SUPPLEMENTARY MATERIALS

Predictors of flare-related inpatient or emergency department stay in systemic lupus erythematosus: A real-world analysis of Medicaid claims in the United States

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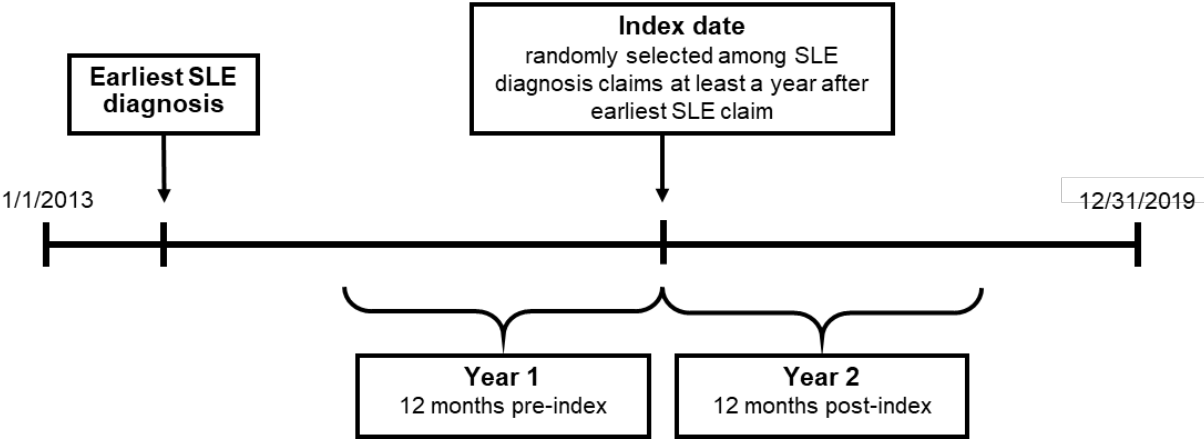
Supplemental Figure 1. Study Period Diagram

Supplemental Table 1. SLE-related conditions

Acute confusional state/psychosis	Lupus enteritis/colitis
Acute pancreatitis	Lymph node enlargement
Aortitis	Mononeuropathy/polyneuropathy
Arterial/venous thrombosis	Myalgia/myositis
Arthritis/arthralgia	Myelopathy
Aseptic meningitis	Myocarditis
Cardiac tamponade	Nephritis
Chorioretinitis	Optic neuritis
Cranial neuropathy	Pericarditis
Demyelinating syndrome/acute inflammatory demyelinating polyradiculoneuropathy	Pleurisy/pleural effusion
Dry eye/tear film insufficiency	Pseudotumor cerebri
End stage renal disease	Pulmonary hemorrhage
Episcleritis/scleritis	Rash
Hemolytic anemia	Renal impairment
Hepatitis	Seizure
Intestinal pesudo-obstruction	Stroke/TIA
Ischemic necrosis of bone	Uveitis vasculitis
Low white blood cell count	

