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Hidradenitis suppurativa encounters in a national electronic health record database notable for low dermatology utilization, infrequent biologic prescriptions, and frequent opiate prescriptions

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Hidradenitis suppurativa (HS) is an under-studied disease. Our objective was to characterize HS encounters, including providers seen, medications prescribed, and procedures performed, which have not previously been reported.

We performed a cross-sectional study of encounters using a random sample of OptumInsights Electronic Health Record Database (previously Humedica[1–3]; January 2007 – June 2017). Eligible encounters had an HS diagnosis code (ICD-9 705.83, ICD-10 L73.2) and either specified a setting (e.g. outpatient, inpatient) or had a prescription written. We compared non-antibiotic systemics (listed in Table 2) before and after FDA-approval of adalimumab and compared provider specialty and opiate prescriptions in HS versus psoriasis (defined by ICD-9 696.1, ICD-10 L40.0–40.4, L40.8, or L40.9) using chi-squares. In outpatient visits without procedures, we tested whether a dermatology encounter was associated with a non-antibiotic systemic or opiate prescription using multivariable logistic regression, adjusted for age, gender, race, and region, and using generalized estimating equations to account for patients with multiple encounters. To further address potential within-patient correlations, we performed bootstrapped sensitivity analyses with 100 replications. Finally, we performed a sensitivity analysis of patients with two or more HS diagnoses, as the positive predictive value of a single diagnosis is 77–79%.[4,5]

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IRB approval was exempted for this study.

In our dataset of approximately 7.7 million patients, 22,331 encounters in 8,539 patients met inclusion criteria. Patient demographics are shown in Table 1. Encounter characteristics (setting, provider, medications, and procedures) are shown in Table 2. In HS, 20.3% of encounters were with dermatology, as compared with 49.0% of psoriasis encounters ($p<0.001$). The ten most common prescriptions written were doxycycline, topical clindamycin, sulfamethoxazole-trimethoprim, hydrocodone-acetaminophen, cephalexin, oral clindamycin, oxycodone-acetaminophen, minocycline, amoxicillin-potassium clavulanate, and topical mupirocin. Use of non-antibiotic systemics was low (2.7%) but increased after adalimumab FDA approval ($p=0.001$). In total, 18.1% of patients received an opiate prescription during an HS encounter, as compared with 8.5% of psoriasis patients ($p<0.001$). In outpatient visits without skin procedures, seeing dermatology had an OR of 0.23 (95% CI 0.17–0.31) for opiates and an OR of 6.44 (95% CI 4.87–8.52) for non-antibiotic systemics. When we performed bootstrapped sensitivity analyses, the ORs were similar. A sensitivity analysis of patients with two or more HS diagnoses yielded similar results, except the percentage of patients who received opiate prescriptions was higher (29.0%).

Our findings show that HS encounters occur most commonly with family or internal medicine and that opiates are frequently prescribed, while non-antibiotic systemic treatments are infrequently prescribed. Outpatient non-procedure encounters with dermatology were less likely to have opiate and more likely to have non-antibiotic systemic prescriptions.

This study has limitations: it is retrospective and cross-sectional. HS diagnoses cannot be validated in this dataset (though they have been previously[4,5]) and undiagnosed HS cannot be captured. Additionally, HS encounters may have included other medical problems besides HS, which we did not evaluate, though the ten most common prescriptions in these encounters are all HS treatments.

Low dermatology utilization and infrequent non-antibiotic systemic therapy highlight the need for improved dermatology access, and the substantial opiate prescriptions highlights the need for more effective management strategies in HS.

