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Abstract

Objective:To determine whether differences in race and ethnicity affect the usage of dermatological services.

Methods: Data from the National Ambulatory Medical Care Survey were used to study trends in ethnic/race rates of outpatient dermatology office visits among publicly and privately insured patients from 2005-2010. In multivariable models, we explored the magnitude of ethnic/race differences in dermatology visit attendance for patients with public vs. private insurance.

Results: From 2005-2010, dermatology visit utilization increased among insured Hispanics, but not among insured non-Hispanic Blacks or whites. Visits were less frequent by those with public insurance compared to private insurance. Privately and publicly insured visits were less common for non-Hispanic Blacks and Hispanics compared to whites after adjustment for patient demographics and primary visit diagnosis. Racial and ethnic differences in visit utilization rates were most apparent among non-referred visits. However, primary diagnoses for non-referred visits were similar across races and ethnicities, which suggests that differences in utilization may result from factors unrelated to clinical indications for care.

Conclusion: Ethnic/race differences in the use of dermatological services in the United States may result from patient preferences for dermatologic care or health system related factors (e.g., insurance coverage regulations).

Keywords

Race; ethnicity; health disparities; office visits; dermatology; health services accessibility; Medicare; Medicaid; predictive value of tests.

Cover Page Footnote

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Conclusion: Ethnic/race differences in the use of dermatological services in the United States may result from patient preferences for dermatologic care or health system related factors (e.g., insurance coverage regulations).

Keywords: Race, ethnicity, health disparities, office visits, dermatology, and health services accessibility, Medicare, Medicaid, predictive value of tests

INTRODUCTION

The *National Healthcare Disparities Report* cites healthcare utilization as an important indicator for the successful or unsuccessful attainment of adequate health care services (Bonito, Eicheldinger, Evensen, & Lenfestey, 2005). Racial and ethnic differences in the incidence,

prevalence, morbidity and mortality of various skin conditions have been documented (Davis et al., 2012), yet relatively little is known of the role of dermatologic services in directly influencing those differences. For example, while age-adjusted melanoma incidence is considerably higher among whites than ethnic and racial minorities, minorities diagnosed with melanoma are two to four times more likely than whites to receive an advanced stage diagnosis (Cormier et al., 2006). One study demonstrated that minorities are more likely than whites to have common dermatologic conditions such as psoriasis go undiagnosed, suggesting potential racial differences in the receipt of quality dermatologic care (Kurd & Gelfand, 2009). It is critical to know if this contrast in outcomes is attributed to variations in patient access to dermatologic care, particularly for life threatening conditions such as cutaneous melanoma, which requires early detection and timely access to high quality dermatologic attention.

Health insurance, a major determinant of patient access to care (Baker, Shapiro, & Schur, 2000; Burstin, Swartz, O'Neil, Orav, & Brennan, 1998; Ku & Matani, 2001; Newacheck, Stoddard, Hughes, & Pearl, 1998), substantially influences patients' use of health care services and outcomes (Fiscella, Franks, Doescher, & Saver, 2002; Lillie-Blanton & Hoffman, 2005; Sudano & Baker, 2006; Zuvekas & Taliaferro, 2003). Lillie-Blanton and Hoffman found that health insurance was the chief factor to interact with race/ethnicity, and played a major role in a person's ability to obtain high quality health care (Lillie-Blanton and Hoffman, 2005). Little is known about the influence of health insurance status, and its various forms (private vs. public, which differ in their benefit structures and restrictions for dermatological services) on racial/ethnic differences in the frequency of dermatology visits. We studied racial/ethnic patterns in the utilization of US office-based dermatology visits among privately and publicly insured patients. Based on recent reports of less access to specialty services by minorities and individuals with public insurance we hypothesized that disparities in utilization of dermatological services would either decrease or remain unchanged throughout the study period.

METHODS

Overview

We studied trends and predictors of dermatologic service use among insured ethnic and racial minority and non-minority patients in the US for 2005-2010 using the National Ambulatory Medical Care Survey (NAMCS). We hypothesized that ethnic and racial minorities would utilize dermatology services less frequently than their non-minority counterparts and that predictors of dermatologic service use would vary between ethnic and racial groups.

Data Source

The NAMCS is conducted by the National Center for Health Statistics (NCHS) of the Centers for Disease Control and Prevention (CDC) to provide data on the characteristics of health care provided by non-federally funded US office-based physicians. The system measures utilization across a broad spectrum of medical and surgical specialties, including Dermatology. These data estimate outpatient services utilization on an annual basis and are ideal for studying the use of dermatology services in the US because of the large representative sample size, the validated quality checks throughout the survey process, the broad base of information across various geographic regions (Licciardone & Singh, 2011) and the ability to calculate national estimates and associated standard of errors using survey weights (Barnett, Song, & Landon, 2012).

To obtain a representative cross-section of ambulatory visits, the NAMCS employs a multi-stage sampling design (Cherry, Hing, Woodwell, & Rechtsteiner, 2008; Cherry, Woodwell, & Rechtsteiner, 2007; Hsiao, Cherry, Beatty, & Rechtsteiner, 2010; Statistics, 2011a, 2011b). The system applies several weighting procedures to produce nationally representative, unbiased results, including inflation by reciprocals of the probability of selection (Cherry, et al., 2008; Cherry, et al., 2007; Hsiao, et al., 2010; Statistics, 2011a, 2011b), adjustment for non-responses, ratio adjustment to fixed totals and weight smoothing (Cherry, et al., 2008; Cherry, et al., 2007; Hsiao, et al., 2010; Statistics, 2011a, 2011b). A patient record form, completed by physician/medical office personnel or abstracted by US Census Bureau field representatives, documents each patient's race/ethnicity, gender, reason for visit, physician diagnosis for the visit, diagnostic screening services, health education, non-medication treatment, provider type, patient method of payment, and physician disposition. Medical coding and data processing were performed by SRA International of Durham, NC. Coding error rates were usually less than 5 percent (Cherry, et al., 2008; Cherry, et al., 2007; Hsiao, et al., 2010; Statistics, 2011a, 2011b).

Visit Characteristics

We identified insured dermatology visits as those coded within the specialty of dermatology for both children and adults and for which at least one type of health insurance was listed. We examined the use of dermatologic visits among ethnic and racial minorities (defined as non-Hispanic Blacks [NHB], non-Hispanic other and Hispanics) and non-minorities (defined as non-Hispanic whites [NHW]) and excluded "non-Hispanic other" patients from analyses due to the small number of visits. The NCHS uses various methodologies to impute missing data for race and ethnicity. Using a new method adopted in 2009, race/ethnicity were imputed using a model-based sequential regression method. The main predictors for missing race/ethnicity were Census variables of zip code level race and ethnicity population estimates. The proportion of imputed data varied by year for both race and ethnicity and ranged 21-33% (white, Black, Other) for race and 22-34% for ethnicity (Hispanic or Latino/non-Hispanic) (Cherry, et al., 2008; Cherry, et al., 2007; Hsiao, et al., 2010; Statistics, 2011a, 2011b). We also recorded other demographic characteristics of patients attending dermatology visits, such as age (<65 and ≥65 years old), gender, geographic characteristics (South, Northeast, Midwest, and West) and expected sources of insurance payment, including private or public (Medicare, Medicaid, and State Children's Health Insurance Plan [SCHIP]). Based on NCHS guidelines, a hierarchal scheme was used to categorize the primary source of payment with Medicare, Medicaid or SCHIP recorded as public and all other insured visits recorded as private. We excluded 20,165,151 visits where payment was recorded as "Workers' Compensation," "Self Pay," "No Charge/Charity," "Other," "Unknown" or "Blank." We also examined visits by referral status. Visits with referral status coded as "not referred" or "not applicable" were classified as "not referred." Visits were excluded from analysis when referral status was designated as unknown or left blank. Primary diagnoses were recorded based on the *International Classification of Diseases, Ninth Revision, Clinical Modification* codes (ICD-9-CM). To achieve adequate sample sizes, we grouped the 14 most common ICD-9-CM codes for primary diagnosis into three categories: 1) malignant and premalignant (including actinic keratosis, malignant neoplasm of the skin site unspecified, personal history of malignant neoplasm and malignant neoplasm of skin of the face); 2) inflammatory dermatoses (defined as psoriasis, acne, dermatitis unspecified cause and rosacea); and 3) other (defined as benign neoplasm of the skin site unspecified, seborrheic

keratosis, verruca, neoplasm of uncertain behavior, sebaceous cyst, unspecified disorder of the skin and subcutaneous tissue). After excluding those visits with primary diagnoses not in the top 14, 76.4% of visits remained for the comparative analyses.

