

Commentary

Increasing use of non-traditional vehicles for psoriasis and other inflammatory skin conditions

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Abstract

**Background:** Although topical corticosteroid ointments were once viewed as the best vehicle for treating inflammatory skin diseases, the recognition of the problem of poor compliance and patients' preferences for other vehicles has led to the development of corticosteroid products in alternative formulations.

**Objective:** To describe patterns of use of newer vehicle formulations including foams, shampoos, sprays, and lotions for the treatment of psoriasis and other dermatoses.

**Methods:** The use of non-traditional vehicles was identified using visit with diagnoses for psoriasis and other dermatoses from the National Ambulatory Medical Care Survey 2000-2010 data. Trends in corticosteroid vehicles mentions were evaluated over the study period to determine how the use of non-traditional vehicles has changed. The odds ratios of being prescribed a nontraditional vehicle were reported for patient and office-based characteristics of visits.

**Results:** Approximately 2.3% and 1.9% of visits mentioned foam and other non-traditional vehicles (shampoo, lotion, spray), respectively. The use of corticosteroids in shampoo, lotion, or spray preparations increased by 0.5% annually ( $p=0.008$ ) but did not significantly change for corticosteroids in a foam preparation ( $p=0.10$ ). Psoriasis and seborrheic dermatitis were the leading diagnoses at visits prescribed corticosteroids in nontraditional vehicles. Dermatologists were more likely than non-dermatologists to prescribe foam products [OR: 8.4 (3.6, 19.9)] or clobetasol in another non-traditional vehicle [OR: 49.7 (10.3, 240.5)].

**Limitations:** Product vehicle was not specified for all corticosteroids.

**Conclusion:** Although there was increasing use of non-traditional vehicles, the rate of use has remained low. Dermatologists appear to have greater familiarity with the use of these newer vehicle formulations than do physicians in other specialties.

**Key Words:** NAMCS; outpatient visits; corticosteroids; adherence; patient preference; foam; spray; shampoo; solution; ointment

# Introduction

Topical corticosteroids are the mainstay of treatment for psoriasis and many other skin conditions. Traditionally, these agents were prescribed in ointment and cream formulations. For many years, the dogma in dermatology said that ointments are more potent owing to their occlusive nature and should be prescribed to patients with dry, scaly skin eruptions like psoriasis because of their moisturizing properties [1,2]. However, messy vehicles can negatively affect patients' quality of life, leading to treatment non-adherence and poor treatment outcomes [3]. In addition, less messy formulations, like foams, sprays, lotions, and shampoos, may be just as potent as ointment formulations [4].

As patient-care progresses toward personalized medicine with a greater consideration of patients' preferences, less oily types of vehicles have been developed. The introduction of foam-based corticosteroids brought forth a new way of thinking and opened the path for other products such as sprays. Patients prefer vehicles that are quick drying, fragrance-free, and without residues or stains; 95% of patients rated such vehicles as excellent or good [3,5]. The ease in using these non-traditional vehicles makes them more appealing to patients and increases the likelihood that patients will use their medicine [3].

Although there are many clinical studies demonstrating patients favoring non-traditional corticosteroid vehicles, data are limited as to how often in practice physicians are prescribing non-traditional formulations of corticosteroids. We sought to characterize the patterns of use of different corticosteroid vehicles for psoriasis and other inflammatory skin conditions in the US outpatient office setting.

## Methods

We used data from the National Ambulatory Medical Care Survey (NAMCS) to assess the use of non-traditional vehicles by physicians. This survey is conducted by the Center for Disease Control and Prevention's National Center for Health Statistics. The NAMCS annually surveys a stratified sample of non-federally supported physician offices across the US. From these offices, a standardized form is used to collect data on a subset of visits from a random week of patient care. Data abstracted from patient charts and office records include patient characteristics (ie. race, sex, and age), office and physician characteristics (ie. physician specialty, type of payment forms accepted), and features of the visit (procedures performed, diagnoses rendered, medications prescribed, reason for visit). Diagnoses are classified with the International Classification of Disease, 9<sup>th</sup> Revision, Clinical Modification codes (ICD-9-CM). Medications are classified using the National Drug Code Directory. For each visit up to 6-8 medications can be documented.

