Review 2: "Antibiotic Prescribing in Remote Versus Face-to-Face Consultations for Acute Respiratory Infections in English Primary Care: An Observational Study Using TMLE"

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In this manuscript, the authors wish to examine the relationship between in-person (versus remote) consultations and the likelihood of antibiotic prescription in England. The authors adequately set up the problem by noting that remote consultations have increased since the COVID-19 pandemic, and evidence is limited/mixed about the impact of this shift on antibiotic prescribing, especially for those who have acute respiratory infections (ARIs). The authors found that, for adults, having an ARI remote visit was more likely to yield an antibiotic prescription compared to a face-to-face visit. The authors used robust and efficient statistical methods (e.g., targeted maximum likelihood estimation [TMLE] jointly with SuperLearner) to look at this relationship. While this methodology is appropriate to answer the primary question given the observational nature of the data, one major point the authors must address is the interpretation of their point estimates. Specifically, sometimes the authors used a causal odds ratio interpretation and other times the odds ratios were associational. Either could be appropriate, but the authors should think carefully through and be explicit about the assumptions needed for the one they choose. Additionally, the authors described TMLE as a causal machine learning method – however, TMLE is a statistical estimator that can incorporate machine learning in its estimation process and can yield causal effect estimates, but TMLE does not necessarily/always use machine learning or produce causal effects. That said, the authors used an adequate method for accounting for measured confounding in their estimation procedure, and they speak to the limitations of possible unmeasured confounding (a property of most observational data analyses) in the discussion. Finally, the conclusions were sound and, more importantly, signaled the need for closely monitoring antibiotic prescribing due to the potential implications of antibiotic resistance.