

## Supplementary materials

**Table S1** Multivariable analysis of predictors for switching again within 6 months post-index

Variable	OR ( $\beta$ )	95% CI	P
Patient cohort (ref = TNFi cyclers)			
Non-TNFi switchers	0.593	0.508–0.693	<0.001
Age group, years (ref = 55–64 years)			
18–34	1.086	0.851–1.386	0.506
35–44	1.074	0.897–1.287	0.438
45–54	1.045	0.902–1.211	0.556
Male (ref = female)	0.999	0.850–1.174	0.987
Plan type (ref = EPO/PPO)			
Comprehensive/indemnity	0.795	0.549–1.150	0.223
HMO	0.966	0.798–1.169	0.720
POS/POS with capitation	0.995	0.799–1.238	0.961
Other	0.861	0.673–1.100	0.231
Missing/unknown plan type	1.079	0.793–1.469	0.629
Index year (ref = 2011)			
2010	0.908	0.764–1.081	0.278
2012	1.224	1.030–1.454	0.022
2013	1.586	1.325–1.898	<0.001
Region (ref = south)			
Northeast	1.014	0.841–1.223	0.885
North Central	0.972	0.821–1.151	0.742
West	1.046	0.881–1.241	0.610
Unknown	0.782	0.404–1.512	0.465
Rural (ref = urban)	0.970	0.816–1.153	0.730
DCCI	0.977	0.902–1.058	0.568
Hydroxychloroquine pre-index	0.906	0.777–1.055	0.205
Leflunomide pre-index	1.112	0.941–1.313	0.213
Methotrexate pre-index	0.814	0.716–0.925	0.002
Sulfasalazine pre-index	1.025	0.811–1.297	0.834
Greater than or equal to one targeted DMARD type pre-index <sup>a</sup>	0.903	0.700–1.165	0.432
Total expenditure pre-index/US\$1,000	1.001	0.998–1.004	0.481
RA-related total expenditure pre-index/US\$1,000	1.000	0.992–1.007	0.960
Office visit count pre-index	0.998	0.978–1.018	0.852
PDC for RA medications pre-index	1.363	1.004–1.851	0.047
Observations	6,945		
C-statistic	0.594		

Variable	OR ( $\beta$ )	95% CI	P
Pseudo <i>R</i> -squared	0.0170		

**Note:** <sup>a</sup>The number of unique types of targeted DMARDs (reference, one type of targeted DMARD) that used all available claims at any time pre-index; all other pre-index variables were based on the 12-month pre-index period.

**Abbreviations:** CI, confidence interval; DCCI, Deyo–Charlson Comorbidity Index; DMARD, disease-modifying antirheumatic drug; EPO, exclusive provider organization; HMO, health maintenance organization; OR, odds ratio; PDC, proportion of days covered; POS, point of service; PPO, preferred provider organization; RA, rheumatoid arthritis; ref, reference; TNFi, tumor necrosis factor inhibitor.

**Table S2** Multivariable analysis of predictors for switching again within 12 months post-index

Variable	OR ( $\beta$ )	95% CI	P
Patient cohort (ref = TNFi cyclers)			
Non-TNFi switchers	0.762	0.677–0.858	<0.001
Age group, years (ref = 55–64 years)			
18–34	0.968	0.792–1.184	0.755
35–44	1.124	0.971–1.301	0.118
45–54	1.088	0.966–1.225	0.163
Male (ref = female)	0.944	0.828–1.077	0.392
Plan type (ref = EPO/PPO)			
Comprehensive/indemnity	0.934	0.706–1.236	0.633
HMO	0.971	0.832–1.132	0.706
POS/POS with capitation	0.910	0.760–1.090	0.306
Other	0.843	0.692–1.027	0.089
Missing/unknown plan type	0.881	0.683–1.136	0.329
Index year (ref = 2011)			
2010	0.895	0.781–1.026	0.110
2012	1.083	0.943–1.244	0.258
2013	1.306	1.126–1.515	<0.001
Region (ref = south)			
Northeast	0.999	0.858–1.163	0.991
North Central	0.893	0.779–1.023	0.104
West	0.989	0.860–1.137	0.878
Unknown	0.940	0.568–1.559	0.812
Rural (ref = urban)	1.014	0.883–1.166	0.839
DCCI	0.992	0.931–1.057	0.812
Hydroxychloroquine pre-index	0.950	0.841–1.073	0.407
Leflunomide pre-index	1.172	1.023–1.343	0.022
Methotrexate pre-index	0.950	0.856–1.054	0.330
Sulfasalazine pre-index	1.164	0.965–1.404	0.112
Greater than or equal to one type of targeted DMARD pre-index <sup>a</sup>	0.886	0.727–1.081	0.235
Total expenditure pre-index/US\$1,000	1.000	0.998–1.003	0.859
RA-related total expenditure pre-index/US\$1,000	1.004	0.998–1.010	0.242
Office visit count pre-index	1.004	0.988–1.020	0.649
PDC for RA medications pre-index	1.185	0.925–1.519	0.179
Observations	6,945		
C-statistic	0.563		

Variable	OR ( $\beta$ )	95% CI	P
Pseudo <i>R</i> -squared	0.00873		

**Note:** <sup>a</sup>The number of unique types of targeted DMARDs (reference, one type of targeted DMARD) that used all available claims at any time pre-index; all other pre-index variables were based on the 12-month pre-index period.

**Abbreviations:** CI, confidence interval; DCCI, Deyo–Charlson Comorbidity Index; DMARD, disease-modifying antirheumatic drug; EPO, exclusive provider organization; HMO, health maintenance organization; OR, odds ratio; PDC, proportion of days covered; POS, point of service; PPO, preferred provider organization; RA, rheumatoid arthritis; ref, reference; TNFi, tumor necrosis factor inhibitor.

