

Healthcare Resource Utilization and Costs in Patients with Itch-Dominant Moderate-to-Severe Atopic Dermatitis Treated in Private Dermatology Facilities in the United States

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Background

- Atopic dermatitis (AD) is a chronic skin condition characterized by persistent itching and skin lesions of varying severity.
- Combined lesion and itch severity assessment can provide a more comprehensive view of disease burden and clinical phenotype.¹
- Itch-dominant AD is characterized by intense itch despite relatively less severe skin lesions.
- Healthcare resource utilization (HCRU) and associated costs for itch-dominant and other AD phenotypes is not well documented.

Objectives

- Characterize patients with moderate-to-severe AD by combined itch and lesion severity.
- Assess relative HCRU and costs in patients with itch-dominant AD.

Methods

- A retrospective analysis (January 2022-May 2024) of electronic health records and linked claims of patients with AD (L20.xx, ICD-10-CM) from specialty dermatology facilities in the US-based OMNY Health platform was performed.
- Patients were indexed at the first encounter in EHR or claims designated as moderate or severe AD, defined as the initiation of phototherapy, mid/high potency topicals, or systemic treatment for AD.²
- Patients were selected if they were ages ≥ 12 years, had ≥ 12 months of pre-index data, and had an Investigator’s Global Assessment (IGA; range 0-4) and Itch Numerical Rating Scale (NRS; range: 0-10) measurement from 1 month before to 1 week after the index date.
- Documented itch and lesion severity at index encounter were dichotomized as follows:
 - Mild-moderate itch (MI; NRS: 0-6) or severe itch (SI; NRS: 7-10)
 - Mild-moderate lesions (ML; IGA: 0-3) or severe lesions (SL; IGA: 4)
- Patients were categorized into the following combined itch and lesion severity groups: MI-ML, MI-SL, SI-ML, SI-SL.
- The following outcome variables were annualized over a 12-month follow-up period:
 - Number of hospitalizations, emergency visits, and outpatient visits.
 - Charges associated with each healthcare resource and pharmacy.
- Multinomial propensity score weighting was applied to estimate and compare adjusted annualized 12-month outcomes across phenotypes.³

