Patients with HS had increased risk of MI ($P < .001$) in the pooled analysis of cohort studies. The magnitude of increased risk could not be determined because of study heterogeneity ($I^2 = 76\%$). This may be due to population differences between a US study reporting a smaller RR and 2 Danish studies reporting larger RRs. Additionally, the US study adjusted for the most confounders and cardiovascular comorbidities and uniquely accounted for ethnicity, which likely contributed to different MI risk across studies.

Among case-control studies, there were conflicting results regarding the association of MI and HS: 1 study reported increased odds, whereas another study reported no association. This discrepancy may be due to survival bias inherent in case-control designs, especially considering the increased odds of all-cause mortality in patients with HS.[3] Finally, different populations, adjusted confounders, and definitions of MACEs (eg, *acute MI* defined as International Classification of Diseases (ICD)−10th Revision code I21 in one cohort study vs *MI* defined as ICD−Ninth Revision code 410.x or ICD−10th Revision code I21.x-I22.x in another cohort study) likely contributed to differing magnitudes of association.

One study reported increased risk of cardiovascular-associated mortality in patients with HS (RR, 1.95; 95% CI, 1.42-2.67). Furthermore, 1 cohort and 1 case-control study found that the association between HS and MACEs may be independent of disease severity. Additional studies are needed because these findings either relied on patient-reported severity or involved a small study population.

The association between HS and MACE is hypothesized to result from chronic systemic inflammation. Patients with HS have decreased levels of circulating endothelial progenitor cells,[4] which function to protect the vascular endothelium, and elevated levels of proinflammatory cytokines (interleukin 1β, interleukin 6, interleukin 23, and tumor necrosis factor alpha), which promote atherosclerosis and thrombosis.[1] Effective interventions for HS may reduce the risk of MACEs.

In conclusion, patients with HS should be informed of their increased risk of MACEs. Because of the suboptimal screening for cardiovascular comorbidities in patients with HS,[5] early screening and appropriate counseling on modifiable cardiac risk factors should be provided for all patients with HS, and appropriate cardiac workup should be considered in those presenting with cardiac symptoms.

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Authors Bailey and Li and Dr Tan are co-first authors.

Funding sources: None.

Conflicts of interest: None disclosed.

IRB approval status: Not applicable.

Reprints not available from the authors.

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https://doi.org/10.1016/j.jaad.2020.10.005

Trends in Medicare Part D prescription claims for biologic and nonbiologic immunosuppressive medications by dermatologists

To the Editor: Biologic immunomodulators are increasingly used to treat many inflammatory skin conditions, given their targeted mechanisms and lower immunosuppressive effects compared with traditional agents.[1] We sought to compare recent use trends in novel biologic and traditional nonbiologic

Table I. Trends in Medicare Part D prescription claims for biologic and nonbiologic immunosuppressive medications by dermatologists, 2013-2017

	2013 (N = 10,247)	2014 (N = 10,466)	2015 (N = 10,605)	2016 (N = 10,935)	2017 (N = 11,239)	Average annual rate of change, %	*P* (trend)
Biologic immunosuppressive medications							
Dermatologist claims for all biologics (per 100,000 beneficiaries)	143.3	155.4	158.0	193.6	217.2	11.0	.011
Dermatologists submitting >10 claims, no. (%)	1816 (17.7)	2067 (19.8)	2160 (20.4)	2625 (24.0)	2989 (26.6)	13.3	.005
Biologic proportion of all Medicare part D dermatology claims (%)	0.9	1.0	1.0	1.2	1.4	10.6	.008
Dermatologist claims for specific biologics (per 100,000 beneficiaries)							
Adalimumab	71.9	78.7	71.4	83.9	94.7	7.1	.08
Apremilast	—	1.1	19.4	42.2	56.6	273.3	.003
Etanercept	66.0	67.9	57.3	45.7	35.4	−14.4	.011
Secukinumab	—	—	1.6	12.7	20.7	255.1	.06
Ustekinumab	5.3	7.6	8.2	9.0	9.8	16.4	.009
Dupilumab	—	—	—	—	4.5	—	—
Nonbiologic immunosuppressive medications							
Dermatologist claims for all nonbiologics (per 100,000 beneficiaries)	494.4	531.8	549.8	583.1	596.2	4.8	.001
Dermatologists submitting >10 claims, no. (%)	3936 (38.4)	4326 (41.3)	4524 (42.7)	4765 (43.6)	5032 (44.8)	6.3	.001
Nonbiologic proportion of all Medicare Part D dermatology claims (%)	3.2	3.4	3.6	3.8	3.8	4.5	.004
Dermatologist claims for specific nonbiologics (per 100,000 beneficiaries)							
Prednisone	223.5	238.7	240.8	250.9	252.4	3.1	.013
Methotrexate	170.3	180.7	190.4	205.6	215.9	6.1	<.001
Hydroxychloroquine	49.0	54.8	61.4	65.8	67.2	8.2	.004
Mycophenolate	24.2	27.5	28.0	30.7	30.9	6.3	.012
Methylprednisolone	13.2	13.6	13.6	13.8	14.1	1.7	.09
Azathioprine	9.2	9.2	11.0	11.4	11.1	4.9	.06
Cyclosporine	5.1	6.4	4.6	4.9	4.9	−1.2	.46