Supplemental Table 2. Full logistic model results

Predictor	OR (95% CI)	p-value
Intercept	**0.13 (0.10 - 0.17)**	**<0.001**
Age (per year increase)	**0.99 (0.98 - 0.99)**	**<0.001**
Sex - Male vs. Female	0.85 (0.69 - 1.05)	0.123
Race - Black vs. White	**1.49 (1.32 - 1.68)**	**<0.001**
Race - Other vs. White	1.13 (0.97 - 1.33)	0.125
Population Density - Rural vs. Urban/Unknown	0.98 (0.87 - 1.11)	0.751
Insurance Plan Type - Comprehensive/Indemnity vs. HMO	1.08 (0.95 - 1.22)	0.246
Insurance Plan Type - Other vs. HMO	0.44 (0.14 - 1.43)	0.175
Cancer	0.96 (0.73 - 1.27)	0.782
Chronic pulmonary disease	**1.17 (1.04 - 1.31)**	**0.010**
Coagulopathy	0.95 (0.73 - 1.23)	0.677
Congestive heart failure	0.95 (0.77 - 1.18)	0.666
Deficiency anemia	1.13 (1.00 - 1.28)	0.054
Depression	**1.24 (1.10 - 1.40)**	**<0.001**
Diabetes	0.88 (0.77 - 1.02)	0.084
Drug abuse	**1.22 (1.05 - 1.43)**	**0.010**
Fluid and electrolyte disorders	**1.26 (1.10 - 1.45)**	**0.001**
Hypertension	**1.25 (1.09 - 1.43)**	**0.001**
Hypothyroidism	0.95 (0.81 - 1.11)	0.482
Liver disease	0.97 (0.77 - 1.22)	0.766
Obesity	1.00 (0.89 - 1.13)	0.970
Other neurological disorders	**1.63 (1.43 - 1.87)**	**<0.001**
Peripheral vascular disorders	**1.32 (1.06 - 1.66)**	**0.013**
Chronic Kidney Disease or Renal Failure	**1.35 (1.10 - 1.66)**	**0.004**
Anxiety	1.07 (0.95 - 1.20)	0.292
Atherosclerosis	1.04 (0.83 - 1.30)	0.735
Cerebrovascular disease, stroke, or TIA	1.01 (0.84 - 1.21)	0.912
Endocarditis	1.18 (0.99 - 1.41)	0.066
Myocardial infarction	1.27 (0.95 - 1.70)	0.109
Pericarditis	1.14 (0.82 - 1.58)	0.425
Fibromyalgia	**1.14 (1.01 - 1.28)**	**0.039**
Fractures	1.16 (0.94 - 1.43)	0.162
Kidney Transplant	1.64 (0.87 - 3.09)	0.128
Lupus Nephritis	1.01 (0.82 - 1.24)	0.926
Osteoarthritis	1.10 (0.97 - 1.24)	0.158
Osteoporosis	0.93 (0.74 - 1.17)	0.559
Pleurisy/Pleural Effusion	1.05 (0.83 - 1.32)	0.708
Raynaud's Disease	0.95 (0.77 - 1.17)	0.629
Thrombocytopenia	1.10 (0.81 - 1.50)	0.532
Antidepressants	1.01 (0.89 - 1.14)	0.884
Antihypertensives	**0.87 (0.77 - 1.00)**	**0.044**
Opioids	**1.30 (1.17 - 1.45)**	**<0.001**
Number of flares (per number increase)	**1.19 (1.15 - 1.22)**	**<0.001**
SLE-treatment progression: Antimalarial only vs. none	**0.68 (0.60 - 0.78)**	**<0.001**
SLE-treatment progression: Immunosuppressant vs. none	**0.59 (0.51 - 0.68)**	**<0.001**
SLE-treatment progression: Biologic vs. none	**0.54 (0.42 - 0.70)**	**<0.001**
Cumulative oral corticosteroid dosage (per 100mg increase)	1.00 (1.00 - 1.01)	0.071
Any systemic corticosteroid	1.12 (1.01 - 1.25)	0.039
Any inpatient admission	**1.26 (1.10 - 1.43)**	**0.001**
Any ER visit	**2.19 (1.93 - 2.49)**	**0.000**
Total healthcare costs (per 10% increase)	1.00 (1.00 - 1.00)	0.913

Supplemental Table 3. All demographics and Year 1 characteristics

	All Patients N = 8,083	
Demographic Characteristics[1]		
Age (Mean, SD)	40.9	12.3
Median	40.0	N/A
Sex (N, %)		
Male	546	6.8
Female	7,537	93.3
Race (N, %)		
White	3,097	38.3
Black	3,794	46.9
Other	1,192	14.7
Urbanicity (N, %)		
Urban	6,312	78.1
Rural	1,771	21.9
Insurance plan type (N, %)		
Comprehensive/indemnity	3,279	40.6
HMO	4,783	59.2
Other	21	0.3
Clinical Characteristics[2]		
ECI Conditions (N,%)		
AIDS/HIV	42	0.5
Alcohol abuse	294	3.6
Blood loss anemia	241	3.0
Chronic pulmonary disease	1,937	24.0
Coagulopathy	760	9.4
Congestive heart failure	545	6.7
Deficiency anemia	2,106	26.1