Statistical Analyses

Annual trends in office visits among minorities and non-minorities. To explore the annual trends of visits to dermatologists by payment source, we used logistic regression modeling probability for each patient visit. The dependent variable of the model was defined for each visit by the binary variable DERM with values of 1 if a patient visited a dermatologist and 0 otherwise. The association between survey year, patient race and ethnicity and primary payment type was represented by interaction terms between the continuous variable YEAR and categorical variables RACEETH (1- NHW; 2- NHB; 3- non-Hispanic others; 4-Hispanics) and PAYTYPE (1-Public insurance; 2- Private Insurance). To adjust for possible discrepancies in patient characteristics between survey years, the logistic model included covariates of patient age (AGE), sex (SEX), Census region (REGION), metropolitan area or rural locality (MSA = 1-Metropolitan area, 2- non-Metropolitan area) and primary diagnosis (DIAGNOSIS = 1- pre-malignant and malignant neoplasm, 2- inflammatory dermatoses and 3- other diagnoses). As a result, the following logistic regression model was used to identify annual trends in the proportion of visits to dermatologists for minorities and non-minorities by payment source:

$$\textit{logit}\,(P[DERM=1[) = \alpha + \beta_1*AGE + \beta_2*SEX + \beta_3*REGION + \beta_4*MSA + \beta_5*DIAGNOSIS + \beta_6*REFERRED + \beta_7*RACEETH + \beta_8*PAYTYPE + \beta_9*YEAR*RACEETH*PAYTYPE$$

Because patient's race and ethnicity variable is defined at four levels and the primary type of payment variable has two levels (see above), cross-tabulation of RACEETH and PAYTYPE defines eight groups of patients. For each group, corresponding estimates of β_9 become available from the model, along with the *p*-values for *t*-statistics for checking the null hypothesis (no annual trend). Therefore, the annual trend of visiting dermatologists can be estimated separately for each of these eight groups. We considered the annual trend for a particular group of patients to be statistically significant if the corresponding estimated model coefficient β_9 was statistically significantly different from 0 at the $p = 0.05$ level.

Association of patient characteristics with visit attendance. We pooled data from 2005 to 2010 in order to achieve a greater efficiency of estimates and to increase the power of statistical analyses. Aggregation of data was necessary because visits to dermatologists constitute only 3.6% of the total number of office-based visits. Additionally, because we were interested in estimates for subgroups of the sample population, visits from just one year of data would not provide enough information to produce estimates with a reasonable degree of reliability.

For all insured visits, we described patients' demographic characteristics, including their race/ethnicity (NHW, NHB, and Hispanic/Latino), age, gender, the geographic region of visit (Northeast, Midwest, South or West), whether the region was considered a metropolitan statistical area, whether visits occurred as a result of a referral, and the primary diagnosis (premalignant and malignant, inflammatory or other) listed for the visit. We further stratified descriptions according to insurance type (public or private). We calculated the weighted totals and percentages for visits to dermatologists and the standard errors for all estimates, accounting

for the stratified multi-stage sampling design and using Taylor series linearization for non-linear estimates.

We used logistic regression models to estimate the adjusted odds ratios (AOR) for dermatology visits by minorities compared to non-minorities, for all visits, for referred and non-referred visits, with patient race/ethnicity as the categorical covariate of interest. AORs between NHW, NHB and Hispanics were estimated as an exponent of the corresponding model coefficient and were adjusted for potential confounders including patient age, gender, geographic region, MSA status and primary diagnosis. In order to explore the relationship between patient race/ethnicity and primary payment type, we included in the model interaction term RACEETHN*PAYTYPE and calculated AORs between l levels of RACEETHN for a given level of PAYTYPE:

$$\textit{logit}\,(P[DERM=1]) = \alpha + \beta_1*AGE + \beta_2*SEX + \beta_3*REGION + \beta_4*MSA + \beta_5*DIAGNOSIS + \beta_6*REFERRED + \beta_7*\,RACEETHN + \beta_8*PAYTYPE + \beta_9*RACEETHN*PAYTYPE.$$

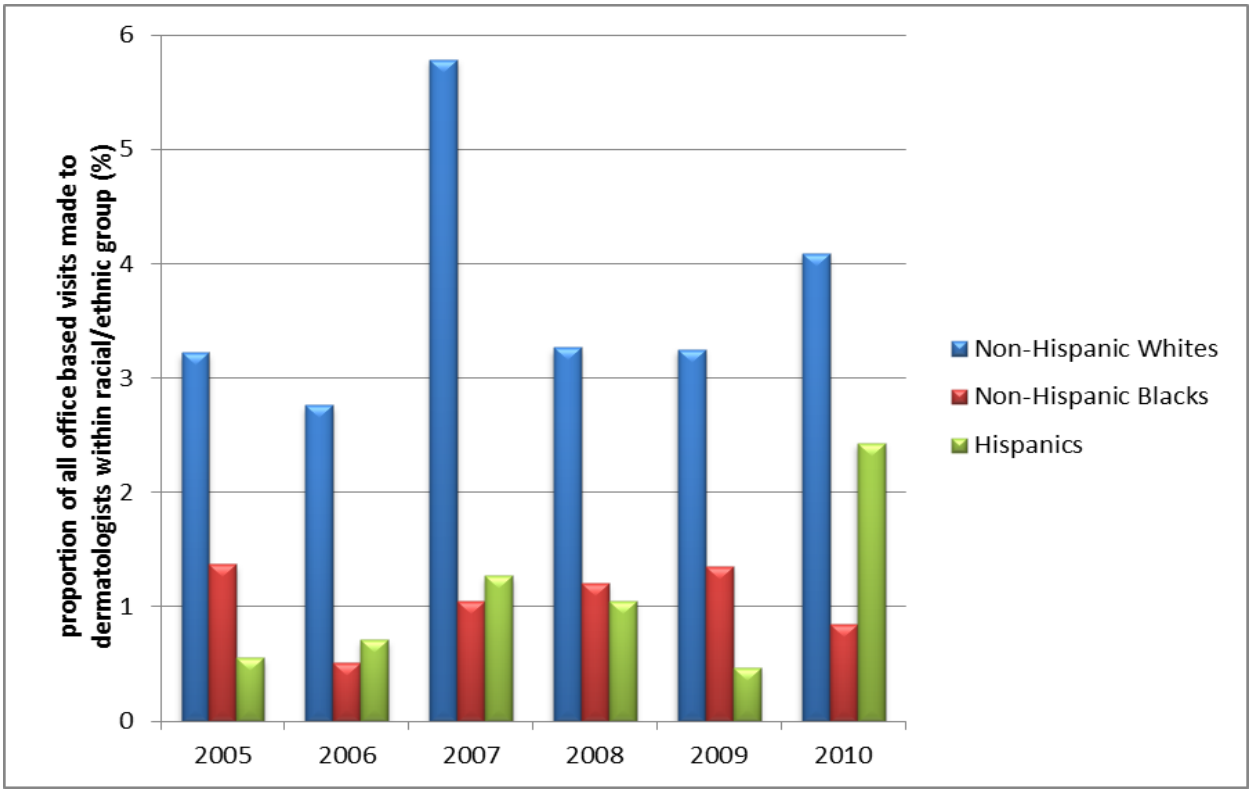
For every level of cross-tabulation between categorical variables RACEETHN and PAYTYPE, there is a separate estimated value of β_9 (RACEETHN, PAYTYPE). The AOR between, for example, Hispanics (RACEETHN=4) and NHW (RACEETHN=1) with public insurance (PAYTYPE=1) is calculated as $\exp[\beta_9(4, 1) - \beta_9 (1, 1)]$. Estimated AORs cannot be expressed as explicit functions of other simple statistics, such as totals. To calculate their variances and confidence intervals (CIs) accounting for the sampling design, we used the Binder (Binder, 1983) approach. We tested hypotheses of non-zero contrast of AOR to visits between minorities and non-minorities at the $p = 0.05$ level of significance. To account for the complex survey design, we used Rao-Scott (Rao & Scott, 1981) approximations for statistical hypotheses testing. Statistical analyses were performed using SAS 9.2 (SAS Institute, Cary, NC) and SUDAAN 11 (Research Triangle Institute, NC).