**Table S3** Multivariable analysis of predictors for treatment persistence for 12 months post-index

Variable	OR ( $\beta$ )	95% CI	P
Patient cohort (ref = TNFi cyclers)			
Non-TNFi switchers	1.206	1.078–1.349	0.001
Age group, years (ref = 55–64 years)			
18–34	0.900	0.745–1.087	0.275
35–44	0.897	0.779–1.032	0.129
45–54	0.921	0.822–1.032	0.156
Male (ref = female)	1.095	0.965–1.242	0.160
Plan type (ref = EPO/PPO)			
Comprehensive/indemnity	1.170	0.894–1.533	0.253
HMO	0.962	0.830–1.114	0.602
POS/POS with capitation	1.092	0.920–1.297	0.316
Other	1.111	0.922–1.339	0.267
Missing/unknown plan type	1.210	0.949–1.542	0.124
Index year (ref = 2011)			
2010	1.111	0.976–1.265	0.111
2012	0.949	0.831–1.083	0.436
2013	0.776	0.672–0.895	0.001
Region (ref = south)			
Northeast	0.957	0.827–1.106	0.550
North Central	1.166	1.023–1.328	0.021
West	1.045	0.914–1.194	0.523
Unknown	0.984	0.608–1.592	0.947
Rural (ref = urban)			
DCCI	0.984	0.926–1.045	0.597
Hydroxychloroquine pre-index	1.072	0.954–1.205	0.241
Leflunomide pre-index	0.908	0.796–1.036	0.151
Methotrexate pre-index	1.068	0.967–1.179	0.197
Sulfasalazine pre-index	0.945	0.788–1.133	0.542
Greater than or equal to one type of targeted DMARD pre-index <sup>a</sup>	1.030	0.855–1.242	0.753
Total expenditure pre-index/US\$1,000	1.000	0.997–1.002	0.777
RA-related total expenditure pre-index/US\$1,000	0.996	0.990–1.002	0.214
Office visit count pre-index	1.006	0.991–1.022	0.413
PDC for RA medications pre-index	1.267	0.997–1.609	0.053
Observations	6,945		
C-statistic	0.558		

Variable	OR ( $\beta$ )	95% CI	P
Pseudo <i>R</i> -squared	0.00719		

**Note:** <sup>a</sup>The number of unique types of targeted DMARDs (reference, one type of targeted DMARD) that used all available claims at any time pre-index; all other pre-index variables were based on the 12-month pre-index period.

**Abbreviations:** CI, confidence interval; DCCI, Deyo–Charlson Comorbidity Index; DMARD, disease-modifying antirheumatic drug; EPO, exclusive provider organization; HMO, health maintenance organization; OR, odds ratio; PDC, proportion of days covered; POS, point of service; PPO, preferred provider organization; RA, rheumatoid arthritis; ref, reference; TNFi, tumor necrosis factor inhibitor.

**Table S4** Multivariable analysis of predictors for treatment effectiveness

Variable	OR ( $\beta$ )	95% CI	P
Patient cohort (ref = TNFi cyclers)			
Non-TNFi switchers	1.195	1.053–1.355	0.006
Age group, years (ref = 55–64 years)			
18–34	0.786	0.627–0.985	0.037
35–44	0.814	0.690–0.959	0.014
45–54	0.930	0.818–1.058	0.272
Male (ref = female)	1.261	1.098–1.449	0.001
Plan type (ref = EPO/PPO)			
Comprehensive/indemnity	1.054	0.788–1.408	0.724
HMO	0.974	0.820–1.156	0.759
POS/POS with capitation	1.057	0.870–1.285	0.574
Other	1.172	0.953–1.443	0.131
Missing/unknown plan type	1.001	0.760–1.319	0.992
Index year (ref = 2011)			
2010	0.988	0.853–1.144	0.873
2012	0.968	0.831–1.126	0.672
2013	0.821	0.694–0.972	0.022
Region (ref = south)			
Northeast	0.981	0.827–1.164	0.828
North Central	1.167	1.009–1.350	0.038
West	1.070	0.917–1.248	0.392
Unknown	0.923	0.513–1.656	0.786
Rural (ref = urban)	1.009	0.866–1.176	0.907
DCCI	0.929	0.864–1.001	0.052
Hydroxychloroquine pre-index	1.068	0.935–1.221	0.333
Leflunomide pre-index	1.057	0.907–1.232	0.477
Methotrexate pre-index	1.370	1.221–1.538	<0.001
Sulfasalazine pre-index	1.010	0.817–1.250	0.923
Greater than or equal to one type of targeted DMARD pre-	0.946	0.766–1.168	0.606
Total expenditure pre-index/US\$1,000	0.995	0.992–0.999	0.015
RA-related total expenditure pre-index/US\$1,000	1.009	1.002–1.016	0.009
Office visit count pre-index	0.978	0.960–0.995	0.013
PDC for RA medications pre-index	2.227	1.701–2.915	<0.001
Constant	0.202	0.156–0.261	<0.001
Observations	6,945		
C-statistic	0.607		
Pseudo R-squared	0.0233		

**Note:** <sup>a</sup>The number of unique types of targeted DMARDs (reference, one type of targeted DMARD) that used all available claims at any time pre- index; all other pre-index variables were based on the 12-month pre-index period.

**Abbreviations:** CI, confidence interval; DCCI, Deyo–Charlson Comorbidity Index; DMARD, disease-modifying antirheumatic drug; EPO, exclusive provider organization; HMO, health maintenance organization; OR, odds ratio; PDC, proportion of days covered; POS, point of service; PPO, preferred provider organization; RA, rheumatoid arthritis; ref, reference; TNFi, tumor necrosis factor inhibitor.