Our analysis was restricted to visits in which a diagnosis of psoriasis (ICD-9-CM: 696.1), atopic dermatitis (ICD-9-CM: 691.XX), contact dermatitis (ICD-9-CM: 692.XX and 693.XX), or seborrheic dermatitis (ICD-9-CM: 690.1) was rendered and a corticosteroid was mentioned. As non-traditional formulations emerged in NAMCS records as early as 2000, data from 2000-2010 were included. Non-traditional vehicles included foams, sprays, shampoos, and lotions.

The percent of patient visits mentioning foam-based; lotion, shampoo, or spray corticosteroids were reported. PROC SURVEYREG was used to determine trends in use of these vehicles over the study period. Leading diagnoses associated were reported. Odds ratios were calculated to compare by patient, physician, and visit characteristics the likelihoods of nontraditional vehicles being mentioned at visits. For all estimates, 95% confidence intervals (95% CI) were reported. Data analysis was performed using SAS 9.2 (SAS Institute, Cary, NC). To account for the complex survey design and sampling weights, the PROC SURVEY package was used.

## Results

From 2000 to 2010, an estimated 8 million (95% CI: 7 million, 8 million) visits per year were linked with a diagnosis of psoriasis or other dermatoses and mentioned a corticosteroid. Foam-based corticosteroids and other formulations (lotion, spray, shampoo) were mentioned in 2.3% (95% CI: 1.6, 2.9) and 1.9% (95% CI: 1.2, 2.6) of these visits, respectively. For psoriasis visits, foam-based corticosteroids and other new-formulations were mentioned in 9.8% (95% CI: 6.6, 13.0) and 5.6% (95% CI: 2.8, 8.3) visits, respectively. From 2000, when the first foam products were introduced, there was no significant change over time in the proportion of total visits mentioning foam corticosteroids ( $p=0.10$ ). Since 2003, when clobetasol in alternative formulations were first introduced, the proportion of visits mentioning such products has increased by 0.5% annually (95% CI: 0.1, 0.9;  $p=0.008$ ). From 2000 through 2010, the percent of visits with corticosteroids that did not specify non-traditional vehicles decreased by 0.6% annually (95% CI: -0.9, -0.3;  $p < 0.0001$ ).

**Table 1.** Leading diagnoses rendered at visits where foam corticosteroids or clobetasol in nontraditional formulations were prescribed

	Prescribed a foam corticosteroid		Prescribed clobetasol lotion, spray or shampoo	
Rank	Diagnosis (ICD-9-CM)	Percent of visits (95% CI)	Diagnosis (ICD-9-CM)	Percent of visits (95% CI)
1	Psoriasis (696.1)	58.2 (41.6, 74.8)	Contact dermatitis (692.XX-693.XX)	42.4 (25.6, 59.1)
2	Contact dermatitis (692.XX-693.XX)	35.3 (19.1, 51.5)	Psoriasis (696.1)	39.1 (21.4, 56.7)
3	Seborrheic dermatitis (690.1)	16.9 (8.8, 25.1)	Seborrheic dermatitis (690.1)	20.6 (11.9, 29.4)

ICD-9-CM – International Classification of Disease, 9<sup>th</sup> Revision, Clinical Modification

CI – confidence interval

**Table 2.** The relative odds by patient demographic and visit characteristics of receiving either a foam or another untraditional preparation (spray, shampoo, or lotion) of a corticosteroid

Patient or visit characteristic	Foam preparation – OR (95% CI)	Clobetasol spray, shampoo, or lotion – OR (95% CI)
<b>Patient Characteristic</b>		
Patient gender –Female vs. male	0.8 (0.4, 1.4)	0.8 (0.4, 1.6)
Patient race – White vs. black or “other”	2.6 (1.0, 7.3)	4.7 (1.7, 13.2)*
<b>Visit Characteristic</b>		
Dermatologists vs. non-dermatologists	8.4 (3.6,19.9) **	49.7 (10.3,240.5) **
Payment type – Private vs. public insurance	1.3 (0.5, 3.2)	1.4 (0.5, 3.7)
Private insurance vs. self-pay	0.8 (0.3, 2.4)	2.2 (0.3, 16.8)