RESULTS

Visit Characteristics from 2005-2010

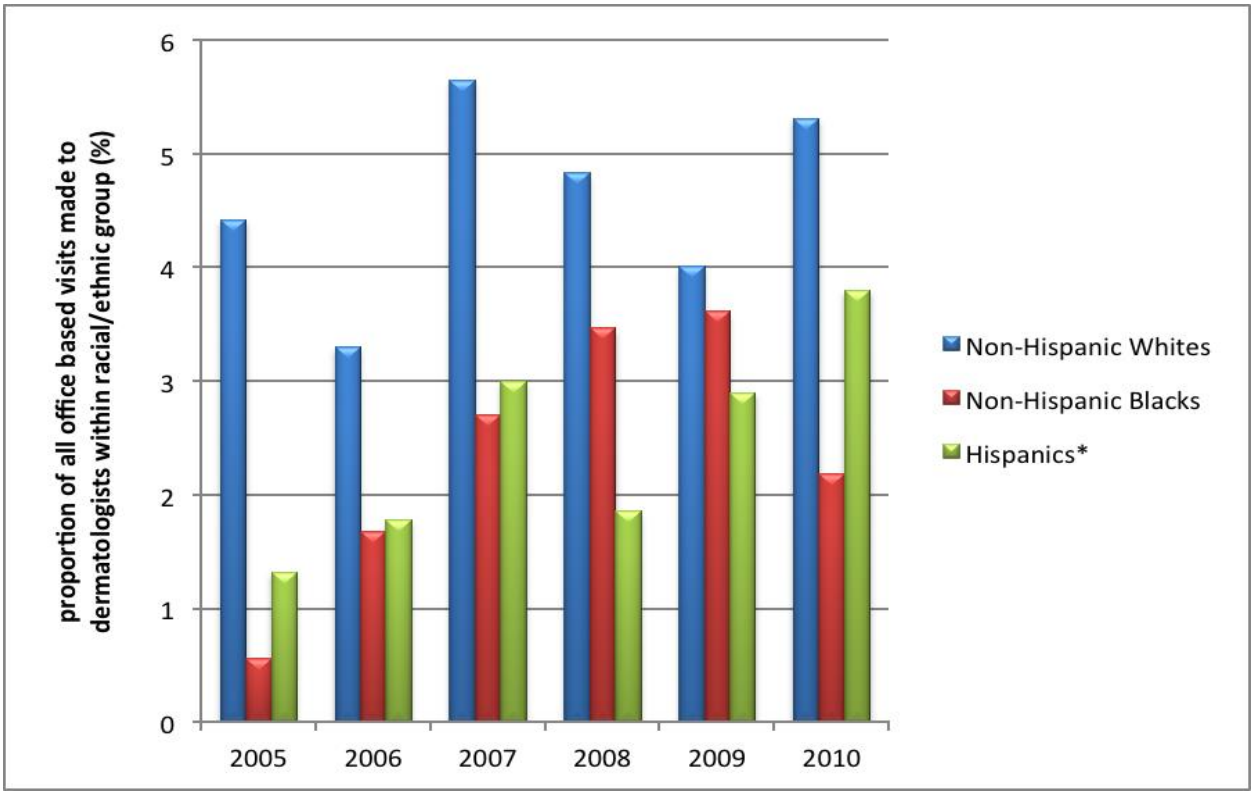
From 2005 to 2010, 190,612,400 outpatient visits to dermatologists occurred among insured US patients. Of those, NHW made 165,469,000 visits, NHB made 9,704,400 visits and Hispanics made 10,423,200 outpatient visits. Publicly insured visits accounted for approximately one-third of insured dermatology visits. Figures 1a and 1b illustrates the proportion of all outpatient visits for dermatology services by racial/ethnic group for each year from 2005 to 2010. The proportion of visits for all primary dermatologic diagnoses increased significantly for Hispanics ($\beta = 0.19$, $p = 0.003$) with private insurance during the study period. For Hispanics with public insurance and NHB with either private or public insurance, differences in utilization did not change significantly over time (Figure 1).

Figure 1a: Proportion of Office Visits Made to Dermatologists Among Patients with Public Insurance.



The proportional utilization by race/ethnicity and source of payment demonstrates that differences in utilization did not change significantly over time for Hispanics and non-Hispanic Blacks with public insurance. The number for publicly insured dermatologic and non-dermatologic visits totaled 803,638,300 during 2005-2010 study period.

Figure 1b: Proportion of Office Visits Made to Dermatologists Among Patients with Private Insurance.



*The proportion of visits for all primary diagnoses by Hispanics increased significantly ($\beta = 0.19$, $p = 0.003$) among all those with private insurance during the study period. The number of privately insured dermatologic and non-dermatologic encounters totaled 3,125,989,800 visits during the 2005-2010 study period.

Characteristics of Publicly and Privately Insured Visits

Characteristics of visits attended by publicly and privately insured NHW, NHB and Hispanics for 2005-2010 are displayed in Tables 1 and 2. For both publicly and privately insured patients, visits by NHB and Hispanics were far less frequent than visits by NHW.

Publicly insured visits made by NHB were most frequently done by females, patients older than 65, those living in metropolitan regions and those living in the South. Primary diagnoses for publicly insured visits by NHB were most often categorized in the "remaining diagnosis" (supplement) and most frequently were non-referred. Publicly insured visits made by Hispanics were also most often by females, those older than age 65, those living in metropolitan regions and those in the West. Primary diagnoses of publicly insured visits by Hispanics were most often categorized in the "remaining diagnosis" category. Publicly insured visits by NHW were more frequent among males, those older than age 65, those living in metropolitan regions and those living in the South. Primary diagnoses with publicly insured NHW were most frequently recorded as "pre-malignant and malignant conditions" and were most often non-referred (Table 1).

Table 1. Characteristics of insured office-based visits to dermatologists by race, ethnicity and primary source of payment, United States, 2005-2010.*

Public Insurance**

	All visits Weighted frequency (in 1000s)	Standard of error	% of visits	Non-Hispanic whites Weighted frequency (in 1000s)	Non-Hispanic whites Standard of error	% of visits	Non-Hispanic Blacks Weighted frequency (in 1000s)	Non-Hispanic Black Standard of error	% of visits	Hispanics (in 1000s)	Hispanics Standard of error	% of visits
Age												
All ages	61,759.6	5,011.8	100	55,066	4,721.3	100	2,694.8	637.9	100	3,173.6	765.7	100
< 65 years old	7,584.8	1,140.8	12.3	5,515.7	840.5	10.0	1,211.4	376.4	45.0	794.3	298.1	25.0
≥ 65years old	54,174	4,353	87.7	49,550.3	4,208.5	89.9	1,483.4	411.3	55.0	2,379.3	567.8	75.0
Gender												
Female	31,165.2	2,712.8	50.5	27,085.4	2,438	49.2	1,759.6	488.6	65.3	1,807.6	564.5	57.0
Male	30594.5	2,638.8	49.5	27,980.6	2,573.1	50.8	935.2	230.0	34.7	1,366.0	301.7	43.0
Metropolitan Statistical Area (MSA)												
Metro	53,388.7	4,413.2	86.5	47,151.3	4,117.6	85.6	2,592.6	633.7	96.2	2,851.0	752.4	89.8
Non-metro	8,371	2,370.8	13.6	7,914.7	2,315.2	14.4	102.3	76.3	3.8	322.5	142.5	10.2
Geographic region												
Northeast	8,493.7	1,520.9	13.8	8,116.2	1,466.9	14.7	95.6	48.4	3.6	281.9	93.1	8.9
Midwest	14,540.6	2,252.7	23.5	13,442.1	2,224.6	24.4	666.6	319.6	24.7	369.8	139.5	11.7
South	25,626.1	3,671.2	41.5	22,473.2	3,388.3	40.8	1,748.4	545.7	64.9	1,236.9	651.6	39.0

West	13,099.2	2,068.9	21.2	11,034.5	1,922.2	20.0	184.2	71.8	6.8	1,285.0	365.5	40.5
Diagnoses												
Pre-malignant and Malignant* **	19,949.7	1,943.9	32.3	19,016	1,944.9	34.5	273.2	122.4	10.1	656.1	176.9	20.7
Inflammatory Dermatoses** **	8,051.2	848.5	13.0	6,408.2	726.4	11.6	870.2	269.1	32.3	490.6	133.6	15.5
Other Diagnoses*** **	16,309.7	1,718.1	26.4	14,782.5	1,604.3	26.9	536.7	179.8	19.9	633.4	167.7	20.0
Remaining Diagnoses**** ***	17,449	1,955.1	28.3	14,859.3	1,813.8	27.0	1,014.8	300.7	37.7	1,393.4	549.7	44.0
Referral status												
Referred	10,805.1	1,458	17.5	8,963.2	1,210.3	16.3	962.4	336.6	35.7	708.9	212.3	22.3
Non-referred	39,847	4,042	64.5	36,638.2	3,904.2	66.5	1,169.2	288.7	43.4	1,656.7	414.3	52.2
Unknown or Blank	11,107.6	1,307.4	18.0	9,464.6	1,169.3	17.2	563.3	207.4	20.9	807.9	356.8	25.5

*Data source: National Ambulatory Medical Care Survey (2005-2010)
**Public Insurance includes Medicaid and Medicare, Medicare, or Medicaid/State Children's Health Insurance Plan (SCHIP)
***Premalignant and malignant: actinic keratosis, malignant neoplasm of skin-unspecified site, personal history of malignant neoplasm of the skin, malignant neoplasm of skin on the face
****Inflammatory dermatoses: acne, dermatitis, psoriasis, and rosacea
*****Other: benign neoplasm of skin-unspecified, seborrheic keratosis, verruca, neoplasm of uncertain behavior, sebaceous cyst, and unspecified disorder of the skin
******Remaining diagnoses: all other primary diagnoses for office-based visits

