

# Journal Pre-proof

The Frequency of Topical Antibiotic Use Following Biopsy and Excision Procedures Amongst Dermatologists and Non-Dermatologists: 2006-2015

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**Manuscript Title:** The Frequency of Topical Antibiotic Use Following Biopsy and Excision Procedures Amongst Dermatologists and Non-Dermatologists: 2006-2015.

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Several studies have documented that topical antibiotics do not reduce the risk of surgical site infection following uncomplicated clean cutaneous surgery compared to petrolatum.<sup>1,2</sup> Although evidence-based recommendations from the Centers for Disease Control and Prevention recommend avoiding topical antibiotic use, nearly half of dermatology wound care handouts advise using topical antibiotics after such procedures.<sup>3,4</sup> However, there is a lack of information regarding actual clinician prescribing practices for topical antibiotics following these procedures and how this has changed over time.

Using the National Ambulatory Medical Care Survey (NAMCS), we investigated the frequency of topical antibiotic use associated with biopsies and excisions between 2006 and 2015. Each encounter that was coded as including a biopsy or excision was evaluated for prescribing of topical antibiotics (i.e. mupirocin, gentamicin, neomycin, bacitracin, polymyxin, clindamycin, erythromycin). Using logistic regression, we evaluated the frequency of topical antibiotic use following clean biopsies and excisions, stratified by specialty (dermatologists versus non-dermatologists). To improve accuracy and better characterize temporal trends in antibiotic use due to limited number of observations available in NAMCS, the study period was divided into 5 two-year periods, as has been recommended elsewhere.<sup>4</sup>

In 2014-2015, among patients seen by dermatologists, there were an estimated 503,227 (10.2% of visits) and 268,264 (5.7% of visits) topical antibiotic prescriptions each year associated with biopsies and excisions, respectively. Among patients seen by non-dermatologists in 2014-2015, there were an estimated 210,536 (1.9% of visits) and 401,684 (5.3% of visits) topical antibiotic prescriptions each year associated with biopsies and excisions, respectively.

During the study period, the odds of receiving a topical antibiotic after a biopsy initially fell amongst dermatologists, with a nadir in 2010-2011 (OR 0.20, CI 0.06-0.63), before increasing back to

baseline rates in subsequent years (Figure 1). Among non-dermatologists, the odds of receiving a topical antibiotic post-biopsy remained largely unchanged, with the exception of 2012-2013 (OR = 3.98, CI 1.07-14.82).

With respect to excisions, a similar initial decrease and subsequent increase in prescribing was noted among dermatologists, although these changes did not reach statistical significance (Figure 2). Among non-dermatologists, the odds of receiving a topical antibiotic after an encounter including an excision significantly increased throughout the study period, peaking in 2014-2015 (OR 5.16, CI 1.77-14.99).

This work builds on a prior study investigating the use of topical antibiotics following clean dermatologic procedures between 1993-2007, which reported antibiotic use in 5.0% of these procedures.<sup>5</sup> We identified substantially higher rates of antibiotic use following biopsies and excisions, particularly when conducted by dermatologists. Despite high-quality evidence from randomized controlled trials suggesting multiple advantages of using petrolatum over topical antibiotics after clean cutaneous surgery,<sup>2</sup> physicians continue to prescribe topical antibiotics after procedures, with over 750,000 prescriptions annually by dermatologists alone. In addition, given that data in NAMCS may not capture over-the-counter antibiotic use or samples given in the office, it is likely that total topical antibiotic use frequency is higher than our estimates. Future studies are needed to understand the factors driving this persistent prescribing and to identify how to optimize topical antibiotic use to improve patient outcomes and prevent resistance in the community.