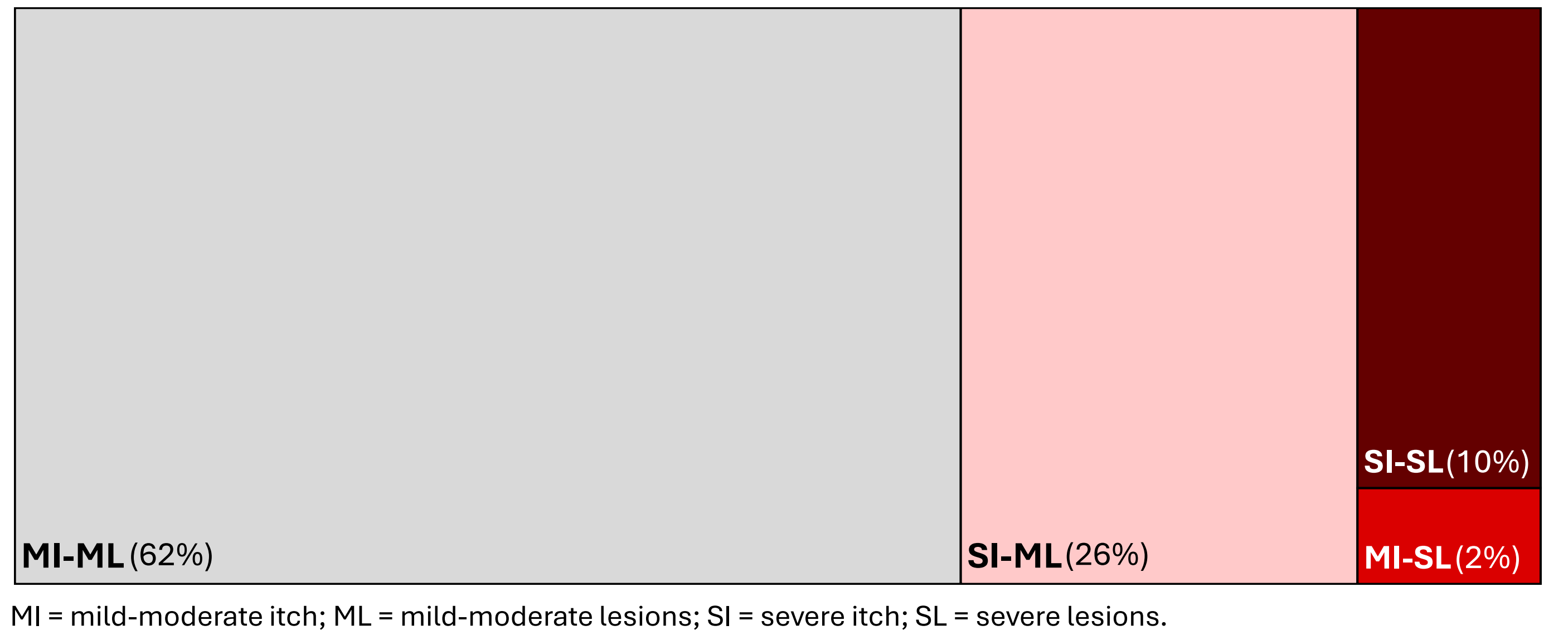
Results

- Of 256,386 patients with moderate or severe AD from specialty dermatology facilities with linked claims:
 - 92,109 patients met age and pre-index data criteria.
 - 9,096 patients had both IGA and Itch NRS data associated with the index encounter, comprising the study population.
- The distribution of combined lesion and itch severity was as follows: 62% MI-ML, 2% MI-SL, 26% SI-ML, 10% SI-SL (**Figure 1**).
- Patient demographic, medical history, and treatment history characteristics are presented in **Table 1**. Patients with SI-ML had the following characteristics compared to other phenotype groups:
 - Older and more likely to be female and publicly insured (along with SI-SL).
 - Greater overall comorbidity burden and greater prevalence of depression/anxiety and type 2 diabetes.
 - Most likely to have experience with topical corticosteroids, opioids/analgesics, and sleep aids.
- Adjusted mean annualized number of visits for each resource is summarized in **Figure 2**.
 - HCRU for hospitalizations and emergency visits was similar across lesion and itch severity groups.
 - Patients with SI-SL had a slightly greater mean number of outpatient visits.
- Adjusted mean annualized charges associated with HCRU are presented in **Figure 3**.
 - Patients with SI-ML had the highest mean hospitalization charges and the second highest mean emergency and outpatient charges.
 - Concurrently, patients with SI-ML exhibited the lowest mean pharmacy charges.

Conclusions

- Results suggest a complex relationship between AD clinical phenotype and healthcare charges.
- Patients with itch-dominant phenotype appear to have significant need for high-cost healthcare; however, they appear not to access the same prescriptions and pharmacy resources as other clinical phenotypes.
- Future research would need to further investigate the role of AD clinical phenotypes in HCRU and their contribution to the overall economic burden of AD