Table 2. Characteristics of insured office-based visits to dermatologists by race, ethnicity and primary source of payment, United States, 2005-2010.*

Private Insurance**

	All visits Weighted frequency (in 1000s)	Standard of error	% of visits	Non-Hispanic whites Weighted frequency (in 1000s)	Non-Hispanic whites Standard of error	% of visits	Non-Hispanic Blacks Weighted frequency (in 1000s)	Non-Hispanic Blacks Standard of error	% of visits	Hispanics Weighted frequency (in 1000s)	Hispanics Standard of error	% of visits
Age												
All ages	128,852.7	9086.6	100	110,403.1	8,519.6	100	7,009.6	1,284.5	100	7,249.6	777.2	100
< 65 years old	116,453.7	8500.7	90.4	98,970.4	7,954.8	89.7	6,675.6	1,216.8	95.2	6,774.8	742.1	93.5
≥ 65 years old	12,399.0	1326.8	9.6	11,432.7	1,253.5	10.4	334	146.8	4.8	474.8	121.4	6.55
Gender												
Female	76,018.7	6016.7	59.0	64,197.5	5,610.6	58.2	4,921.7	986.0	70.2	4,343.9	520.9	57.0
Male	52,834.1	3547.5	41.00	46,205.6	3,335.6	41.9	2,087.8	400.3	29.8	2,905.6	410.0	43.0
Metropolitan Statistical Area (MSA)												
Metro	121,195.5	8,943.8	94.1	103,265.6	8,386.8	93.5	6,838.0	1,277.1	97.5	7,028.5	768.8	97.0
Non-metro	7,657.2	1,561.9	5.9	7,137.5	1,467.7	6.5	171.6	102.3	2.5	221.0	115.1	3.0
Geographic region												
Northeast	24,244.0	2,900.1	18.8	22,243.3	2,733.1	20.2	511.8	124.3	7.3	1,055.6	235.6	14.6
Midwest	32,442.9	4,828.2	25.2	29,440.4	4,703.1	26.7	1,408.9	586.7	20.1	766.9	187.6	10.6
South	46,445.0	6,521.8	36.1	38,913.1	6,035.4	35.3	4,359.6	1,113.1	62.2	2,404.6	490.7	33.2
West	25,720.8	2,784.9	20.0	19,806.3	2,498.0	17.9	729.3	2,06.5	10.4	3,022.5	522.3	41.7
Diagnoses												
Premalignant and	14,523.1	1,408.1	11.3	13,965.4	1,380.2	12.7	126.2	59.8	1.8	383.3	108.7	5.3

Malignant* **												
Inflammatory Dermatoses** **	37,865.5	2,891.6	29.34	30,230.7	2,595.6	27.4	2,800.4	573.4	40.0	2,850.6	410.3	39.3
Other Diagnoses*** **	31,074.3	2,739.5	24.1	28,088.8	2,619.3	25.4	676.3	157.7	9.7	1,637.4	261.9	22.6
Remaining Diagnoses**** **	45,389.9	3,347.6	35.2	38,118.3	3,122.8	34.5	3,406.7	724.5	49.0	2,378.2	344.3	32.8
Referral status												
Referred	30,548.0	3,146.6	23.7	25,208.7	2,728.4	22.8	2,106.7	858.2	30.1	2,040.5	364.2	28.2
Non-referred	73,845.1	6,890.5	57.3	64,798.4	6,430.5	58.7	3,366.6	611.6	48.0	3,634.9	528.9	50.1
Unknown or Blank	24,459.6	2,620.4	19.0	20,396.1	2,292.8	18.5	1,536.2	331.7	21.9	1,574.2	273.2	21.7

*Data source: National Ambulatory Medical Care Survey (2005-2010)
**Includes visits exclusively with private insurance
***Premalignant and malignant: actinic keratosis, malignant neoplasm of skin-unspecified site, personal history of malignant neoplasm of the skin, malignant neoplasm of skin on the face
****Inflammatory dermatoses: acne, dermatitis, psoriasis, and rosacea
*****Other: benign neoplasm of skin-unspecified, seborrheic keratosis, verruca, neoplasm of uncertain behavior, sebaceous cyst, and unspecified disorder of the skin
******Remaining diagnoses: all other primary diagnoses for office-based visits

Privately insured visits by NHB were more common among those younger than 65 years, women, those living in metropolitan areas and those in the South. The most common primary diagnostic category for NHB was "remaining diagnoses," and non-referred visits outnumbered referred visits. Visits by Hispanics were also more common in those younger than 65 years, women, those residing in metropolitan areas and those in the West. The most common primary diagnosis category was inflammatory dermatoses and non-referred visits outnumbered referred visits. Similarly, for privately insured NHW, visits were more frequent among patients younger than 65, women, metropolitan dwellers and those in the southern region. The most common primary diagnosis category was "remaining diagnosis" and non-referred visits were also more frequent than referred ones for privately insured NHW (Table 2).

Racial and Ethnic Differences in Use of Publicly and Privately Insured Visits

Dermatology visits were statistically significantly less likely to be made by publicly insured patients compared to privately insured ones, after adjustment for age, gender, geographic region, MSA status and primary diagnosis AOR (95% Confidence Interval [CI]) = 0.46 [0.39-0.55]). Overall, publicly insured visits were less likely among NHB (62% lower odds) and Hispanics (54% lower odds) compared to NHW. However, NHB and Hispanics had 76% and 64% lower odds, respectively, of making a non-referred visit compared to NHW, a statistically significant difference. Privately insured dermatology visits were also less likely among NHB (39% lower odds) and Hispanics (53% lower odds) than NHW. Similarly, privately insured NHB and Hispanics had 55% and 61% lower odds, respectively, of making a non-referred visit compared to NHW (Table 3).

Table 3. Adjusted odds ratio (OR) of office-based dermatology visits by referral status. NAMCS, 2005-2010*

Publically Insured**						
Race/Ethnicity	Any Visit OR (95% CI)	*P* Value ^	Referred OR (95% CI)	*P* Value	Non-Referred OR (95% CI)	*P* Valu
on-Hispanic Blacks	0.38 (0.24, 0.62)	.0001	1.54 (0.85, 2.79)	0.155	0.24 (0.14, 0.40)	0.001
Hispanics	0.46 (0.26, 0.80)	.0063	0.62 (0.28, 1.36	0.233	0.36 (0.20, 0.64)	0.005
Non-Hispanic whites	1.0 (reference)		1.0 (reference)		1.0 (reference)	
Privately Insured***						
Race/Ethnicity	Any Visit OR (95% CI)	*P* Valu e	Referred OR (95% CI)	*P* Value	Non-Referred OR (95% CI)	*P* Value
Non-Hispanic Blacks	0.61 (0.39, 0.94)	0.02 5	1.24 (0.47, 3.26)	0.657	0.45 (0.29, 0.71)	0.000 5
Hispanics	0.47 (0.35, 0.63)	<0.0 01	0.64 (0.40, 1.02)	0.058	0.39 (0.26, 0.56)	<0.00 1
Non-Hispanic whites	1.0 (Reference)		1.0 (Reference)		1.0 (Reference)	

*Data source: National Ambulatory Medical Care Survey, 2005-2010
Multivariate analyses adjusted for age, gender, MSA status, geographic region and primary diagnoses.
**Public Insurance: Medicaid and Medicare, Medicare, or Medicaid/State Children's Health Insurance Plan (SCHIP).
***Includes those with private insurance only
^P Value <0.05 considered statistically significant.
CI = confidence interval

Patterns of non-Referred Visit Diagnoses among whites and Minorities

For publicly and privately insured NHW and minorities (NHB and Hispanics), non-referred dermatology visits were more likely to be attributed to "pre-malignant and malignant" diagnoses than to 'inflammatory" ones. Among NHW, visits were 55% more likely to be due to diagnoses in the "other" non-inflammatory diagnoses (including benign neoplasm of skin-unspecified, seborrheic keratosis, verruca, neoplasm of uncertain behavior, sebaceous cyst and unspecified disorder of the skin) than to inflammatory diagnoses (Table 4).

