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Letter to the Editor

Regarding Gong CL, Duong A, Zangwill KM. Estimating the cost of inappropriate antibiotic prophylaxis prior to dental procedures. *Infection Control & Hospital Epidemiology* 2023; 1-4.

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Dear 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 there is significant overprescribing of antibiotic prophylaxis (AP) to patients for whom it is not recommended. A recent study of US patients with employer provided medical/dental insurance coverage found 9.5% of patients at moderate infective endocarditis (IE) risk and 2.9% of patients at low risk were prescribed AP when undergoing invasive dental procedures (IDPs) despite this not being recommended by American Heart Association (AHA) guidelines.² Similar figures were found for those on Medicaid (10.5% and 3.8%, respectively).³ As suggested by Gong et al. , there is a significant cost associated with this overprescribing.

The authors, however, did not address another and perhaps more important aspect of inappropriate AP prescribing by dentists. The AHA guidelines recommend that all patients at high risk from IE should receive AP before undergoing IDPs.⁴ However, a 2020 US study found that 64% of IDPs were unlikely to have been covered with AP in patients at high risk of developing IE complications.⁵ More recently, Thornhill et al. found that only 32.6% of high risk US patients with employer provided medical/dental insurance received AP when undergoing an IDP.² And in a 2023, another study found that only 25.9% of high-risk Medicaid patients received AP before IDPs.³ These two studies also demonstrated that AP significantly reduced the subsequent risk of IE for high-risk patients undergoing IDPs, particularly dental extractions and oral surgery procedures.^{2,3} Indeed, the number of IDPs of all types combined, extractions or oral surgery procedures that need to be covered by AP to prevent one case of IE (i.e., the

number needed to prevent) was respectively, 1536, 125 and 45 for those with employer provided medical/dental cover² and 244, 143 and 71 for Medicaid patients.³

The failure to prescribe AP for ~2/3 of patients for whom it is recommended, places a significant number of patients at unnecessary risk of developing IE, with all its consequences. IE 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% require surgical replacement of one or more heart valves.⁶ Stroke, heart or kidney failure and brain abscess are common complications and those who survive frequently have on-going complications and disabilities that affect their ability to work and function.⁶ The cost of failure to prescribe AP 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 AP.

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

Under- and overprescribing represent two different facets of inappropriate AP dental prescribing. The extent of both is a serious cause for concern and needs addressing urgently through educational and antibiotic stewardship programs aimed at reducing both under- and overprescribing of AP by dentists. In particular, efforts need to ensure the correct targeting of AP at high-risk patients only undergoing IDPs, as per the AHA guidelines.⁴ Correct AP targeting would reduce the huge financial and personal costs of unnecessary IE cases that result from a

failure to prescribe AP for those who need it (not mentioned in this article)⁷ as well as the unnecessary cost and risks associated with prescribing AP for those who don't need it.¹

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