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# Trends in prescribing behavior of systemic agents used in the treatment of acne among dermatologists and nondermatologists: A retrospective analysis, 2004-2013



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**Background:** Despite recommendations to limit the use of oral antibiotics and increasing support for hormonal agents in the treatment of acne, it is unclear whether there have been any significant changes in practice patterns.

**Objective:** To characterize changes in prescribing behavior for systemic agents in the treatment of acne in the United States between 2004 and 2013.

**Methods:** We conducted a retrospective analysis using the OptumInsight Clinformatics DataMart (Optum, Eden Prairie, MN).

**Results:** The number of courses of spironolactone prescribed per 100 female patients being managed for acne by dermatologists and nondermatologists increased from 2.08 to 8.13 and from 1.43 to 4.09, respectively. The median duration of therapy with oral antibiotics was 126 and 129 days among patients managed by dermatologists and nondermatologists, respectively, and did not change significantly over the study period.

**Limitations:** The OptumInsight Clinformatics DataMart lacks information on acne severity and clinical outcomes.

**Conclusions:** Additional work to identify patients who would benefit most from alternative therapies such as spironolactone, oral contraceptives, or isotretinoin represents a potential opportunity to improve the care of patients with acne. (*J Am Acad Dermatol* 2017;77:456-63.)

**Key words:** acne vulgaris; antibiotic resistance; evidence-based medicine; guideline nonadherence; isotretinoin; oral antibiotics; spironolactone; tetracyclines; topical retinoids; treatment guidelines.

Acne is one of the most common diseases worldwide.<sup>1,2</sup> Although mild acne can typically be managed with topical therapies, for moderate to severe acne, a variety of systemic agents are often used, including oral antibiotics,

combined oral contraceptives, spironolactone, and isotretinoin.<sup>3</sup>

Considering systemic therapies, oral antibiotics are among the most frequently prescribed medications. For years, there have been concerns about the

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Dr Barbieri had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

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excessive use of antibiotics throughout medicine.<sup>4</sup> In fact, dermatologists prescribe more antibiotics per capita than any other specialty.<sup>5</sup> However, concerns that these medications may be associated with adverse outcomes, including pharyngitis, inflammatory bowel disease, and the development of antibiotic resistance, have resulted in calls to reduce antibiotic use in the treatment of acne.<sup>6-12</sup> Current guidelines, which are largely based on expert opinion, recommend limiting the duration of oral antibiotic treatment to 3 to 6 months, although the most recent American Academy of Dermatology guidelines also note that there is a subset of patients who are not appropriate for alternative therapies and may require longer courses of oral antibiotics.<sup>3,13-17</sup>

Despite these recent recommendations regarding the importance of antibiotic stewardship and appropriate use of antibiotics in patients with acne, it is unclear whether there have been any significant changes in practice patterns. In addition, although increased utilization of hormonal agents such as spironolactone and combined oral contraceptives and earlier initiation of isotretinoin in patients with severe acne may represent opportunities to reduce antibiotic exposure, how utilization of these agents has changed over time is unknown.<sup>18-23</sup> In this study, our aim was to characterize changes in prescribing behavior for each of these systemic agents in the treatment of acne among both dermatologists and nondermatologists in the United States between 2004 and 2013.

## METHODS

### Data source

This study was a retrospective analysis of patients treated for acne using the OptumInsight Clinformatics DataMart (Optum, Eden Prairie, MN) between 2004 and 2014. The OptumInsight Clinformatics DataMart includes deidentified commercial claims data for approximately 12 to 14 million annual covered lives, for a total of roughly 56 million unique covered lives in the data set. These data include both medical and pharmacy claims, as well as patient demographic information such as age and sex.

## Study design and study population

Patients who were continuously enrolled in the OptumInsight Clinformatics DataMart with at least 2 claims associated with an *International Classification of Diseases, 9th or 10th Revision*, code for acne separated by 12 months and who were 12 to 40 years of age at the start date of their

course of therapy were included in the study population.<sup>2,24,25</sup> In addition, sensitivity analyses using inclusion criteria of 2 claims associated with a code for acne separated by 3 months and 18 months were performed. Patients with any diagnosis of rosacea, for which extended courses of oral tetracyclines are also commonly used as therapy, were excluded.<sup>26</sup> Patients who had at least 1 claim for acne with a provider coded as a dermatologist were considered to have been

seen by a dermatologist; otherwise, the patient was considered to have been managed by nondermatologists.

Prescriptions for oral antibiotics, combined oral contraceptives, spironolactone, and isotretinoin were identified by their National Drug Code numbers. These prescriptions were consolidated into courses of therapy, for which the start date of therapy was defined as the date of the first prescription in the series and the end date of therapy was defined as the date of the last prescription in the series plus the number of days of medication supplied. Because adherence to long-term medications is imperfect and may result in delays between prescriptions,<sup>27-30</sup> prescriptions separated by fewer than 30 days were considered to be part of a single course of therapy.<sup>24-26</sup> To avoid including prescriptions for antibiotics prescribed for acute illnesses (eg, Lyme disease, Rocky Mountain spotted fever), courses of therapy lasting fewer than 30 days were excluded. Finally, because we did not have data after December 31, 2014, we limited our analysis to courses of therapy started before 2014 to ensure at least 1 year of potential follow-up after the start of therapy to reduce the risk of introducing bias toward a shorter duration of therapy.

The primary outcome of interest was the number of courses of therapy with oral antibiotics, combined oral contraceptives, spironolactone, and isotretinoin prescribed by dermatologists and nondermatologists

## CAPSULE SUMMARY

- Guidelines for acne recommend limiting therapy with oral antibiotics.
- Spironolactone use for acne is increasing, although it remains relatively infrequently utilized when compared with oral antibiotics.
- Identifying patients who would benefit most from alternative agents such as spironolactone, oral contraceptives, or isotretinoin represents a potential opportunity to improve care for patients with acne.

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