Table 4. Adjusted odds ratio (OR) of non-referred visits by primary diagnosis. NAMCS, 2005-2010.*

	Visit Diagnosis Type	Adjusted OR (95% CI)	*P* Value^
Non-Hispanic whites			
	Pre-malignant and Malignant**	4.58 (3.27, 6.41)	<0.001
	Other***	1.55 (1.28, 1.89)	<0.001
	Inflammatory dermatoses****	1.0 (Reference)	
Non-Hispanic Blacks and Hispanics			
	Pre-malignant and Malignant**	4.48 (1.68, 11.94)	0.0027
	Other***	0.77 (0.50, 1.19)	0.2381
	Inflammatory dermatoses****	1.0 (Reference)	

*Data source: National Ambulatory Medical Care Survey, 2005-2010
Multivariate analyses adjusted for age, gender, MSA status, geographic region and primary diagnoses
**Pre-malignant and malignant: actinic keratosis, malignant neoplasm of skin-unspecified site, personal history of malignant neoplasm of the skin, malignant neoplasm of skin on the face
***Other: benign neoplasm of skin-unspecified, seborrheic keratosis, verruca, neoplasm of uncertain behavior, sebaceous cyst, and unspecified disorder of the skin
****Inflammatory dermatoses: acne, dermatitis, psoriasis, and rosacea
^*P* Value <0.05 is considered statistically significant
CI = confidence interval

DISCUSSION

In this study, we found that insured NHB and Hispanics were significantly less likely than their NHW counterparts to make outpatient dermatology visits in the US from 2005 to 2010. The proportion of visits by privately insured Hispanics increased during this time period. Racial/ethnic differences in utilization were the most profound among publicly insured patients and were observed only among non-professionally referred dermatology visits. These findings

provide insights into potential mechanisms for ethnic and racial inequities in patient utilization of dermatology services, as well as racial/ethnic differences in dermatological clinical outcomes.

To our knowledge, previous studies have not examined ethnic and racial differences in the use of dermatological services among insured patients in the US. Our results are consistent with findings from other disciplines of medicine, demonstrating that minorities are less likely to access health care services in general, including specialty services (Bisgaier & Rhodes, 2011; Heller et al., 2012; Levine et al., 2011). The reasons for these inequities among an insured patient population are not entirely clear. Several factors may play a role, including patients' awareness of the need or preferences for dermatologic care, the practice patterns of referring healthcare providers (e.g., primary care providers) and/or insurance policies. In prior studies, minority patients demonstrated less awareness of sun-protective behaviors and routine skin cancer screenings compared to their white counterparts (Buster, You, Fouad, & Elmets, 2012; Cheng et al., 2010).

Throughout all years, minorities (NHB and Hispanics) were less likely than NHW to seek dermatology care, with differences most profound among non-referred visits. Although both NHW and minorities made non-referred visits with pre-malignant and malignant diagnoses, NHW were more likely to make non-referred visits for "other diagnoses" relative to inflammatory diagnoses, while minorities were not. The reasons for the lower frequency of visits overall and for differences in non-referred visits are unclear. It is possible that minorities hold a higher threshold for seeking dermatologic care than non-minorities. Additional factors may include differences in preferences for dermatologic services, the recognition of dermatological conditions, competing health priorities and/or attitudes toward health care in general. Patients' cultural perceptions, lack of necessary language skills, individual values concerning overall health and illness (Zuvekas & Taliaferro, 2003), use of folk medicines and fear of detecting cancer or other serious conditions have been proposed as reasons why minorities, such as African Americans, might be less likely to seek out the care of a dermatologist (McMichael & Jackson, 2000). Further, because minorities are at lower risk for the development of skin cancer, they may possess inherent cultural biases regarding the importance of dermatological health to their overall health (Cheng, et al., 2010). Prior studies have shown that limited English language fluency contributes to race/ethnicity disparities in the receipt of pediatric and psychiatric care (Fiscella, et al., 2002; Sentell, Shumway, & Snowden, 2007). The role of English language fluency in utilization and access to dermatologic care deserves further exploration. Our findings demonstrate no racial differences in the likelihood of having a referred dermatology visit, suggesting that primary provider referral practice patterns may be independent of race and ethnicity and may be more a consequence of the primary diagnosis chronicity and severity.

More frequent dermatology visits and referrals among the privately insured may reflect differences in health insurance coverage for dermatology services as well as differences in the willingness of dermatologists to accept patients with public insurance. Bisgaier and Rhodes demonstrated significant disparities in access to specialists (including dermatologists) that was directly attributable to providers' reluctance to accept patients with public insurance (Bisgaier & Rhodes, 2011). Furthermore, in dermatology practices accepting both private and public insurance plans, public insurance enrollees experienced longer average wait times than those with private insurance (Bisgaier & Rhodes, 2011). The low participation rates of dermatologists in public insurance programs may be attributable, in part, to low provider reimbursement rates, cumbersome administrative requirements, poor provider perceptions of programs, institutional or

practice restrictions regarding program participation and/or financial constraints (Bisgaier & Rhodes, 2011; Bonito, et al., 2005; "Disparities," 2010). Our findings suggest that public insurance policies may improve the access of racial/ethnic minority patients to certain types of care (e.g., primary care) (*Medicaid's Role for Black Americans*, 2011; *Medicaid's Role for Hispanic Americans*, 2011) while inadvertently hindering their access to dermatology services, which corroborates similar findings on the lower use of other types of specialty services among minorities with public insurance (Bisgaier & Rhodes, 2011; Hargraves, Cunningham, & Hughes, 2001). The influence of the Patient Protection and Affordable Care Act (ACA) on disparities in patients' use of and access to dermatology services deserves further study.

Our study has several limitations. First, despite the availability of numerous data elements within NAMCS to explore dermatology health services utilization, high non-response rates for race and ethnicity required reliance on a large proportion of imputed data for the estimation of visit frequencies and calculation of adjusted odds ratios which may have altered our findings. (Cherry, et al., 2008; Cherry, et al., 2007; Hsiao, et al., 2010; Statistics, 2011a, 2011b). Further, few visits were identified for patients who were "non-Hispanic other," limiting our ability to explore differences with other racial/ethnic groups. Second, the relatively low number of dermatology visits within the NAMCS limited our ability to explore ethnic/race differences in dermatology service use among different forms of public insurance. We acknowledge the varying dermatological experience of Medicare and Medicaid beneficiaries. It is likely that dermatology service use varies among persons insured by Medicaid, Medicare and SCHIP, especially given the age distribution differences in these populations and their unique dermatologic needs. Nonetheless, prior studies exploring dermatology service use among patients with these different insurances have revealed similar findings, providing confidence in our approach (Stern, 2004). Third, the design of the NAMCS provides little information to assess the influence of varying levels of patient income or education on dermatology service use, factors implicated as highly important determinants of health care utilization in general, as well as in dermatology services in prior studies (Buster, et al., 2012; Sheehy et al., 2011; Zuvekas & Taliaferro, 2003). We were also unable to assess system-level barriers including intake procedures, physician hours and physicians' administrative resources, all of which could influence the ability of physicians to see new minority and non-minority patients in dermatology care (Scheppers, van Dongen, Dekker, & Geertzen, 2006). Fourth, NAMCS contains limited data on clinical diagnoses for ambulatory care visits. Studies providing greater detail on the types of diagnoses and disease severity of patients utilizing dermatology services could better inform reasons for the disparities we observed in this study. Finally, we were unable to evaluated trends in utilization after the implementation of the ACA as this was unavailable during the time of our analysis. Future studies examining the impact of the ACA on utilization of and access to dermatologic services for the insured and uninsured are needed

CONCLUSION

In summary, we observed racial/ethnic disparities in the use of dermatology services for both publicly insured and privately insured visits that were most profound among patients attending non-referred visits, which suggests that observed inequities may result from minority patients' preferences or other factors (e.g., insurance coverage policies). Further studies examining the various patient, provider and system-related factors that influence the unequal

utilization of dermatology health services are important to identify mechanisms through which we can eliminate disparities in dermatological outcomes.

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APPENDIX

"Remaining" diagnoses, not included in definition for Malignant, Inflammatory and Other.