The table demonstrates aggregated Medicare Part D claims (original prescriptions and refills) for biologic and nonbiologic immunosuppressive medications by dermatologists. Select medications (golimumab, guselkumab, and certolizumab) were not tabulated because they were minimally used by dermatologists (<0.5 annual claims per 100,000 beneficiaries). Dermatologists (N) were assessed if they were listed as a dermatologist in the Medicare Part D and National File data sets during the study period. Aggregated claims are listed per 100,000 national Medicare Part D beneficiaries in each respective year. Claims counts fewer than 11 are suppressed in the Medicare data sets and are not included in the table. Dashes indicate no aggregated data in the respective year because the medication was not yet Food and Drug Administration approved for a dermatologic indication. Average annual rate of change was calculated from a compound growth rate formula during the study period. $P < .05$ indicates a significant trend, as determined through a linear regression model.

agents among dermatologists, which has not been delineated at the national level, to our knowledge.

We performed a cross-sectional analysis of the 2013-2017 Medicare Part D Prescriber data sets to identify all dermatologists filing Medicare prescription claims. Dermatology specialty was confirmed through the Physician Compare National File. The primary outcome was total annual claims per 100,000 Medicare Part D beneficiaries, described for each biologic agent with a

Table II. Trends in Medicare Part D prescription claims for biologic medications according to dermatologist characteristics and local practice settings, 2013-2017

Dermatologist subgroup (proportion of all biologic-prescribing dermatologists, %)	2013 (n = 1816)	2014 (n = 2067)	2015 (n = 2160)	2016 (n = 2625)	2017 (n = 2989)	Average annual rate of change, %	*P* (trend)
All biologic immunosuppressive medications (claims per 100,000 Medicare Part D beneficiaries)							
All dermatologists 100.0	143.3	155.4	158.0	193.6	217.2	11.0	.011
Dermatologist sex							
Men 66.0	107.2	112.9	113.3	136.2	149.2	8.6	.02
Women 34.0	36.1	42.5	44.7	57.3	68.0	17.2	.006
Dermatologist practice experience, y							
<20 41.2	50.1	54.4	54.7	71.9	84.4	13.9	.02
≥20 58.8	93.2	101.1	101.4	118.9	132.0	9.1	.011
Dermatologist practice setting							
Independent or small private practice 67.2	99.4	105.5	106.6	131.6	144.1	9.7	.02
Large multispecialty group or hospital practice 20.9	26.0	28.8	31.0	38.8	45.6	15.1	.006
Academic hospital practice 11.8	17.9	21.1	20.3	23.1	27.5	11.3	.02
Geographic region							
Northeast 18.4	22.7	24.6	26.3	36.1	40.6	15.7	.011
Midwest 22.9	35.8	36.7	38.3	44.5	50.6	9.0	.02
South 38.5	57.9	62.7	62.3	75.4	83.0	9.4	.02
West 20.2	24.8	29.4	28.7	34.1	40.0	12.7	.013
County population density							
Metropolitan 91.2	127.5	139.1	141.2	172.3	193.0	10.9	.010
Nonmetropolitan 6.8	10.8	11.2	11.5	15.2	17.1	12.1	.02
Rural 2.0	4.7	4.8	5.0	5.8	6.5	8.6	.02
County income							
Below national median 46.8	68.7	70.9	71.8	88.7	94.5	8.3	.02
Above national median 53.2	57.6	65.9	68.1	81.9	98.0	14.2	.008
Availability of dermatologists in county							
Relative shortage (<4.0 derm. per 100,000 persons) 31.1	52.0	55.2	56.2	69.3	72.3	8.6	.02
No shortage (≥4.0 derm. per 100,000 persons) 68.9	88.9	97.9	99.1	120.6	141.3	12.3	.013

