Table 1: Model Validation by Initial Set of Predictor Variables

Variable Sets			All Clinical Predictors	All Predictors	Pre-screening
Potential Predictors			253	1275	279
Potential Predictors with ≥ 1% prevalence (i.e., predictors put in model)			175	567	230
Predictors in final model			32	45	46
5-fold cross-validated R-Square (test)			0.237	0.243	0.246
5-fold cross-validated Adj. R-Square (test)			0.221	0.221	0.223
<5 years of RA disease Adj. R-Square (test)			0.218	0.190	0.196
≥5 years of RA disease Adj. R-Square (test)			0.186	0.185	0.185
Classification Accuracy					
4 Categories	High	TPR	11%	10%	11%
	(>5.1)	PPV	58%	62%	63%
	Moderate	TPR	85%	88%	87%
	(3.2-5.1)	PPV	43%	43%	43%
	Low	TPR	20%	18%	18%
	(2.6-3.1)	PPV	22%	21%	21%
	Remission	TPR	0.3%	0%	0%
	(<2.6)	PPV	100%	0%	0%
	CCR (95% C.I.)		40% (38%-42%)	41% (38%-43%)	41 % (38%-43%)

CCR = Correct Classification Rate
TPR = True Positive Rate
PPV = Positive Predictive Value

Disclosure: B. Sauer, Amgen, 2; **C. C. Teng**, Amgen, 2; **N. Accortt**, Amgen, 3,Amgen, 1; **Z. Burningham**, Amgen, 2; **D. Collier**, Amgen, 3,Amgen, 1; **M. Trivedi**, Amgen, 3,Amgen, 1; **G. W. Cannon**, Amgen, 2.

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Abstract Number: 2231

Change in Health Care Utilization after Etanercept Initiation in Patients with Rheumatoid Arthritis

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Background/Purpose: Patients with rheumatoid arthritis (RA) have higher healthcare utilization (HCU) and costs than patients without RA[1]. Evidence is mixed as to the impact of biologic treatment on HCU. The purpose of this study was to evaluate HCU before and after etanercept (ETN) initiation.

Methods: We conducted a retrospective cohort study using claims data. Adult RA patients newly exposed to ETN from January 1, 2010 through December 31, 2013 were included. Patients were required to have at least 1 inpatient or outpatient claim for RA (ICD-9-CM 714.0) in the primary position, and at least 1 ETN medication claim; the earliest ETN claim served as index date. Patients were excluded if they had exposure to a biologic DMARD or had a claim for psoriasis, psoriatic arthritis, ankylosing spondylitis, or juvenile idiopathic arthritis. The proportion of days covered (PDC) was calculated and used as a measure of ETN compliance. The primary outcome was the change in HCU (both overall and RA-related) in the year before and after ETN initiation. McNemar's test and paired t-test were used to determine statistical significance for dichotomous and continuous variables, respectively. To compare the HCU across ETN compliance groups, F-test and Chi-square test were used for categorical and continuous variables, respectively.

Results: We identified 6,737 ETN initiators. The mean age was 49.8 years and 77.3% were female. Frequency of medication use for oral corticosteroids, opioid analgesics, NSAIDS and NB-DMARDS decreased significantly from the pre-index to post-index period (Table 1). There was a significant decrease in overall outpatient services, ED visits and hospitalizations from the pre-index to post-index period (data not shown). In the post-index period, there was a statistically significant decrease in HCU factors with increasing ETN compliance (Table 2).

Conclusion: Health care utilization, including medication use, outpatient services and inpatient admissions decreased after ETN initiation. Patients who were the most compliant with their medication experienced significantly lower utilization than non-compliant patients. The reduction in HCU is consistent with a reduction in disease activity as shown in clinical trials of ETN.[2]

1. Michet CJ, et al. Hospitalization Rates and Utilization Among Patients With Rheumatoid Arthritis: A Population-Based Study From 1987 to 2012 in Olmsted County, Minnesota. Mayo Clinic Proceedings. 2015;90:176–183.

2. Moreland LW, et al. Etanercept therapy in rheumatoid arthritis: a randomized, controlled trial. Annals of internal medicine. 1999 Mar 16;130(6):478-86.

Table 1. Pre- and Post-Index Comparison of the use Pharmacologic Treatments for RA

	Pre-index	Post-index	*P-Value*
Medication Use			
NB DMARDs use (n, %)	5,865 (87.1)	5,330 (79.1)	<.001
No. of NB DMARDs use (mean ± SD)	1.3 ± 0.8	1.1 ± 0.7	<.001
Oral corticosteroids (n, %)	4,756 (70.6)	3,817 (56.7)	<.001
Oral opioid analgesics (n, %)	3,695 (54.8)	3,515 (52.2)	<.001
Oral NSAIDs (n, %)	3,421 (50.8)	2,654 (39.4)	<.001

Table 2. Overall and RA-Related Health Service Utilization by Etanercept Compliance

	Pre-index	Post-Index			
		ETN Proportion Days of Covered			
		0-39%	40-79%	80-100%	*P*-Value[a]
	N=6,737	N = 1,899; 28.2%	N = 1,826; 27.1%	N = 3,012; 44.7%	
Overall Utilization					
No. of outpatient services (mean ± SD)	22.0 ± 17.0	24.4 ± 18.8	22.3 ± 17.7	18.9 ± 14.5	<.001
No. of office visits (mean ± SD)	17.1 ± 14.0	17.7 ± 13.9	17.1 ± 13.7	14.7 ± 12.1	<.001
No. of outpatient hospital services (mean ± SD)	4.5 ± 6.4	5.1 ± 7.8	4.1 ± 5.6	3.5 ± 5.5	<.001
No. of lab visits (mean ± SD)	2.5 ± 3.4	2.6 ± 3.6	2.4 ± 3.2	2.2 ± 3.0	<.001
Any ED visits (n, %)	1,439 (21.4)	492(25.9)	390 (21.4)	425 (14.1)	<.001
Any inpatient admissions (n, %)	674 (10.0)	257 (13.5)	217 (11.9)	193 (6.4)	<.001
RA-related utilization					
No. of RA-related outpatient services[b] (mean ± SD)	5.9 ± 4.9	7.4 ± 6.3	6.8 ± 5.3	6.4 ± 4.8	<.001
No. of RA-related office visits[b] (mean ± SD)	4.8 ± 4.3	5.5 ± 4.5	5.5 ± 4.3	5.1 ± 4.0	0.002
No. of diagnostic lab tests[c] (mean ± SD)	4.3 ± 2.9	4.1 ± 3.3	4.1 ± 3.0	4.0 ± 2.6	0.398
No. of diagnostic imaging studies[d] (mean ± SD)	2.6 ± 2.5	2.4 ± 3.0	2.1 ± 2.5	1.6 ± 2.0	<.001
Total joint arthroplasty[b], joint reconstruction, or soft tissue procedures (n, %)	264 (3.9)	81 (4.3)	91 (5.0)	98 (3.3)	0.010

[a] For comparisons among categories of Etanercept Compliance
[b] Claims with RA diagnosis in any diagnosis field
[c] Including complete blood cell (CBC), erythrocyte sedimentation rate test (ESR), C-reactive protein (CRP), rheumatoid factor (RF), anti-cyclic citrullinated peptide antibodies (anti-CCP), anti-MCV antibodies, and multi-biomarker disease activity (MDBA) test
[d] Including plain film X-rays, CT scans, MRI, and ultrasonography

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Abstract Number: 2232

Above-Label Dosing with Biologics in Treatment-NaïVe and Treatment-Experienced Patients with Moderate-to-Severe Psoriatic Arthritis

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