ICD-9-CM	Diagnoses label	Frequency	Percent	Cumulative Frequency	Cumulative Percent
2169-	**Benign neoplasm of skin, site unspecified**	293	12	731	29.93
6918-	**Other atopic dermatitis and related conditions**	59	2.42	1121	45.9
69010	**Seborrheic dermatitis, unspecified**	56	2.29	1059	43.37
V501-	**Other plastic surgery for unacceptable cosmetic appearance**	52	2.13	2168	88.78
7098-	**Other specified disorders of skin**	50	2.05	1860	76.17
70909	**Other dyschromia**	49	2.01	1791	73.34
V6709	**Examination following other treatment**	49	2.01	2302	94.27
2165-	**Benign neoplasm of skin of trunk, except scrotum**	46	1.88	430	17.61
7011-	**Keratoderma, acquired**	39	1.6	1411	57.78
70401	**Alopecia areata**	38	1.56	1564	64.05
0780-	**Molluscum contagiosum**	35	1.43	127	5.2
7048-	**Other specified diseases of hair and hair follicles**	33	1.35	1616	66.18

2392-	**Neoplasms of unspecified nature of bone, soft tissue, and skin**	32	1.31	831	34.03
7820-	**Rash and other nonspecific skin eruption**	32	1.31	1961	80.3
69279	**Other dermatitis due to solar radiation**	31	1.27	1193	48.85
7014-	**Keloid scar**	31	1.27	1452	59.46
70900	**Dyschromia, unspecified**	29	1.19	1726	70.68
1729-	**Malignant neoplasm of melanoma of skin, site unspecified**	28	1.15	264	10.81
70400	**Alopecia, unspecified**	27	1.11	1526	62.49
V829-	**Special screening for unspecified condition/Non-codable diagnosis/insuff. info for diagnosis**	27	1.11	2438	99.84
V5831	**Encounter for removal of sutures**	26	1.06	2205	90.29
1101-	**Dermatophytosis of nail**	25	1.02	157	6.43
6983-	**Lichenification and lichen simplex chronicus**	24	0.98	1340	54.87
7019-	**Unspecified hypertrophic and atrophic conditions of skin**	24	0.98	1486	60.85
75733	**Congenital pigmentary anomalies of skin**	24	0.98	1922	78.71
V1209	**Personal Hx of Infection/Parasitic diseases Unspecified/Personal history of diseases of skin unspecified**	24	0.98	2098	85.91
6989-	**Unspecified pruritic disorder**	23	0.94	1365	55.9
V6759	**Unspecified follow-up examination**	22	0.9	2324	95.17

69589	**Other specified erythematous conditions**	21	0.86	1267	51.88
69272	**Acute dermatitis due to solar radiation**	20	0.82	1156	47.34
V0739	**Other prophylactic chemotherapy**	19	0.78	2066	84.6
22800	**Hemangioma of unspecified site**	18	0.74	750	30.71
1734-	**Malignant neoplasm of scalp and skin of neck**	17	0.7	297	12.16
7068-	**Other specified diseases of sebaceous glands**	17	0.7	1665	68.18
7092-	**Scar conditions and fibrosis of skin**	17	0.7	1809	74.08
1735-	**Malignant neoplasm of skin of trunk, except scrotum**	16	0.66	313	12.82
70901	**Vitiligo**	16	0.66	1742	71.33
2329-	**Carcinoma in situ of skin, site unspecified**	15	0.61	792	32.43
6945-	**Pemphigoid**	15	0.61	1232	50.45
6959-	**Unspecified erythematous condition**	15	0.61	1282	52.5
7089-	**Urticaria, unspecified**	15	0.61	1697	69.49
V6549	**Examination following surgery, unspecif**	14	0.57	2239	91.69
V6700	**Examination following other surgery**	14	0.57	2253	92.26
0539-	**Herpes zoster without mention of complication**	13	0.53	75	3.07
1110-	**Pityriasis versicolor**	13	0.53	201	8.23
1991-	**Malignant neoplasm other w/o specification of site**	13	0.53	344	14.09

6829-	**Other cellulitis and abscess of unspecified sites**	13	0.53	967	39.6
V741-	**Special screening for bac/spirochetal diseased: Pulmonary Tuberculosis**	13	0.53	2394	98.03
0549-	**Herpes simplex without mention of complication**	12	0.49	89	3.64
2163-	**Benign neoplasm of skin of other and unspecified parts of face**	12	0.49	379	15.52
5285-	**Diseases of lips**	12	0.49	924	37.84
684--	**Impetigo**	12	0.49	979	40.09
6869-	**Unspecified local infection of skin and subcutaneous tissue**	12	0.49	1003	41.07
6970-	**Lichen planus**	12	0.49	1310	53.64
70581	**Dyshidrosis**	12	0.49	1635	66.95
V711-	**Observation for suspected malignant neoplasm**	12	0.49	2349	96.19
1736-	**Malignant neoplasm of skin of upper limb including shoulder**	11	0.45	324	13.27
22801	**Hemangioma of skin and subcutaneous tissue**	11	0.45	761	31.16
7821	**Rash and other nonspecific skin eruption**	11	0.45	1972	80.75
78261	**Pallor**	11	0.45	1986	81.33
V681	**Encounter for Admin Purposes: Rx refill**	11	0.45	2336	95.66
V7283	**Other specified pre-op examination**	11	0.45	2380	97.46

1105-	**Dermatophytosis of the body**	10	0.41	180	7.37
1732-	**Malignant neoplasm of skin of ear and external auditory canal**	10	0.41	280	11.47
V6540	**Counseling NOS**	10	0.41	2225	91.11
6954-	**Lupus erythematosus**	9	0.37	1246	51.02
7018-	**Other specified hypertrophic and atrophic conditions of skin**	9	0.37	1462	59.87
7038-	**Other specified diseases of nail**	9	0.37	1498	61.34
919-	**Superficial Injury/multiple/unspec site**	9	0.37	2026	82.96
V820	**Special screening for skin conditions**	9	0.37	2406	98.53
V221-	**Supervision of other normal pregnancy**	8	0.33	2109	86.36
1104-	**Dermatophytosis of foot**	7	0.29	170	6.96
1109-	**Dermatophytosis of unspecified site**	7	0.29	188	7.7
20210	**Mycosis fungoides, unspec site, extranodal and solid organ sites**	7	0.29	352	14.41
2299-	**Benign neoplasm of site unspecified**	7	0.29	772	31.61
6926-	**Contact dermatitis/eczema due to plants [except food]**	7	0.29	1135	46.48
69289	**Other dermatitis or eczema due to other specified agents**	7	0.29	1207	49.43
70409	**Other alopecia**	7	0.29	1577	64.58

71590	**Osteoarthrosis, unspec generalized or localized, site unspec**	7	0.29	1872	76.66
V5832	**Encounter for removal of sutures**	7	0.29	2212	90.58
V711-	**Observation for suspected malignant neoplasm**	7	0.29	2356	96.48
1737-	**Malignant neoplasm of skin of lower limb, including hip**	6	0.25	330	13.51
4481-	**Nevus, non-neoplastic**	6	0.25	877	35.91
68600	**Pyoderma, unspecified**	6	0.25	986	40.38
69274	**Other chronic dermatitis due to solar radiation**	6	0.25	1162	47.58
6962-	**Parapsoriasis**	6	0.25	1288	52.74
6963-	**Pityriasis rosea**	6	0.25	1294	52.99
7010-	**Circumscribed scleroderma**	6	0.25	1372	56.18
7012-	**Acquired acanthosis nigricans**	6	0.25	1417	58.03
70402	**Telogen effluvium**	6	0.25	1570	64.29
7041-	**Hirsutism**	6	0.25	1583	64.82
70521	**Primary focal hyperhidrosis**	6	0.25	1623	66.46
70583	**Hidradenitis**	6	0.25	1641	67.2
7063-	**Seborrhea**	6	0.25	1648	67.49
7828-	**Changes in skin texture**	6	0.25	1992	81.57
V509-	**Attention to surgical dressings and s...**	6	0.25	2178	89.19

V7189	**Observation for unspecified suspected conditions**	6	0.25	2362	96.72
V727	**Diagnostic skin and sensitization tests**	6	0.25	2368	96.97
1100-	**Dermatophytosis of scalp and beard**	5	0.2	132	5.41
1103-	**Dermatophytosis of groin and perianal area**	5	0.2	163	6.67
1123-	**Candidiasis of skin and nails**	5	0.2	207	8.48
1129-	**Candidiasis of unspecified site**	5	0.2	212	8.68
1330-	**Scabies**	5	0.2	219	8.97
2141-	**Lipoma of other skin and subcutaneous tissue**	5	0.2	359	14.7
2149-	**Lipoma, unspecified site**	5	0.2	364	14.91
2164-	**Benign neoplasm of scalp and skin of neck**	5	0.2	384	15.72
37331	**Eczematous dermatitis of eyelid**	5	0.2	857	35.09
4489-	**Other and unspecified capillary diseases**	5	0.2	882	36.12
45981	**Venous (peripheral) insufficiency, unspecified**	5	0.2	895	36.65
4720-	**Chronic rhinitis**	5	0.2	907	37.14
6809-	**Carbuncle and furuncle of unspecified site**	5	0.2	939	38.45
6819-	**Cellulitis and abscess of unspecified digit**	5	0.2	945	38.7
6930-	**Dermatitis due to drugs and medicines**	5	0.2	1212	49.63
7079-	**Chronic ulcer of unspecified site**	5	0.2	1678	68.71

