

Supplementary Information

The following tables are provided as supplementary material.

Table S1 Primary analyses: Type II ANOVA results for parsimonious models.

Effect	DAS28-CRP		DAS28-ESR		HAQ	
	<i>F</i>	<i>p</i>	<i>F</i>	<i>p</i>	<i>F</i>	<i>p</i>
Visit	2.89	0.060	1.90	0.153	0.80	0.453
Drug class	8.34	0.005*	5.65	0.021*	7.72	0.007*
Smoking	2.17	0.123	0.45	0.641	5.98	0.004*
Corticosteroid use	3.38	0.072	2.13	0.150	1.09	0.301
Visit $\times$ Drug	1.82	0.167	0.76	0.470	1.04	0.358

Asterisks denote $p < 0.05$

Table S2 Primary Analysis: Fixed effects coefficients for parsimonious model predicting DAS28-CRP ($R^2_{\text{marginal}} = 0.166$; $R^2_{\text{conditional}} = 0.510$).

Effect	Est.	SE	df	<i>t</i>	<i>p</i>
Intercept	2.598	0.238	26.5	10.93	<0.001
Visit 2	−0.022	0.192	120.0	−0.11	0.909
Visit 3	0.494	0.192	120.0	2.58	0.011
Drug (TNFi)	−0.453	0.255	124.9	−1.78	0.078
Smoking (former)	0.455	0.231	56.8	1.97	0.054
Smoking (current)	0.321	0.331	56.5	0.97	0.337
Corticosteroid use (Yes)	0.410	0.223	52.7	1.84	0.072
V2 $\times$ TNFi	0.040	0.271	120.0	0.15	0.883
V3 $\times$ TNFi	−0.426	0.271	120.0	−1.57	0.119

Table S3 Primary Analysis: Fixed effects coefficients for parsimonious model predicting DAS28-ESR ($R^2_{\text{marginal}} = 0.103$; $R^2_{\text{conditional}} = 0.547$).

Effect	Est.	SE	df	<i>t</i>	<i>p</i>
Intercept	2.993	0.361	17.4	8.29	<0.001
Visit 2	−0.040	0.239	120.0	−0.17	0.868
Visit 3	0.430	0.239	120.0	1.80	0.074
Drug (TNFi)	−0.450	0.325	118.1	−1.39	0.168
Smoking (former)	0.191	0.297	55.0	0.65	0.521
Smoking (current)	0.326	0.422	53.5	0.77	0.444
Corticosteroid use (Yes)	0.430	0.295	57.0	1.46	0.150
V2 $\times$ TNFi	−0.099	0.338	120.0	−0.29	0.771
V3 $\times$ TNFi	−0.400	0.338	120.0	−1.18	0.239

Table S4 Primary Analysis: Fixed effects coefficients for parsimonious model predicting HAQ ($R^2_{\text{marginal}} = 0.178$; $R^2_{\text{conditional}} = 0.662$).

Effect	Est.	SE	df	<i>t</i>	<i>p</i>
Intercept	0.924	0.150	18.6	6.15	<0.001
Visit 2	−0.097	0.093	120.0	−1.04	0.301
Visit 3	−0.060	0.093	120.0	−0.65	0.517
Drug (TNFi)	−0.443	0.146	99.8	−3.03	0.003
Smoking (former)	0.491	0.143	56.1	3.42	0.001
Smoking (current)	−0.001	0.205	55.3	−0.00	0.997
Corticosteroid use (Yes)	0.146	0.140	55.4	1.04	0.301
V2 × TNFi	0.097	0.132	120.0	0.74	0.464
V3 × TNFi	0.190	0.132	120.0	1.44	0.153

Table S5 Variance components for the primary models.

Model	$\sigma^2_{\text{Patient:Hospital}}$	$\sigma^2_{\text{Hospital}}$	$\sigma^2_{\text{Residual}}$
DAS28-CRP	0.355	0.045	0.570
DAS28-ESR	0.565	0.303	0.884
HAQ	0.161	0.032	0.134

Table S6 Secondary analyses: Type II ANOVA results for parsimonious models.

