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## Letter to the Editor: Can Topical Vancomycin Prevent Periprosthetic Joint Infection in Hip and Knee Arthroplasty? A Systematic Review

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To the Editor,

We have read “Can Topical Vancomycin Prevent Periprosthetic Joint Infection in Hip and Knee Arthroplasty? A Systematic Review” by Wong et al. [6] with great interest. We applaud the authors for performing a systematic review on such an important subject, especially when high-level evidence is lacking. After screening more than 1700 records, Wong et al. included nine observational studies [6]. Although no data synthesis was performed, the authors reported

that only one of nine studies found a statistically significant lower risk of periprosthetic joint infection (PJI) for patients treated with topical vancomycin powder, while the other eight studies found no statistically significant difference. Based on this analysis, the authors concluded that “preponderance of the evidence did not find that topical vancomycin reduced infection risk” [6].

The methodology used by the authors is called “vote counting.” This approach calls for the authors to count the number of studies with a statistically significant effect and the number of studies without a statistically significant effect [5]. All studies get one vote regardless of their methodological quality or study size, and the total votes for each group are counted. In this case, there was one vote for a statistically significant lower risk of PJI for patients treated with topical vancomycin powder compared to eight votes for no statistically significant effect. Hence, the authors recommended against the use of topical vancomycin for TKA and THA [6].

However, the vote counting methodology based on statistical significance has serious limitations, can lead to the wrong conclusions,

and is classified as an “unacceptable method” in the Cochrane handbook [5] based on the fact that: (1) underpowered studies that do not rule out clinically important effects are counted as not showing benefit, (2) vote counting does not provide information on the magnitude of the effect, and (3) vote counting does not account for differences in the relative size of studies [5].


Vote counting thus falsely assumes that a nonsignificant finding is evidence that an effect is absent. But the “absence of evidence is not evidence of absence” [1, 5].

Based on the data provided in the manuscript, a random effects model gives a pooled risk for PJI of 0.3% (95% CI 0.1% to 0.6%) in the topical vancomycin group compared to 1.1% (95% CI 0.7% to 1.5%) in the control group. Therefore, there is a pooled 0.7% (95% CI 0.3% to 1.1%) absolute risk difference with a number needed to treat of approximately 145 in favor of the topical vancomycin group. Put another way, to prevent one occurrence of PJI, 145 patients need to be treated with vancomycin powder. In our view, low-certainty evidence suggests an association between topical vancomycin use and lower risk of PJI.

This leads to the following question: Do we want to expose 145 patients to possibly reduce one

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The opinions expressed are those of the writer, and do not reflect the opinion or policy of *CORR*® or The Association of Bone and Joint Surgeons®.

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occurrence of PJI considering that we do not know the safety concerns associated with vancomycin and we could possibly introduce antimicrobial resistance, which makes treatment of PJI cases more difficult or even impossible in the future? Perhaps we should focus on improving easily modifiable risk factors for PJI prior to elective joint arthroplasty. Such risk factors include perioperative cessation of anticoagulants, immune-modular drugs, and proton-pump inhibitors when possible [2-4] and preoperative correction of anemia (to reduce allogenic

transfusions), malnutrition, and electrolyte disorders [3, 4].

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