8789-	**Open wound(s) unspecified, complicated: Genital organs including traumatic amputation**	5	0.2	2010	82.31
V500-	**Elective Procedure: Hair Transplant**	5	0.2	2116	86.65
V820-	**Special screening for unspecified conditions**	5	0.2	2411	98.73
2166-	**Benign neoplasm of skin of upper limb, including shoulder**	4	0.16	434	17.77
2167-	**Benign neoplasm of skin of lower limb, including hip**	4	0.16	438	17.94
2389-	**Neoplasm of uncertain behavior, site unspec.**	4	0.16	799	32.72
45989	**Other specified disorders of circulatory system**	4	0.16	899	36.81
6923-	**Contact dermatitis/eczema due to drug and med in contact w/ skin**	4	0.16	1127	46.15
69281	**Dermatitis due to cosmetics**	4	0.16	1197	49.02
7013-	**Striae atrophicae**	4	0.16	1421	58.19
7088-	**Other specified urticaria**	4	0.16	1682	68.88
7100-	**Systemic lupus erythematosus**	4	0.16	1864	76.33
7571-	**Vascular hamartomas**	4	0.16	1896	77.64
7808-	**Disturbance of skin sensation**	4	0.16	1929	78.99
78900	**Other ill-defined conditions**	4	0.16	2000	81.9
V1082	**Personal Hx of malignant melanoma of skin**	4	0.16	2070	84.77
V109-	**Personal history of malignant neoplasm: Other,**	4	0.16	2074	84.93

	Gastrointestinal				
V508-	**Unspecelectiv surgery for purpose other then remedying health state**	4	0.16	2172	88.94
5319	**Gastric Ulcer: Unspecified acute/chronic, without mention of hemorrhage/perforation**	3	0.12	62	2.54
1725-	**Malignant neoplasm of trunk, except scrotum**	3	0.12	230	9.42
1726-	**Malignant neoplasm of upper limb, including shoulder**	3	0.12	233	9.54
1727-	**Malignant neoplasm of lower limb, including hip**	3	0.12	236	9.66
1730-	**Malignant neoplasm of skin of lip**	3	0.12	267	10.93
1731-	**Malignant neoplasm of eyelid, including canthus**	3	0.12	270	11.06
22809	**Hemangioma of other sites**	3	0.12	764	31.29
2323-	**Carcinoma in situ of skin of other and unspec parts of face**	3	0.12	775	31.74
2399-	**Neoplasms of unspecified nature site unspec**	3	0.12	836	34.23
2872-	**Other non-thrombocytopenic purpuras**	3	0.12	848	34.73
38000	**Perichondritis of pinna, unspecified**	3	0.12	862	35.3
4476-	**Arteritis, unspecified**	3	0.12	871	35.67
4540-	**Varicose veins of lower extremities with ulcer**	3	0.12	885	36.24
6822-	**Other cellulitis and abscess of trunk**	3	0.12	949	38.86
6861-	**Pyogenic granuloma**	3	0.12	991	40.58

69018	**Other seborrheic dermatitis**	3	0.12	1062	43.49
6944-	**Pemphigus**	3	0.12	1217	49.84
6978-	**Other lichen, not elsewhere classified**	3	0.12	1313	53.77
6982-	**Prurigo**	3	0.12	1316	53.89
70710	**Ulcer of lower limbs, exc decubitus,**	3	0.12	1671	68.43
71946	**Brachia neuritis or radiculitis NOS**	3	0.12	1878	76.9
7273-	**Synovial cyst, unspecified**	3	0.12	1886	77.23
79989	**Other specified cause/Other ill-defined condition**	3	0.12	2003	82.02
99832	**Disruption/Dihiscence of external closure**	3	0.12	2042	83.62
V7643	**Special screening for unspecified/other infectious disease: Skin**	3	0.12	2397	98.16
1338-	**Other acariasis**	2	0.08	221	9.05
135--	**Sarcoidosis**	2	0.08	223	9.13
2381-	**Neoplasm of uncertain behavior of connective and other soft tissue**	2	0.08	795	32.56
2395-	**Neoplasms of unspecified nature other genitourinary organs**	2	0.08	833	34.11
2449-	**Unspecified hypothyroidism**	2	0.08	838	34.32
4019-	**Unspecified essential hypertension**	2	0.08	864	35.38

4541-	**Varicose veins of lower extremities with inflammation**	2	0.08	887	36.32
4659-	**Acute upper respiratory infections of unspecified site**	2	0.08	902	36.94
6920-	**Contact dermatitis/eczema of due to detergents**	2	0.08	1123	45.99
69282	**Dermatitis due to other radiation**	2	0.08	1199	49.1
6940-	**Dermatitis herpetiformis**	2	0.08	1214	49.71
6949-	**Unspecified bullous dermatoses**	2	0.08	1234	50.53
6964-	**Pityriasis rubra pilaris**	2	0.08	1296	53.07
6965-	**Other and unspecified pityriasis**	2	0.08	1298	53.15
6984-	**Dermatitis factitia [artefacta]**	2	0.08	1342	54.95
7028-	**Other specified dermatoses**	2	0.08	1488	60.93
7069-	**Unspecified disease of sebaceous glands**	2	0.08	1667	68.26
71596	**Arthropathy, unspecified, site unspecified**	2	0.08	1874	76.74
72691	**Other bursitis**	2	0.08	1883	77.11
75732	**Congenital pigmentary anomalies of skin**	2	0.08	1898	77.72
9194-	**Insect Bite, nonvenomous w/ out mention of infection**	2	0.08	2028	83.05
9596-	**Injury to unspecified site**	2	0.08	2032	83.21
9951-	**Other drug allergy**	2	0.08	2035	83.33
99889	**Other specified complications of procedures**	2	0.08	2045	83.74

V0481	**Other prophylactic chemotherapy**	2	0.08	2047	83.82
V4589	**Hair transplant**	2	0.08	2111	86.45
V992-	**Diagnosis of `none`**	2	0.08	2441	99.96
1700	**Malignant Neoplasm of bone: Skull/Face -**	1	0.04	57	2.33
042--	**Human immunodeficiency virus (HIV) disease**	1	0.04	58	2.38
0529-	**Varicella without mention of complication**	1	0.04	59	2.42
0540-	**Eczema herpeticum**	1	0.04	76	3.11
5419	**Other genital herpes**	1	0.04	77	3.15
0559-	**Measles without mention of complication**	1	0.04	90	3.69
0578-	**Other specified viral exanthemata**	1	0.04	91	3.73
0579-	**Viral exanthem, unspecified**	1	0.04	92	3.77
1102-	**Dermatophytosis of hand**	1	0.04	158	6.47
1108-	**Dermatophytosis of other specified sites**	1	0.04	181	7.41
1120-	**Candidiasis of mouth**	1	0.04	202	8.27
1179-	**Other and unspecified mycoses**	1	0.04	213	8.72
1320-	**Pediculosis capitis [head louse]**	1	0.04	214	8.76
1600-	**Malignant neoplasm of nasal cavities**	1	0.04	224	9.17
1710-	**Malignant neoplasm connective/soft tissue: Head, Face,**	1	0.04	225	9.21

	Neck				
1723-	**Malignant neoplasm of other and unspec parts of face**	1	0.04	226	9.25
1724-	**Malignant neoplasm of scalp and neck**	1	0.04	227	9.3
1954-	**Malignant neoplasm of other ill-defined site: Upper Limb**	1	0.04	331	13.55
20190	**Hodgkin`s dis, unspec, unspecsite, extranodal and solid organ sites**	1	0.04	345	14.13
20280	**Other lymphomas, unspec site, extranodal and solid organ sites**	1	0.04	353	14.46
2107-	**Benign neoplasm of nasopharynx**	1	0.04	354	14.5
2150-	**Other benign neoplasm of head, face, and neck**	1	0.04	365	14.95
2160-	**Benign neoplasm of skin of lip**	1	0.04	366	14.99
2162-	**Benign neoplasm of ear and external auditory canal**	1	0.04	367	15.03
22389	**Benign neoplasm of other urinary organs**	1	0.04	732	29.98
2298-	**Benign neoplasm of other specified sites**	1	0.04	765	31.33
2325-	**Carcinoma in situ of skin of trunk, except scrotum**	1	0.04	776	31.78
2326-	**Carcinoma in situ of skin of upper limb, including shoulder**	1	0.04	777	31.82
2349-	**Carcinoma in situ of site unspecified**	1	0.04	793	32.47
2564-	**Polycystic ovaries**	1	0.04	839	34.36
2648-	**Other manifestations of vitamin A deficiency**	1	0.04	840	34.4

2722-	**Mixed hyperlipidemia**	1	0.04	841	34.44
2726-	**Lipodystrophy**	1	0.04	842	34.48
2727-	**Lipidoses**	1	0.04	843	34.52
2769-	**Electrolyte and fluid disorders not elsewhere classified**	1	0.04	844	34.56
2832-	**Hemoglobinuria due to hemolysis from external causes**	1	0.04	845	34.6
2911-	**Alcohol amnestic syndrome**	1	0.04	849	34.77
311--	**Depressive disorder, not elsewhere classified**	1	0.04	850	34.81
3540-	**Carpal tunnel syndrome**	1	0.04	851	34.85
37230	**Conjunctivitis, unspecified**	1	0.04	852	34.89
3739-	**Unspecified inflammation of eyelid**	1	0.04	858	35.14
37484	**Cysts of eyelids**	1	0.04	859	35.18
4299-	**Heart disease, unspecified**	1	0.04	865	35.42
4378-	**Other cerebrovascular disease**	1	0.04	866	35.46
4460-	**Polyarteritis nodosa**	1	0.04	867	35.5
44629	**Other specified hypersensitivity angiitis**	1	0.04	868	35.54
4542-	**Varicose veins of lower extremities w/ ulcer and inflammation**	1	0.04	888	36.36
4549-	**Varicose vein of lower extremities w/o symptoms**	1	0.04	889	36.4