Depression	2,809	34.8
Diabetes, complicated	707	8.7
Diabetes, uncomplicated	668	8.3
Drug abuse	985	12.2
Fluid and electrolyte disorders	1,627	20.1
Hypertension, complicated	1,004	12.4
Hypertension, uncomplicated	3,221	39.8
Hypothyroidism	977	12.1
Liver disease	385	4.8
Lymphoma	43	0.5
Metastatic cancer	34	0.4
Obesity	1,982	24.5
Other neurological disorders	1,387	17.2
Paralysis	204	2.5
Peptic ulcer disease, excluding bleeding	101	1.2
Peripheral vascular disorders	466	5.8
Psychoses	1,443	17.9
Pulmonary circulation disorders	297	3.7
Renal failure	840	10.4
Rheumatoid arthritis/collagen vascular diseases	7,325	90.6
Solid tumour without metastasis	201	2.5
Valvular disease	729	9.0
Weight loss	444	5.5
SLE-Related Comorbidities (N, %)[4]		
Anxiety	2,816	34.8
Atherosclerosis	546	6.8
Cerebrovascular disease[5]	719	8.9
Stroke/TIA	521	6.4
Endocarditis	774	9.6

Myocardial infarction	283	3.5
Pericarditis	206	2.5
Chronic Kidney Disease	1,093	13.5
Fibromyalgia	2,040	25.2
Fractures	455	5.6
Kidney Transplant	50	0.6
Lupus Nephritis	1,207	14.9
Osteoarthritis	1,916	23.7
Osteoporosis	440	5.4
Pleurisy/Pleural Effusion	396	4.9
Raynaud's Disease	495	6.1
Thrombocytopenia	500	6.2
Number of flares (Mean, SD)	3.9	2.0
Treatment Characteristics[2]		
SLE treatments (N, %)		
Antimalarials	4,460	55.2
Biologics	397	4.9
Immunosuppressants	2,609	32.3
Systemic corticosteroids	2,907	36.0
Cumulative OCS dose[6] in 100 mg (Mean, SD)	9.15	17.32
Most advanced SLE treatments (N, %)		
No antimalarial, immunosuppressant, or biologic use	2,905	35.9
Antimalarial (without immunosuppressant or biologic)	2,454	30.4
Immunosuppressant (without biologic use)	2,327	28.8
Biologic	397	4.9
Concomitant medications (N, %)		
Antidepressants	4,220	52.2
Antihypertensives	4,539	56.2
Opioids	4,148	51.3

All-cause healthcare utilization and costs[2]		
Patients with an IP admission (N, %)	2,128	26.3
Patients with an ER visit (N, %)	5,649	69.9
Total healthcare costs (Mean, SD)	$19,996	$59,337

CDHP: consumer-driven health plan; ECI: Elixhauser Comorbidity Index; EPO: exclusive provider organization; ER: emergency room; HDHP: high deductible health plan; HMO: health maintenance organization; IP: inpatient; N/A: not available; OCS: oral corticosteroid; POS: point of service; PPO: preferred provider organization; SD: standard deviation; SLE: systemic lupus erythematosus; TIA: transient ischemic attack

[1]Demographic characteristics were measured on the index date.

[2]Clinical characteristics, treatment characteristics, and healthcare utilization and costs were measured during the 12-month period prior to the index date.

[3]Other neurological conditions is defined in the ECI as neurological conditions other than dementia, seizures and epilepsy, or neurological disorders affecting movement.

[4]The SLE-related comorbidities were adapted from Ward MM. *J Rheumatol*. 2000;27(6):1408-1413.

[5]Cardiovascular disease is inclusive of cerebrovascular disease and myocardial infarction, as well as other cardiovascular-related conditions.

[6]Oral corticosteroid dosing was measured in prednisone-equivalent doses