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Table 1:

Demographics of HS patients

Demographic	Number (percentage) or mean (SD)
Sex	
Female	6438 (75.4%)
Male	2091 (24.5%)
Missing	10 (0.1%)
Age at first HS encounter	
0–17	657 (7.7%)
18–29	2494 (29.2%)
30–39	2000 (23.4%)
40–49	1521 (17.8%)
50–59	1186 (13.9%)
60+	681 (8%)
Race	
Caucasian	5082 (59.5%)
African American	2278 (26.7%)
Asian	125 (1.5%)
Other/unknown	1054 (12.3%)
Ethnicity	
Hispanic	499 (5.8%)
Not Hispanic	7172 (84%)
Unknown	868 (10.2%)
Census region	
Midwest	4082 (47.8%)
South	2361 (27.7%)
Northeast	863 (10.1%)
West	805 (9.4%)
Other/unknown	428 (5%)
Mean (SD) years of follow up in the dataset	6.8 (SD 3.5)
Number of HS encounters	
1	5168 (60.5%)
2+	3371 (39.5%)

Table 2:

Setting, provider, medications, and procedures in HS encounters

HS encounters	**Number (percentage)**
Setting (n=22,019)[1]	
Outpatient	15928 (72.3%)
Inpatient	1602 (7.3%)
Emergency department	1133 (5.2%)
Home health or skilled nursing	547 (2.5%)
Prescription-only	2809 (12.8%)
Provider (n=20,752)[2]	
Dermatology	4207 (20.3%)
Surgery	4652 (22.4%)
Family or Internal Medicine	10765 (51.9%)
Emergency medicine	2176 (10.5%)
Pediatrics	1012 (4.9%)
Obstetrics/Gynecology	1361 (6.6%)
Prescription medications (n=22,331)	
Oral antibiotics	8207 (36.8%)
Topical antibiotics	2847 (12.7%)
Non-antibiotic systemic medications[3]	594 (2.7%)
pre-Humira FDA approval (n=14,009)	334 (2.4%)[4]
post-Humira FDA approval (n=8,322)	260 (3.1 %)[4]
Biologics[5]	183 (0.8%)
Non-biologic systemics[6]	420 (1.9%)
Opiates (all encounters)	2993 (13.4%)
Opiates (non-procedure encounters)[7] (n=20,473)	2659 (13.0%)
Dermatology (n=3392)	84 (2.5%)
Surgery (n=4237)	798 (18.8%)
Family or Internal Medicine (n=10151)	1259 (12.4%)
Emergency medicine (n=1745)	482 (27.6%)
Pediatrics (n=962)	89 (9.3%)
Obstetrics/Gynecology (n=1307)	87 (6.7%)
Procedures (n=19,522)[8]	
Any skin procedure	1858 (9.5%)
Incision and drainage	931 (4.8%)
Surgery (deroofing, biopsy, excision, reconstruction)	248 (1.3%)

HS encounters	Number (percentage)
Injection	675 (3.5%)

[1]312 encounters had more than one setting recorded (eg emergency and inpatient) and are not included

[2]Percentages may add up to more than 100% because more than one provider could be associated with each encounter, and one provider could list more than one specialty

[3]Non-antibiotic systemic medications included adalimumab, infliximab, anakinra, ustekinumab, cyclosporine, acitretin, isotretinoin, finasteride, and spironolactone

[4]Chi-square comparing non-antibiotic systemics before and after FDA approval of adalimumab p=0.001

[5]Biologic medications included adalimumab, infliximab, anakinra, and ustekinumab

[6]Non-biologic systemic medications included cyclosporine, acitretin, isotretinoin, finasteride, and spironolactone

[7]Percentages may add up to more than 100% because more than one provider could be associated with each encounter, and one provider could list more than one specialty. Displayed are the percentages of specialty encounters (excluding encounters with skin procedures) that had opiate prescriptions.

[8]Any skin procedure includes all of the following: incision and drainage codes CPT 10060, 10061, 10080, 10140, 10160, 19020, 46040, 46050, and ICD-9 86.04; surgery codes CPT 10040, 11100, 11450–11471, ICD-9 86.11, 86.24; injection codes CPT 11900, 11901, HCPCS J3301