Effect	SDAI		CDAI		RADAI	
	<i>F</i>	<i>p</i>	<i>F</i>	<i>p</i>	<i>F</i>	<i>p</i>
Visit	2.19	0.116	2.10	0.127	0.72	0.489
Drug class	7.39	0.009*	8.39	0.005*	2.07	0.156
Smoking	0.26	0.772	0.09	0.912	0.84	0.438
Corticosteroid use	9.59	0.003*	13.91	<0.001*	7.24	0.009*
Visit × Drug	1.92	0.151	1.63	0.201	0.23	0.793

Asterisks denote $p < 0.05$.

Table S7 Secondary analyses: Fixed effects coefficients for parsimonious model predicting SDAI ($R^2_{\text{marginal}} = 0.182$; $R^2_{\text{conditional}} = 0.449$).

Effect	Est.	SE	df	<i>t</i>	<i>p</i>
Intercept	8.817	2.076	25.7	4.25	<0.001
Visit 2	0.113	1.696	120.0	0.07	0.947
Visit 3	4.254	1.696	120.0	2.51	0.013
Drug (TNFi)	−2.459	2.034	144.3	−1.21	0.229
Smoking (former)	0.686	1.704	55.7	0.40	0.689
Smoking (current)	1.567	2.428	54.6	0.65	0.521
Corticosteroid use (Yes)	5.218	1.685	56.9	3.10	0.003
V2 × TNFi	−0.481	2.399	120.0	−0.20	0.841
V3 × TNFi	−4.292	2.399	120.0	−1.79	0.076

Table S8 Secondary analyses: Fixed effects coefficients for parsimonious model predicting CDAI ($R^2_{\text{marginal}} = 0.201$; $R^2_{\text{conditional}} = 0.431$).

Effect	Est.	SE	df	t	p
Intercept	8.109	2.051	23.8	3.95	<0.001
Visit 2	0.097	1.704	120.0	0.06	0.955
Visit 3	4.059	1.704	120.0	2.38	0.019
Drug (TNFi)	-2.480	1.951	153.5	-1.27	0.206
Smoking (former)	0.394	1.564	55.1	0.25	0.802
Smoking (current)	0.839	2.224	53.8	0.38	0.707
Corticosteroid use (Yes)	5.805	1.557	57.0	3.73	<0.001
V2 $\times$ TNFi	-0.466	2.410	120.0	-0.19	0.847
V3 $\times$ TNFi	-3.978	2.410	120.0	-1.65	0.101

Table S9 Secondary analyses: Fixed effects coefficients for parsimonious model predicting RDAI ($R^2_{\text{marginal}} = 0.110$; $R^2_{\text{conditional}} = 0.557$).

Effect	Est.	SE	df	t	p
Intercept	2.404	0.530	18.4	4.54	<0.001
Visit 2	0.171	0.349	120.0	0.49	0.625
Visit 3	0.194	0.349	120.0	0.56	0.580
Drug (TNFi)	-0.570	0.478	117.0	-1.19	0.235
Smoking (former)	0.533	0.439	55.1	1.21	0.230
Smoking (current)	0.378	0.624	53.8	0.61	0.547
Corticosteroid use (Yes)	1.171	0.435	57.0	2.69	0.009
V2 $\times$ TNFi	-0.139	0.493	120.0	-0.28	0.778
V3 $\times$ TNFi	0.196	0.493	120.0	0.40	0.692

Table S10 Residual diagnostics for the parsimonious models.

Score	Shapiro W	Shapiro p	Skewness	Kurtosis	$r(\varepsilon , \hat{y})$
DAS28-CRP	0.984	0.031	0.490	0.809	0.257
DAS28-ESR	0.994	0.658	0.051	-0.062	0.039
SDAI	0.938	<0.001	1.055	1.949	0.457
CDAI	0.930	<0.001	1.131	2.080	0.425
RDAI	0.992	0.409	0.285	0.357	0.039
HAQ	0.980	0.008	0.467	0.947	0.175

$r(|\varepsilon|, \hat{y})$: Pearson correlation between absolute residuals and fitted values (heteroscedasticity index).

Table S11 Model comparison: Full vs. Parsimonious models.

Score	AIC Full	AIC Pars.	BIC Full	BIC Pars.	LRT p
DAS28-CRP	511.0	506.5	572.3	545.2	0.215
DAS28-ESR	600.0	594.5	661.3	633.3	0.287
SDAI	1303.2	1296.8	1364.5	1335.5	0.370
CDAI	1296.0	1288.3	1357.3	1327.0	0.505
RDAI	744.0	736.6	805.3	775.3	0.468
HAQ	274.0	268.7	335.3	307.4	0.276