Figure 1. Distribution of Combined Itch and Lesion Severity



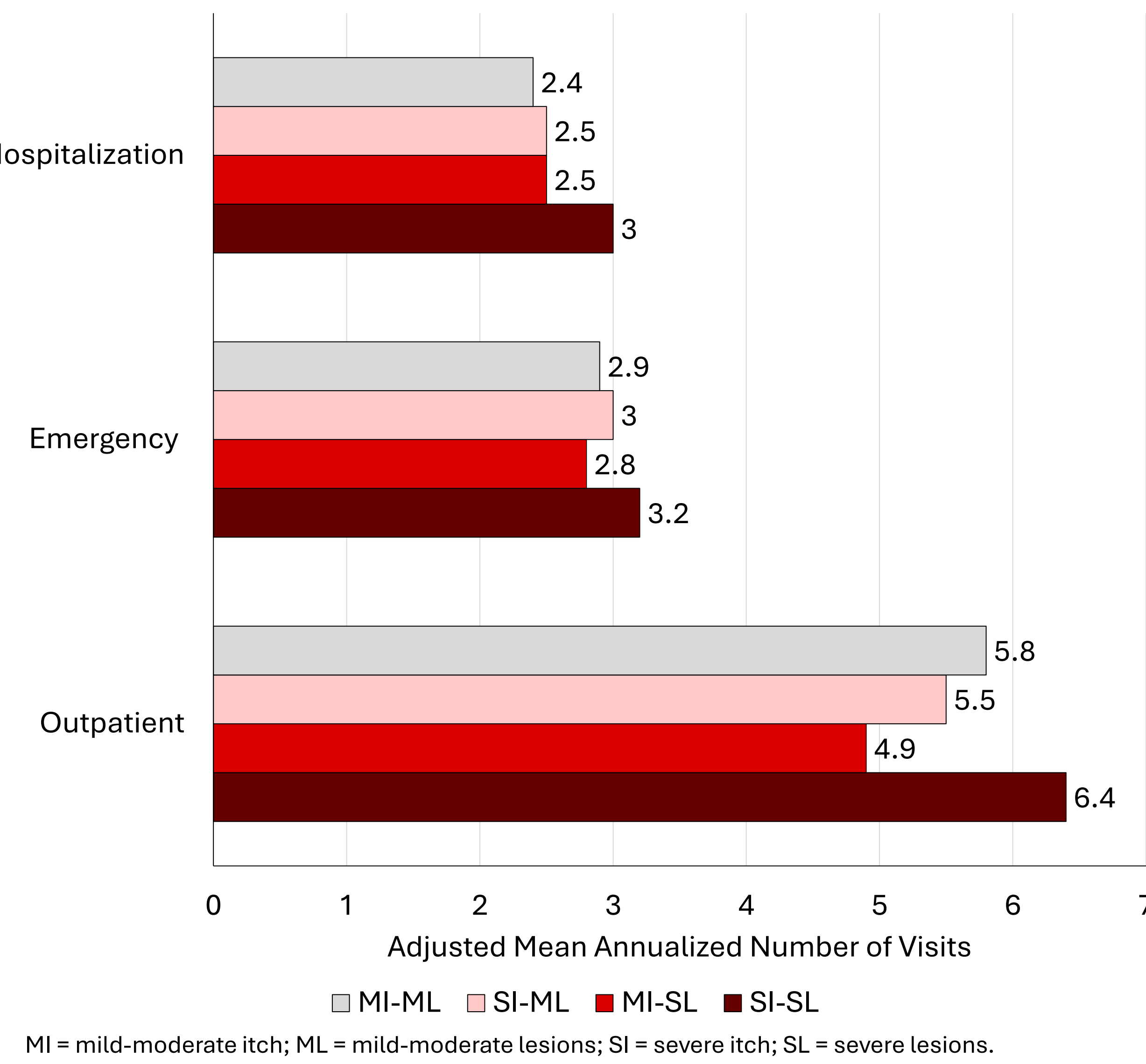
MI = mild-moderate itch; ML = mild-moderate lesions; SI = severe itch; SL = severe lesions.

