Re: Estimating the cost of inappropriate antibiotic prophylaxis prior to dental procedures

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To the Editor—We would like to comment on the paper by Gong et al, "Estimating the cost of inappropriate antibiotic prophylaxis prior to dental procedures."[1] We agree that significant overprescribing of antibiotic prophylaxis occurs in patients for whom it is not recommended. A recent study of US patients with employer provided medical/dental insurance coverage found that 9.5% of patients at moderate infective endocarditis risk and 2.9% of patients at low risk were prescribed antibiotic prophylaxis when undergoing invasive dental procedures (IDPs) despite this not being recommended by American Heart Association (AHA) guidelines.[2] Similar figures were reported for those on Medicaid (10.5% and 3.8%, respectively).[3] As suggested by Gong et al,[1] significant cost is associated with this overprescribing.

These researchers, however, did not address another and perhaps more important aspect of inappropriate antibiotic prophylaxis prescribing by dentists. The AHA guidelines recommend that all patients at high risk from infective endocarditis should receive antibiotic prophylaxis before undergoing IDPs.[4] However, in a 2020 US study, 64% of IDPs were unlikely to have been covered with antibiotic prophylaxis in patients at high risk of developing infective endocarditis complications.[5] More recently, Thornhill et al[2] found that only 32.6% of high-risk US patients with employer-provided medical/dental insurance received antibiotic prophylaxis when undergoing an IDP. And in a 2023, another study reported that only 25.9% of high-risk Medicaid patients received antibiotic prophylaxis before IDPs.[3] These 2 studies further demonstrated that antibiotic prophylaxis significantly reduced the subsequent risk of infective endocarditis for high-risk patients undergoing IDPs, particularly dental extractions and oral surgery procedures.[2,3] Indeed, the numbers of IDPs of all types combined, extractions and oral surgery procedures, that need to be covered by antibiotic prophylaxis to prevent 1 case of infective endocarditis (ie, the number needed to prevent) were 1,536, 125, and 45, respectively, for those with employer provided medical/dental cover[2] and 244, 143, and 71, respectively, for Medicaid patients.[3]

The failure to prescribe antibiotic prophylaxis for ~65% of patients for whom it is recommended places a significant number of patients at unnecessary risk of developing infective endocarditis, with all its consequences. Infective endocarditis is a devastating infection of the heart valves with ~30% first-year mortality.[6] Patients require extended hospital admissions often involving intensive care and long courses of antibiotics, and ~50% of these patients require surgical replacement of 1 or more heart valves.[6] Stroke, heart failure, kidney failure, and brain abscess are common complications, and those who survive frequently have ongoing complications and disabilities that affect their ability to work and function.[6] The cost of failure to prescribe antibiotic prophylaxis is, therefore, extremely high, not just to the healthcare system but also for affected individuals, their families, and society.[7] These costs are likely to substantially exceed the costs of overprescribing antibiotic prophylaxis.

Our concern is that focusing only on inappropriate overprescribing, with the implicit message that antibiotic prophylaxis prescribing should be reduced, could exacerbate the underprescribing of antibiotic prophylaxis to those who should receive it.

Under- and overprescribing represent 2 different facets of inappropriate antibiotic prophylaxis dental prescribing. The extents of both are serious causes for concern, and both urgently need to be addressed through educational and antibiotic stewardship programs aimed at reducing both under- and overprescribing of antibiotic prophylaxis by dentists. In particular, efforts need to ensure the correct targeting of antibiotic prophylaxis to high-risk patients only undergoing IDPs, according to the AHA guidelines.[4] Correct antibiotic prophylaxis targeting would reduce the huge financial and personal costs of unnecessary infective endocarditis cases that result from a failure to prescribe antibiotic prophylaxis for those who need it (not mentioned in this article)[7] as well as the unnecessary cost and risks associated with prescribing antibiotic prophylaxis for those who do not need it.[1]

Acknowledgments.

Financial support. No financial support was provided relevant to this article.

Competing interests. All authors report no conflicts of interest relevant to this article.

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Cite this article: Miller CS and Thornhill MH. (2024). Re: Estimating the cost of inappropriate antibiotic prophylaxis prior to dental procedures. *Infection Control & Hospital Epidemiology*, 45: 555, https://doi.org/10.1017/ice.2023.209