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Conflict of interest and citation impact among dermatology guideline authors

To the Editor: Clinical practice guidelines (CPGs) apply structured review of evidence as well as expert evaluation to help characterize optimal patient care. Most CPGs include authors with financial conflicts of interest (COI), such as consultancy payments, research support, equity or stock ownership, or other relationships,[1] although the Institute of Medicine and Council of Medical Specialty Societies advise limiting the percentage of CPG authors with financial COI so that they make up only a minority (<50%) of panel members.

Table I. Articles of example author

Article	Article position (h-position)	No. citations per article
A	1 (most citations)	25
B	2	12
C	3	7
D	4	6
E	5 (fewest citations)	2

Persistent inclusion of physicians with COI is often justified by the argument that they possess expertise crucial to CPG development. As recognized experts, they might be sought after by industry as well as by specialty organizations for their knowledge.[2] By extension, excluding such authors completely would deprive CPGs of valuable expertise.

We sought to evaluate this claim by analyzing the relationship between recognized expertise and financial COI among dermatology CPG authors. All active dermatology CPGs (n = 16) listed on the American Academy of Dermatology (ADD) website as of March 12, 2018, were downloaded and authors were identified and grouped by presence or absence of reported COI. For each guideline, we used the RISmed package in R (version 1.1.423) to search PubMed for each author and determine the number of articles they had published before the year of guideline publication, as well as the number of citations for each article. We then ranked an author's publications by number of citations from largest to smallest and calculated the h-index by determining the hth publication that had been cited at least h times. Consider a researcher with 5 publications A, B, C, D, and E with 25, 12, 7, 6, and 2 citations, respectively. The researcher would have an h-index of 4 because this is the last position in which the number of citations (6) equals or exceeds the position (4) (rank order of the publications, or h value) (Table I). Similar to the h-index, the g-index quantifies productivity by considering the number of papers and the number of citations per paper. We calculated the g-index by identifying the largest rank (g) at which the top ranked articles including g received together at least g^2 citations. The g-index averages the number of citations, allowing more highly cited papers to bolster lower cited papers.

We compared h-index, a measure of citation impact, between authors who reported a COI and those who did not. The h-index is a measure of influence and productivity on the basis of a researcher's publications. The h-index is the number of papers (h) that have been cited at least h times. Researchers with a greater number of publications as well as publications that are more widely cited will have a higher h-index. Although it is difficult to

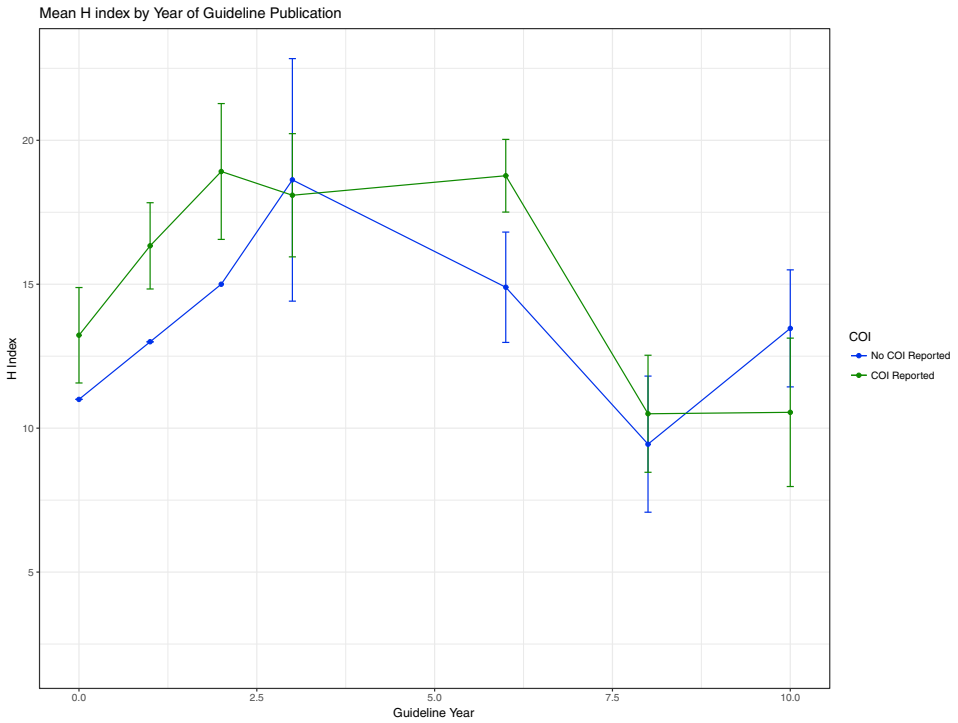

Fig. 1. The mean H index of all authors on dermatology guidelines published in a given year separated by the presence or absence of self-reported conflicts of interest (COI). Bars indicate standard error.