Table 1. Patient Characteristics at Index Encounter

Characteristic	MI-ML N = 5626	SI-ML N = 2337	MI-SL N = 204	SI-SL N = 929
Demographics				
Female, n (%)	3509 (62.7%)	1513 (65.0%)	114 (56.4%)	520 (56.2%)
Age in years, mean (SD)	53.5 (21.6)	54.1 (21.9)	47.8 (20.5)	50.4 (22.7)
Non-White, n/N (%)	313/1986 (15.8%)	155/729 (21.3%)	23/61 (37.7%)	96/303 (31.7%)
Index year, n (%)				
2022	816 (14.5%)	317 (13.6%)	45 (22.1%)	201 (21.6%)
2023	3012 (53.5%)	1216 (52.0%)	111 (54.4%)	483 (52.0%)
2024	1798 (32.0%)	804 (34.4%)	48 (23.5%)	245 (26.4%)
Medicare/Medicaid, n/N (%)	2762/5602 (49.3%)	1243/2323 (53.5%)	97/203 (47.8%)	498/923 (54.0%)
Medical History				
Contact dermatitis, n (%)	1291 (22.9%)	605 (25.9%)	46 (22.5%)	248 (26.7%)
Prurigo nodularis, n (%)	100 (1.8%)	33 (1.4%)	6 (2.9%)	21 (2.3%)
Allergic rhinitis, n (%)	1545 (27.5%)	689 (29.5%)	49 (24.0%)	298 (32.1%)
Asthma, n (%)	1058 (18.8%)	481 (20.6%)	51 (25.0%)	242 (26.0%)
Crohn's disease or UC, n (%)	116 (2.1%)	46 (2.0%)	6 (2.9%)	23 (2.5%)
Rheumatoid arthritis, n (%)	233 (4.1%)	117 (5.0%)	11 (5.4%)	46 (5.0%)
Chronic sinusitis, n (%)	588 (10.5%)	251 (10.7%)	11 (5.4%)	107 (11.5%)
Depression or anxiety, n (%)	2117 (37.6%)	973 (41.6%)	70 (34.3%)	373 (40.2%)
Sleep disorders, n (%)	1619 (28.8%)	706 (30.2%)	64 (31.4%)	275 (29.6%)
Chronic pulmonary disease, n (%)	1605 (28.5%)	770 (32.9%)	67 (32.8%)	337 (36.3%)
Type 2 Diabetes, n (%)	1023 (18.2%)	481 (20.6%)	35 (17.2%)	174 (18.7%)
CCI, mean (SD)	3.3 (3.7)	3.6 (3.8)	2.7 (3.2)	3.3 (3.6)
CCI, n (%)				
0	1463 (26.0%)	550 (23.5%)	64 (31.4%)	234 (25.2%)
1 to 2	1524 (27.1%)	635 (27.2%)	58 (28.4%)	278 (29.9%)
3 to 4	1059 (18.8%)	423 (18.1%)	34 (16.7%)	158 (17.0%)
≥ 5	1580 (28.1%)	729 (31.2%)	48 (23.5%)	259 (27.9%)
Treatment History				
Phototherapy, n (%)	14 (0.2%)	10 (0.4%)	3 (1.5%)	15 (1.6%)
TCS, n (%)	5292 (94.1%)	2228 (95.3%)	185 (90.7%)	869 (93.5%)
TCI, n (%)	1190 (21.2%)	720 (30.8%)	82 (40.2%)	358 (38.5%)
Topical PDE-4I, n (%)	345 (6.1%)	158 (6.8%)	25 (12.3%)	110 (11.8%)
SCS, n (%)	3415 (60.7%)	1553 (66.5%)	145 (71.1%)	668 (71.9%)
SIS, n (%)	1067 (19.0%)	623 (26.7%)	69 (33.8%)	404 (43.5%)
Hydroxyzine, n (%)	687 (12.2%)	490 (21.0%)	39 (19.1%)	267 (28.7%)
Biologics, n (%)	427 (7.6%)	330 (14.1%)	41 (20.1%)	278 (29.9%)
JAK inhibitors, n (%)	514 (9.1%)	233 (10.0%)	26 (12.7%)	130 (14.0%)
Opioids/analgesics, n (%)	2183 (38.8%)	987 (42.2%)	82 (40.2%)	328 (35.3%)
Sleep aids, n (%)	485 (8.6%)	232 (9.9%)	12 (5.9%)	68 (7.3%)

