TNFi who switched to a new RA treatment (ie, index treatment, **Figure 1**) between August 16, 2019 and April 30, 2022, and had ≥ 12 months continuous enrollment pre- and post-index treatment initiation, were included

METHODS CONTINUED

- Patients were excluded if they had a diagnosis of other conditions for which the index treatment or the prior TNFi are indicated
- The following outcomes were assessed at 12 months post-index treatment initiation and compared between TNFi cyclers vs patients who switched to UPA, other JAKi, or other biologic DMARDs (bDMARDs):
  - Treatment response rate based on claims-based algorithm described by Curtis et al[4]
  - Any concomitant glucocorticoid use during follow-up
  - All-cause health care resource utilization, including percent of patients with at least 1 inpatient admission or emergency room (ER) visit and mean number of outpatient and rheumatologist visits
  - All-cause medical (inpatient, ER, and outpatient) costs and total (medical + medication) costs
  - Cost per responder calculated as total costs divided by response rate
- Adjusted odds ratios for binary outcomes, adjusted incidence rate ratios for count outcomes, adjusted costs ratios for cost outcomes, and 95% CI were calculated
- Models were adjusted for age, sex, Charlson Comorbidity Index, and baseline value of the outcome of interest

Figure 1. Study Design



bDMARD, biological DMARD; JAKi, JAK inhibitor; TNFi, TNF inhibitor; UPA, upadacitinib.
[a]JAKi included UPA, tofacitinib, baricitinib.
[b]TNFi included adalimumab, certolizumab pegol, etanercept, golimumab, infliximab.
[c]Other non-TNFi bDMARD included sarilumab, tocilizumab, abatacept, rituximab, anakinra.

RESULTS

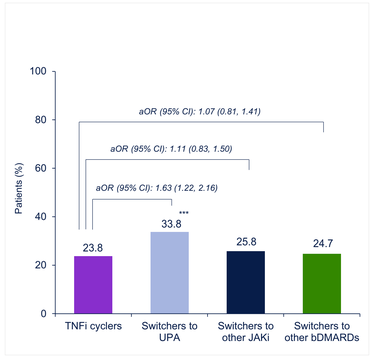
Table 1. Baseline Characteristics

	TNFi cyclers N = 1042	Switchers to UPA N = 289	Switchers to other JAKi N = 303	Switchers to other bDMARDs N = 391	*P*-value
Age, mean ± SD	51.3 ± 11.0	52.7 ± 10.7	52.8 ± 10.8	53.3 ± 12.4	.006
Female, n (%)	824 (79.1)	225 (77.9)	234 (77.2)	307 (78.5)	.904
Region, n (%)					.024
Midwest	218 (24.7)	47 (17.9)	73 (27.0)	96 (28.7)	
Northeast	103 (11.7)	27 (10.3)	38 (14.1)	33 (9.9)	
South	435 (49.2)	153 (58.2)	117 (43.3)	168 (50.3)	
West	128 (14.5)	36 (13.7)	42 (15.6)	37 (11.1)	
Prior use of csDMARDs, n (%)	921 (88.4)	249 (86.2)	266 (87.8)	346 (88.5)	.758
Prior glucocorticoid use, n (%)	985 (94.5)	277 (95.9)	287 (94.7)	382 (97.7)	.076
CCI, mean ± SD	1.5 ± 1.0	1.4 ± 0.9	1.5 ± 1.0	1.8 ± 1.4	< .001

bDMARD, biologic DMARD; CCI, Charlson Comorbidity Index; csDMARD, conventional synthetic DMARD; JAKi, JAK inhibitor; TNFi, TNF inhibitor; UPA, upadacitinib.