The table demonstrates aggregated Medicare Part D claims (original prescriptions and refills) for biologic medications, stratified by dermatologist characteristics, practice features, and practice setting. Select medications (golimumab, guselkumab, and certolizumab) were not tabulated because they were minimally used by dermatologists (<0.5 annual claims per 100,000 beneficiaries). Dermatologists (n) were included if they filed at least 11 Medicare Part D claims for a biologic medication and also appeared as a dermatologist in the National File database. Aggregated claims are listed per 100,000 national Medicare Part D beneficiaries in each respective year. Claims counts fewer than 11 are suppressed in the Medicare data sets and are not included in the table. Average annual rate of change is calculated from a compound growth rate formula during the study period. $P < .05$ indicates a significant trend, as determined through a linear regression model. Each dermatologist's billing address was used to identify geographic county/region and correlated with a respective Rural-Urban Continuum Code to determine population density. County sociodemographic data were obtained from the US Census American Community Survey for each study year.

Derm., Dermatologist.

dermatologic use and among specific dermatologist subgroups. Use trends of nonbiologic immunosuppressants were also characterized.

From 2013 to 2017, total annual claims for biologics by dermatologists increased at a mean annual rate of 11.0% compared with 4.8% for traditional immunosuppressants. Adalimumab was the most frequently used biologic, with apremilast demonstrating the highest growth rate (Table I). Greater annual increases in biologic claims occurred among younger dermatologists, those in the Northeast, and those in counties with a greater population density and median income (Table II).

These findings support that growth in biologic use has outpaced that of traditional therapies across many subsets of dermatologists, although conventional therapies still play an important dermatologic role. As a class, biologic agents are well tolerated, are generally more efficacious than conventional treatments,[2] and improve patient satisfaction,[3] all of which may promote their use. Off-label trials may also be driving prescriptions for several agents, especially tumor necrosis factor α inhibitors, for difficult-to-treat skin conditions.[1]

Claims for etanercept diminished during the study period, which could be due to the increasing use of agents with comparably greater efficacy (eg, secukinumab, ustekinumab) or a more convenient administration route (eg, apremilast).[2] Dupilumab was modestly used in 2017 after its approval, but may play a more substantial role in coming years amid increasing supportive evidence.[1]

Greater biologic use among older dermatologists in small private practices could be driven by the high number of dermatologists and established patients in these settings. However, biologic adoption rates were greater among academic and younger dermatologists. The lower growth of biologic therapies in rural regions is concerning alongside prior evidence that demonstrated fewer biologic prescribers in these areas,[4] and may suggest a widening geographic access gap. Slower adoption of biologics in counties with dermatologist shortages and lower incomes may compound access limitations that already exist among underinsured and minority patients in these settings.

Because the study assessed Medicare data, it may not reflect claims to commercial payers. These data cannot be directly correlated to clinical outcomes. Despite limitations, these findings affirm widespread but nonuniform growth of biologic agents among dermatologists. Although this study did not specifically assess payments, the findings should be interpreted in the context of high costs and persistent price increases for biologics.[5] As the clinical value of biologics continues to expand, efforts to further characterize and ensure appropriate access to these novel therapies are warranted.

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Funding sources: None.

Conflicts of interest: Dr H. Feng reports being a consultant for Cytrellis Biosystems, Inc and Soliton, Inc. Dr P. Feng and Author Gronbeck have no conflicts of interest to declare.

IRB approval status: Not applicable.

Reprints not available from the authors.

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https://doi.org/10.1016/j.jaad.2020.10.015

Impact of ethnicity on the diagnosis and management of cutaneous toxicities from immune checkpoint inhibitors

To the Editor: Immune checkpoint inhibitors (ICIs) have improved outcomes for numerous malignancies,