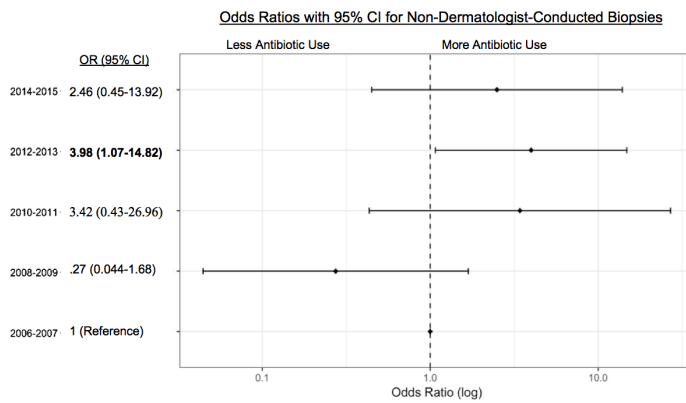
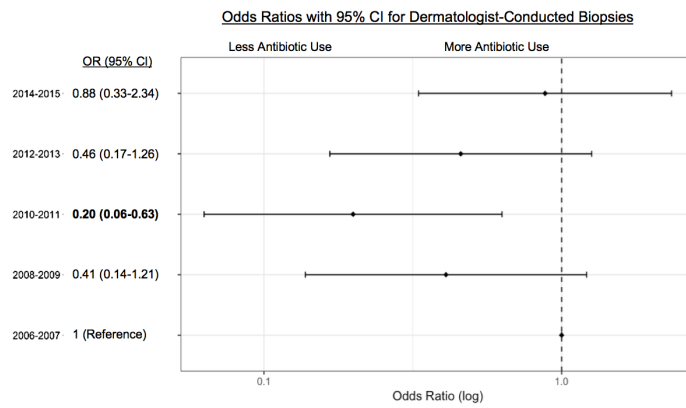
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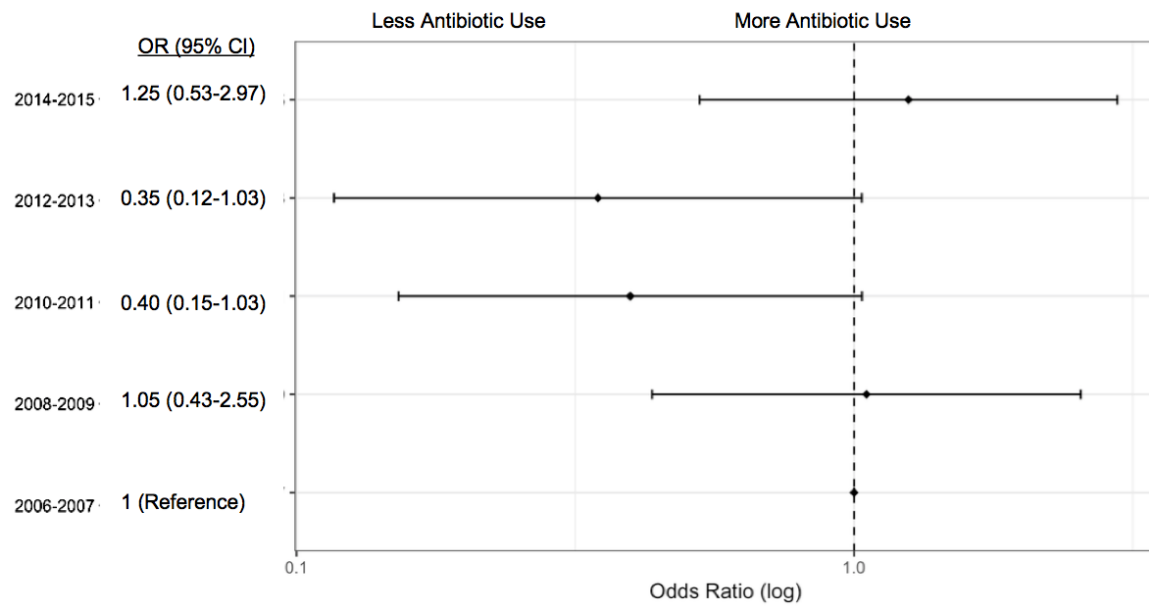
## Figure Legends:

**Figure 1.** Odds of a receiving a topical antibiotic following encounters involving a biopsy by dermatologists (top) and non-dermatologists (bottom). 2006-2007 is the reference year.

**Figure 2.** Odds of a receiving a topical antibiotic following encounters involving an excision by dermatologists (top) and non-dermatologists (bottom). 2006-2007 is the reference year.



### Odds Ratios with 95% CI for Dermatologist-Conducted Excisions



### Odds Ratios with 95% CI for Non-Dermatologist-Conducted Excisions

