

LETTER TO THE EDITOR

Role of antibiotic envelopes in preventing cardiac implantable electronic device infection: A meta-analysis of 14 859 procedures

To the Editor,

I read with great interest the meta-analysis by Kumar et al¹ entitled "Role of antibiotic envelopes in preventing cardiac implantable electronic device infection: A meta-analysis of 14 859 procedures." Their primary analysis demonstrates a 59% reduction in major/minor risk of infection in favor of the antibiotic envelope (Risk Ratio, 0.41; 95% Confidence Interval, 0.31-0.54). They also performed a subgroup analysis of two studies, according to the authors, that used an absorbable envelope compared to no envelope in the prevention of device-related infections and showed a significant 52% reduction in risk of major/minor device-related infections (Risk Ratio, 0.48; 95% Confidence Interval, 0.35-0.65). Therefore, I believe that this study should not be included in this meta-analysis as it did not include any true device-related infections as it was based on a predictive model by gathering data from several other studies (Risk ratio, 0.16; 95% confidence interval, 0.08-0.35). The study by Kay et al² did not report any true device-related infections in their patients as it was a cost-effectiveness analysis using infection rate data from previously published studies³⁻⁵, included in this meta-analysis, and extrapolated it to their patient population in the United Kingdom National Health Services based on a predictive model. Therefore, I believe that this study should not be included in this meta-analysis as it did not include any true device-related infections and it was based on a predictive model by gathering data from several other studies.

Additionally, the authors included a retrospective study by Kolek et al⁵ that aimed to study the efficacy of an antibiotic envelope in the prevention of cardiac implantable electronic device (CIED) infections in high-risk patients. This study by Kolek et al⁵ included 353 patients who received nonabsorbable antibiotic envelopes, 135 patients who received absorbable envelopes, and 636 patients that did not receive an envelope. However, authors of this meta-analysis only included subjects who received a nonabsorbable envelope in their analysis. Albeit technically difficult to include the absorbable envelope group from Kolek et al⁵ in the analysis due to overlap of subjects in the control group, it is worth mentioning this in the discussion or limitations of the manuscript. In summary, the results of this meta-analysis support the benefit of an antibiotic envelope in the reduction of device-related infections in patients undergoing CIED implantation

or upgrade; however, an accurate summary of the effect depends on the correct selection of studies to include for analysis.

CONFLICT OF INTEREST

Authors declare no conflict of interests for this article.

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REFERENCES

1. Kumar A, Doshi R, Shariff M. Role of antibiotic envelopes in preventing cardiac implantable electronic device infection: a meta-analysis of 14 859 procedures. *J Arrhythmia*. 2020;36:176-79.
2. Kay G, Eby EL, Brown B, Lyon J, Eggington S, Kumar G, et al. Cost-effectiveness of TYRX absorbable antibacterial envelope for prevention of cardiovascular implantable electronic device infection. *J Med Econ*. 2018;21(3):294-300.
3. Mittal S, Shaw RE, Michel K, Palekar R, Arshad A, Musat D, et al. Cardiac implantable electronic device infections: Incidence, risk factors, and the effect of the AegisRx antibacterial envelope. *Heart Rhythm*. 2014;11(4):595-601.
4. Shariff N, Eby E, Adelstein E, Jain S, Shalaby A, Saba S, et al. Health and economic outcomes associated with use of an antimicrobial envelope as a standard of care for cardiac implantable electronic device implantation. *J Cardiovasc Electrophysiol*. 2015;26(7):783-9.
5. Kolek MJ, Patel NJ, Clair WK, Whalen SP, Rottman JN, Kanagasundram A, et al. Efficacy of a bio-absorbable antibacterial envelope to prevent cardiac implantable electronic device infections in high-risk subjects. *J Cardiovasc Electrophysiol*. 2015;26(10):1111-6.

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