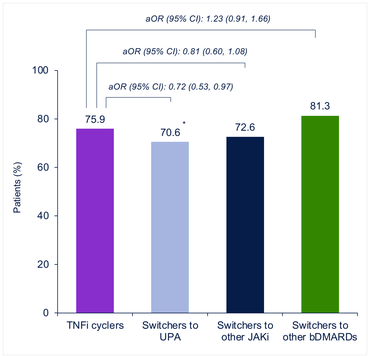
- At baseline, across all groups the most frequently used first-line TNFi was adalimumab (42%–53%) followed by etanercept (30%–40%) and most patients (> 86%) were enrolled in a commercial insurance plan

Figure 2. Treatment Response Rate at 12 Months in TNFi Cyclers vs Switchers to UPA, Other JAKi, and Other bDMARDs



aOR, adjusted odds ratio; bDMARDs, biologic DMARD; JAKi, JAK inhibitor; TNFi, TNF inhibitor; UPA, upadacitinib.
***$P < .001$ vs TNFi cyclers.

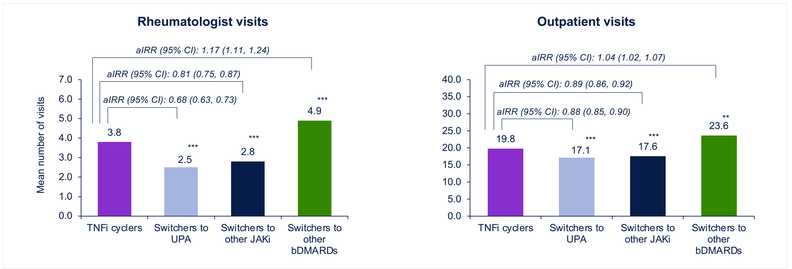
Figure 3. Any Glucocorticoid Use During 12-Month Follow-Up in TNFi Cyclers vs Switchers to UPA, Other JAKi, and Other bDMARDs



aOR, adjusted odds ratio; bDMARDs, biologic DMARD; JAKi, JAK inhibitor; TNFi, TNF inhibitor; UPA, upadacitinib.
*$P < .05$ vs. TNFi cyclers.

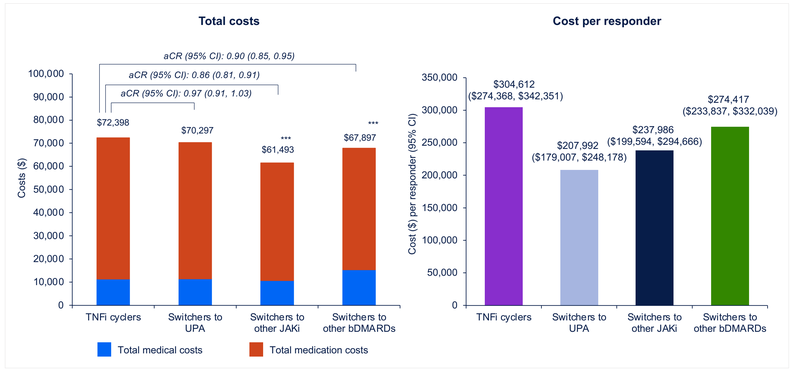
- Additionally, during the 12-month follow-up, the percentage of patients with ≥ 1 inpatient admission or ER visit was similar between patients who cycled TNFi or switched to UPA, other JAKi, or other bDMARDs

Figure 4. Rheumatologist and Outpatient Visits During 12-Month Follow-Up in TNFi Cyclers vs Switchers to UPA, Other JAKi, and Other bDMARDs



aIRR, adjusted incidence rate ratio; bDMARDs, biologic DMARD; ER, emergency room; JAKi, JAK inhibitor; TNFi, TNF inhibitor; UPA, upadacitinib.
**$P < .01$, ***$P < .001$ vs TNFi cyclers.

Figure 5. Total Costs and Cost Per Responder During 12-Month Follow-Up in TNFi Cyclers vs Switchers to UPA, Other JAKi, and Other bDMARDs



aCR, adjusted cost ratio; bDMARDs, biologic DMARD; JAKi, JAK inhibitor; TNFi, TNF inhibitor; UPA, upadacitinib.
***$P < .001$ vs TNFi cyclers.