

## Response to: 'Association between proton pump inhibitors therapy and fracture risk in patients with rheumatoid arthritis' by Lai *et al*

We appreciate Lai *et al*<sup>1</sup> for sharing their data and emphasising the lack of association between proton pump inhibitor (PPI) use and fracture risk in a different patient population. We agree that the adverse association found with PPI use and fracture in the previous studies has not been repeated in many other well-designed studies. Our study has tested this association for the first time in a disease state like rheumatoid arthritis (RA) where the risk of osteoporosis and fractures are already increased.<sup>2</sup> As Lai *et al* emphasise our study is consistent with the prior studies in the general population that PPIs are not associated with increased fracture risk in patients with RA. However, we have to indicate that we did not evaluate different PPI doses and types which may have different risk estimates. We also agree that there is not enough evidence to recommend routine bone density testing neither for RA patients nor patients without any inflammatory disease unless they have other risk factors. Despite this, we want to emphasise that our study did not evaluate other potential health effects of PPIs in RA patients such as increased risk of community-acquired pneumonia,<sup>3</sup> and *Clostridioides difficile* and other enteric infections.<sup>4 5</sup> Although PPI use is quite common in RA due to common use of nonsteroidal anti-inflammatory drugs, glucocorticoids or antiplatelets, we believe that the necessity of PPIs and other medications should be regularly reviewed in RA to minimise polypharmacy and accordingly potential drug interactions and other adverse events of these medications.

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### REFERENCES

- Lai S-W, Kuo Y-H, Liao K-F. Association between proton pump inhibitors therapy and fracture risk in patients with rheumatoid arthritis. *Ann Rheum Dis* 2019;annrheumdis-2019-215982.
- Ozen G, Pedro S, Wolfe F, *et al*. Medications associated with fracture risk in patients with rheumatoid arthritis. *Ann Rheum Dis* 2019;78:1041–7.
- Lambert AA, Lam JO, Paik JJ, *et al*. Risk of community-acquired pneumonia with outpatient proton-pump inhibitor therapy: a systematic review and meta-analysis. *PLoS One* 2015;10:e0128004.
- HH W, Chen YT, Shih CJ, *et al*. Association between recent use of proton pump inhibitors and nontyphoid salmonellosis: a nested case-control study. *Clin Infect Dis* 2014;59:1554–8.
- Kwok CS, Arthur AK, Anibueze CI, *et al*. Risk of *Clostridium difficile* infection with acid suppressing drugs and antibiotics: meta-analysis. *Am J Gastroenterol* 2012;107:1011–9.