4571-	**Other lymphedema**	1	0.04	890	36.45
4619-	**Acute sinusitis, unspecified**	1	0.04	900	36.86
4779-	**Allergic rhinitis cause unspecified**	1	0.04	908	37.18
49320	**Chronic obstructive asthma/Asthma w/ COPD: unspecified asthmaticus or acute exacerbation**	1	0.04	909	37.22
49390	**Asthma, unspecified**	1	0.04	910	37.26
5238-	**Other specified periodontal diseases**	1	0.04	911	37.31
5282-	**Oral aphthae of the oral soft tissues**	1	0.04	912	37.35
5289-	**Other and unspecified diseases of the oral soft tissues**	1	0.04	925	37.88
53550	**Unspecific gastritis/gastroduodenitis w/o mention of hemorrhage**	1	0.04	926	37.92
5650-	**Anal fissure**	1	0.04	927	37.96
566--	**Abscess of anal and rectal regions**	1	0.04	928	38
59010	**Acute pyelonephritis without lesion of renal medullary necrosis**	1	0.04	929	38.04
6071-	**Balanoposthitis**	1	0.04	930	38.08
6072-	**Other inflammatory disorders of penis**	1	0.04	931	38.12
6110-	**Inflammatory disease of breast**	1	0.04	932	38.17
64783	**Other spec infec/parasite dis, antepartum condition or complication**	1	0.04	933	38.21

65963	**Other advanced maternal age, antepartum condition or complication**	1	0.04	934	38.25
68102	**Onychizia and paronychia of finger**	1	0.04	940	38.49
6820-	**Other cellulitis and abscess of face**	1	0.04	946	38.74
6823-	**Other cellulitis and abscess of upper arm and forearm**	1	0.04	950	38.9
6824-	**Other cellulitis and abscess of hand, except fingers and thumb**	1	0.04	951	38.94
6825-	**Other cellulitis and abscess of buttock**	1	0.04	952	38.98
6826-	**Other cellulitis and abscess of leg, except foot**	1	0.04	953	39.03
6828-	**Other cellulitis and abscess of other specified parts**	1	0.04	954	39.07
6851-	**Pilonidal cyst without mention of abscess**	1	0.04	980	40.13
68601	**Pyoderma gangrenosum**	1	0.04	987	40.42
68609	**Other pyoderma**	1	0.04	988	40.46
6924-	**Contact dermatitis/eczema of due to other chemical products**	1	0.04	1128	46.19
69271	**Sunburn**	1	0.04	1136	46.52
69283	**Dermatitis due to metals**	1	0.04	1200	49.14
6951-	**6951-**	1	0.04	1235	50.57
69510	**Erythema multiforme, unspecified/Erythema iris/Herpes iris**	1	0.04	1236	50.61

69519	**Other erythema multiforme**	1	0.04	1237	50.66
700--	**Corns and callosities**	1	0.04	1366	55.94
7015-	**Other abnormal granulation tissue**	1	0.04	1453	59.5
7030-	**Ingrowing nail**	1	0.04	1489	60.97
7039-	**Unspecified disease of nail**	1	0.04	1499	61.38
7051-	**Prickly heat**	1	0.04	1617	66.22
7060-	**Acne varioliformis**	1	0.04	1642	67.24
70700	**Decubitus ulcer of unspecified site**	1	0.04	1668	68.3
70712	**Ulcer of calf, exc decubitus**	1	0.04	1672	68.47
7078-	**Chronic ulcer of other specified sites**	1	0.04	1673	68.51
7091-	**Vascular disorders of skin**	1	0.04	1792	73.38
7093-	**Degenerative skin disorders**	1	0.04	1810	74.12
7103-	**Dermatomyositis/Poikildermatomyositis/Polymyositis w/ skin involvement**	1	0.04	1865	76.37
71690	**Arthropathy/Pain in joint, unspecified**	1	0.04	1875	76.78
7234-	**Brachia neuritis or radiculitis, unspecified**	1	0.04	1879	76.95
7244-	**Thoracic or lumbar sacral neuritis or radiculitis, unspecified**	1	0.04	1880	76.99
72633	**Olecranon Bursitis**	1	0.04	1881	77.03

72740	**Synovial cyst, unspecified**	1	0.04	1887	77.27
7286-	**Contracture of palmar fascia**	1	0.04	1888	77.31
7291-	**Myalgia and myositis**	1	0.04	1889	77.35
7292-	**Neuralgia, neuritis, and radiculitis, unspecified**	1	0.04	1890	77.4
72990	**Disorders of Soft Tissue, unspecified**	1	0.04	1891	77.44
74429	**Other specified anomalies of the ear**	1	0.04	1892	77.48
75739	**Other specified anomalies of the skin**	1	0.04	1923	78.75
7804-	**Dizziness and giddiness**	1	0.04	1924	78.79
78079	**Other malaise and fatigue**	1	0.04	1925	78.83
7822-	**Localized swelling, mass, or lump in skin**	1	0.04	1973	80.79
7823-	**Edema**	1	0.04	1974	80.84
7824-	**Jaundice, unspecified EXLUDING New Born**	1	0.04	1975	80.88
7829-	**Other symptoms involving skin/integument tissues**	1	0.04	1993	81.61
7842-	**Swelling, mass, or lump in head and neck**	1	0.04	1994	81.65
78605	**Shortness of Breath**	1	0.04	1995	81.7
7862-	**Cough**	1	0.04	1996	81.74
7999-	**Unknown cause of morbidity/mortality**	1	0.04	2004	82.06
84210	**Sprains and strains of hand: unspecified site**	1	0.04	2005	82.1

8798-	**Open wound(s) of multiple unspecified sites, complicated**	1	0.04	2011	82.35
8820-	**Open wound of Hand EXCLUDING Finger, w/ out mention of complication**	1	0.04	2012	82.39
8830-	**Open wound of Finger(s)**	1	0.04	2013	82.43
9100-	**Superficial Injury of face, neck, scalp EXCLUDING Eye: Abrasion or friction burn**	1	0.04	2014	82.47
9104-	**Insect Bite, nonvenomous w/ out mention of infection: Face, Neck, Scalp**	1	0.04	2015	82.51
9134-	**Insect Bite, nonvenomous w/ out mention of infection: Elbow, Forearm, Wrist**	1	0.04	2016	82.56
9160-	**Superficial Injury of Hip, Thigh, Leg, Ankle: Abrasion or friction burn**	1	0.04	2017	82.6
9198-	**Other unspecified superficial injury, multiple sites**	1	0.04	2029	83.09
9492-	**Burn w/ blisters and/or epidermal loss: 2nd Degree**	1	0.04	2030	83.13
9599-	**Angioneurotic edema**	1	0.04	2033	83.25
99527	**Drug Allergy, NOS**	1	0.04	2036	83.37
9953-	**Allergy, Allergic rxn NOS**	1	0.04	2037	83.42
99779	**Complications of Surg/Medical care: Vascular complications of other vessels, NOS**	1	0.04	2038	83.46
99811	**Hemorrhage complicating a procedure**	1	0.04	2039	83.5

99859	**Other post-op infection**	1	0.04	2043	83.66
V133-	**Personal history of other diseases of the skin and Subq tissue**	1	0.04	2099	85.95
V1589	**Personal history presenting hazards to health, NOS**	1	0.04	2100	86
V168-	**Personal Hx of Other specified malignant neoplasm**	1	0.04	2101	86.04
V583-	**Encounter for change or removal dressing/sutures**	1	0.04	2179	89.23
V5883	**Encounter for therapeutic drug monitoring**	1	0.04	2213	90.62
V642-	**Surgical or other Procedure not carried out as decided by patient**	1	0.04	2214	90.66
V643-	**Procedure not carried out for other reasons**	1	0.04	2215	90.7
V679-	**Unspecified follow-up examination**	1	0.04	2325	95.21
V700-	**Other specified general medical exam at health care facility**	1	0.04	2337	95.7
V727	**Diagnostic skin and sensitization tests**	1	0.04	2369	97.01
V7285	**Other specified examination**	1	0.04	2381	97.5
V990-	**Transferred to another facility, sent...**	1	0.04	2439	99.88
V997-	**Description not found**	1	0.04	2442	100