compare h-indices among individuals in different academic disciplines, the h-index has been widely applied to differentiate academicians working within the same discipline.[3]

We compared the 2 groups of authors using Student *t* test, controlling for multiple observations per author by randomly sampling 1 guideline per author. We further applied mixed linear regression to model the main effect of COI and year of guideline publication on h-index, clustering within authors. As sensitivity analysis, we repeated these analyses with g-index, which might better capture highly cited publications and total number of prior publications. Last, we examined the subset of guidelines published after 2010 to account for the AAD Board of Director's 2010 policy requirement that a majority (>51%) of CPG participants have no relevant financial COI.[4]

Among 102 authors who contributed to dermatology guidelines published during 2008-2018, 60 reported a COI at any point during that time. Mean h-indices for individuals with and without conflict, by year, are illustrated in Figure 1. There was no significant difference in h-index between authors who reported a COI (mean = 14.089, standard deviation = 10.030) and those who did not (mean = 13.279, standard deviation = 11.841; t(83) = −0.360; $P = .720$). In a linear mixed model, there was a significant effect of guideline year on h-index (B = 0.838, standard error = 0.083; $P < 2E{-}16$), but no significant effect of COI on h-index (B = −0.0214, standard error = 0.714; $P = .976$). When we repeated these analyses using g-index and number of prior publications as the dependent variable, results did not change meaningfully (data not shown). Likewise, limiting analysis to guidelines published after 2010 yielded similar results.

AAD and other professional organizations allow guideline panels to include up to 49% of members with COI. A recent commentary by former AAD president Henry Lim notes the importance of achieving a balance "between the practical and ideal in CPG development."[2] However, the present report suggests no significant association between presence of financial COI and measure of expertise.

There are several limitations to this report. We relied on self-declared COI, and recent data suggests these might be inaccurate.[5] In addition, we reported only 1 measure of expertise, scholarly publications. We also did not measure whether the scholarly publications comprising the h-index were on the same topic as the CPG. Furthermore, other aspects of expertise, such as clinical experience, supervision of relevant trials, and invited presentations might also be important for CPG development. Nonetheless,

these results call into question the need to include CPG experts with COI.

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Development and implementation of an order set to improve value of care for patients with severe stasis dermatitis

To the Editor: Stasis dermatitis is often confused with bilateral cellulitis. Patients with severe disease might be admitted to a hospital, resulting in annual spending of $195-$515 million due to unnecessary hospital stays and antibiotic treatment.[1]

In this mixed methods study, 27 patients admitted for stasis dermatitis were interviewed. They complained of itch, pain, and drainage and had seen an average of 6.96 doctors each for this condition. Gradient compression stockings and bandages are the most effective therapy,[2] and 25 of 27 patients had previously been instructed to wear them. However, most did not believe that stockings were an effective therapy. Many reported they could not obtain stockings or don them.

The patient interviews guided the design of an order set for stasis dermatitis (Table I) that bundled consultations, including physical therapy evaluation for the ability to don a properly fitted stocking, and patient education. We conducted focus groups with inpatient providers to refine the order set. We learned that providers did not consider dermatologic consultation when admitting a patient for lower extremity inflammation.

In 2017, we implemented use of the order set at the flagship hospital of our integrated health system. Patients who did not have the order set used during admission were used as controls to augment the historical 2016 controls. The order set was titled stasis dermatitis and also nested in the cellulitis order set, visible if choosing lower extremity with history of chronic edema without fever or leukocytosis.

Before and after implementation, we measured the outcomes of readmission, length of stay, and cost. Analysis of 42 patients identified before and 37 patients after implementation demonstrated that use of the order set was associated with significantly fewer instances of readmission. There was no increase in cost compared with expected cost with use of the order set, and there was a trend toward decreased cost in patients without major comorbidities. There was no change in length of stay (Table II). Compression stockings were unavailable to inpatients before we implemented our order set. After we implemented the order set, 55% of patients received a physical therapy consultation and were discharged with stockings.

We found that the orders for leg elevation, compression bandages, the patient education EMMI module (Wolters Kluwer, Chicago, IL), brochure, and patient testimonial video were used ≥90% of the time when the order set was opened. Dermatology or vascular medicine consultation was requested in only 10% of patients.

Order set usage continued beyond the roll-out and evaluation period. Previous studies showing benefit of dermatologic consultation prompted by study staff[3-5] might be less sustainable.