OR – odds ratio; CI – confidence interval

\*p<0.05, \*\*p<0.0001

Psoriasis, contact dermatitis, and seborrheic dermatitis were the leading diagnoses at visits where corticosteroids in foam or other preparations (spray, lotion, and shampoo) were prescribed (Table 1). A foam corticosteroid product was more likely to be

prescribed at a visit to a dermatologist rather than a visit to any other physician ( $p < 0.0001$ ; Table 2). Clobetasol either as a shampoo, lotion, or spray was more likely to be prescribed if the patient was white compared to black or “other” race ( $p = 0.004$ ) or at a visit to a dermatologist compared to a non-dermatologist physician ( $p < 0.0001$ ). Visits paid with private insurance or self-pay were just as likely to be prescribed a foam corticosteroid ( $p = 0.54$ ) or another non-traditional form of corticosteroid ( $p = 0.56$ ).

## Discussion

Foams, sprays, lotions, and shampoos provide alternative modes of delivery for corticosteroids compared to ointments and creams. Depending on the areas affected with disease, these nontraditional preparations may be considerably more easy to apply compared to traditional preparations [1]. The “light” vehicle formulations enable active drugs to quickly penetrate the skin while minimizing oiliness and sticky residue [6,7]. These characteristics are ideal for exposed parts of the body, such as the scalp. Spray products facilitate covering large body surface areas. Their mode of delivery is appealing, and they increasingly are being used for other products such as sunscreens [8,9]. Over the study period, the use of shampoo, lotion, or spray-based corticosteroids increased. With this rapid rise in use of these products, the old dogma of dermatology that cream and ointment-based corticosteroids are the best options is fading away. Still, non-dermatologists were less likely to adopt the use of these formulations. As these newer vehicles can improve patient satisfaction and ultimately use of the products, educating primary care physicians about these products may be of benefit to their patients who require topical corticosteroids.

Additional hurdles for patients seeking these newer formulations are the limited availability of these products at some pharmacies and the prohibitive out-of-pocket expenses a patient may expect [10]. Many of the newer formulations are now available as generics, but generic drug prices have recently risen dramatically. Brand name products may have high copayments, though copayment assistance programs—for better, or worse—can help patients obtain access. Given the variation among insurance coverage and prices between pharmacies, physicians cannot know what particular steroid or vehicle will be available and affordable for in every individual patient’s circumstances. Coordination between the physician and pharmacist (perhaps by providing the physician’s phone number in the notes to pharmacist section of electronically transmitted prescriptions) can help identify an appropriate treatment at an affordable price.

Psoriasis diagnoses were rendered at more than half of skin-related visits at which a foam-based corticosteroid was prescribed. The scalp is a common area for psoriatic lesions to develop. Many of these visits may have been for the treatment of scalp psoriasis as foam preparations of corticosteroids have superior efficacy in clearing scalp psoriasis compared to other preparations [11]. A large proportion of visits at which a corticosteroid shampoo, lotion, or spray was prescribed also was diagnosed with contact dermatitis or psoriasis. Like foam-based products, shampoo-based corticosteroids can help treat scalp psoriasis or scalp dermatitis while avoiding oily residues that would remain from ointments or creams.

For some of the corticosteroid prescriptions, the vehicle may not have been specified. This limits the power of trend analyses and makes our point estimates lower-bound estimates of the percents of visits prescribed nontraditional vehicles. As medication mentions reflect physician prescriptions rather than fills at pharmacies, these data cannot identify if patients adhered to physician medication recommendations.

Although nontraditional corticosteroid vehicles are well-favored in clinical trials, these formulations are still used sparingly in practice compared to older formulations. These treatments are proportionally underutilized by non-dermatologists compared to dermatologists, providing a niche which may benefit from education about the vehicles.

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