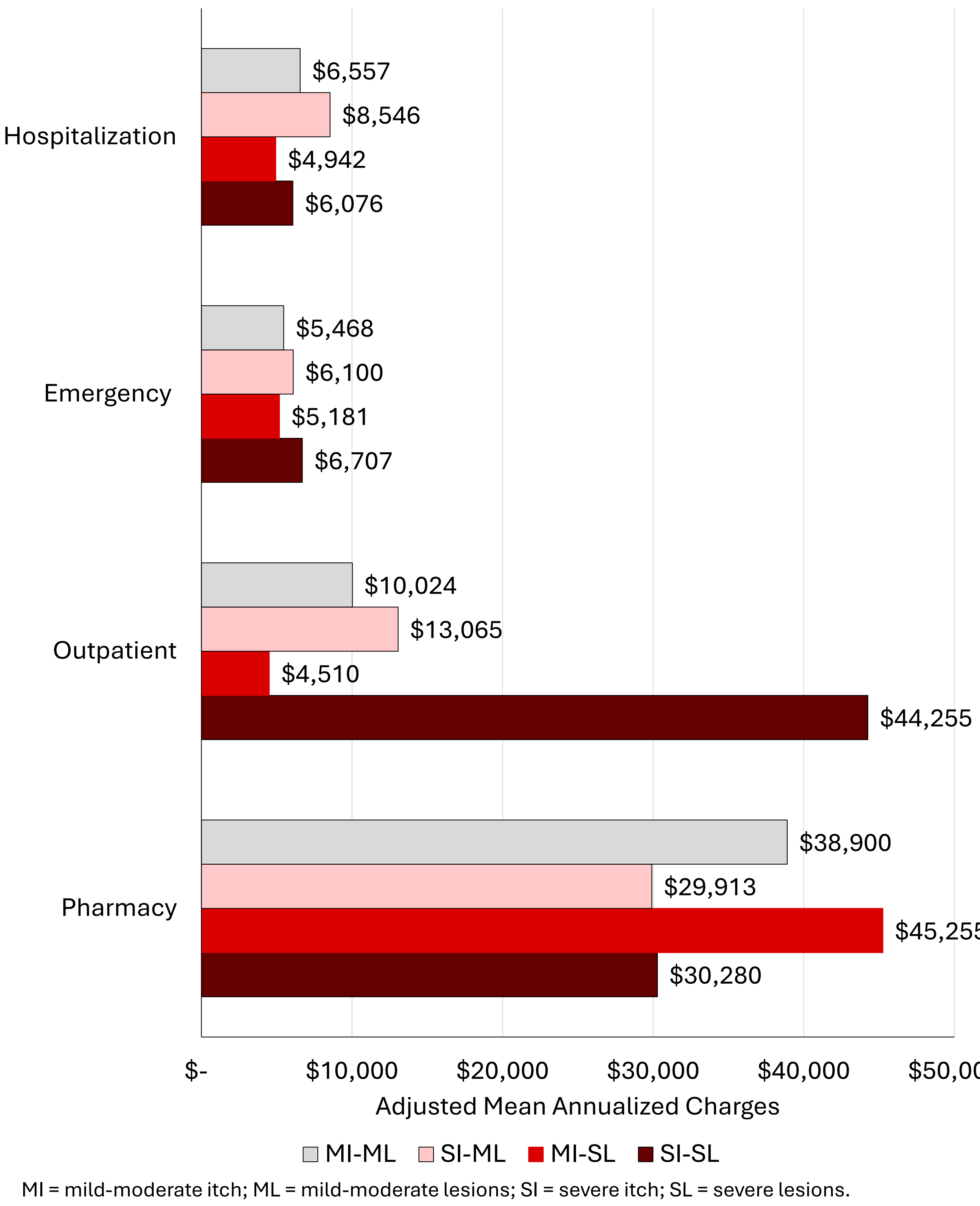
CCI = Charlson comorbidity index; JAK = janus kinase; MI = mild-moderate itch; ML = mild-moderate lesions; n = numerator (number of patients with the characteristic); N = denominator (number of patients with available data); PDE-4I = phosphodiesterase-4 inhibitors; SCS = systemic corticosteroids; SD = standard deviation; SI = severe itch; SIS = systemic immunomodulators; SL = severe lesions; TCI = topical calcineurin inhibitors; TCS = topical corticosteroids; UC = ulcerative colitis.

Figure 2. Healthcare Resource Utilization by Combined Itch and Lesion Severity



MI = mild-moderate itch; ML = mild-moderate lesions; SI = severe itch; SL = severe lesions.

Figure 3. Associated Charges by Combined Itch and Lesion Severity



MI = mild-moderate itch; ML = mild-moderate lesions; SI = severe itch; SL = severe lesions.

Abbreviations: AD = atopic dermatitis; CCI = Charlson comorbidity index; COPD = chronic obstructive pulmonary disease; ICD-10 = International Classification of Diseases, 10th Revision; HCRU = healthcare resource utilization; IGA = Investigator Global Assessment; JAK = janus kinase; MI = mild-moderate itch; ML = mild-moderate lesions; n = numerator; N = denominator; NRS = numerical rating scale; PDE-4I = phosphodiesterase-4 inhibitors; SCS = systemic corticosteroids; SD = standard deviation; SI = severe itch; SIS = systemic immunomodulators; SL = severe lesions; TCI = topical calcineurin inhibitors; TCS = topical corticosteroids; UC = ulcerative colitis.

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