

### Correspondence to Recombinant Adjuvanted Zoster Vaccine and Reduced Risk of Coronavirus Disease 2019 Diagnosis and Hospitalization in Older Adults

TO THE EDITOR—We read with great interest the article by Bruxvoort et al reporting that recombinant adjuvanted zoster vaccine vaccination was associated with a lower risk of coronavirus disease 2019 (COVID-19) diagnosis and COVID-19 hospitalization [1]. We wish to highlight some key points.

Firstly, people who voluntarily receive vaccines could have better personal habits, better health literacy, and more health care seeking behavior [2, 3]. Personal habits, such as smoking, are risk factors for COVID-19 infection and further hospitalization [4], whereas physical exercise could be a protective factor [5]. We suggest that the authors should also adjust for other risk factors, such as smoking, alcohol consumption, and exercise to minimize residual confounders.

Secondly, people who join Kaiser Permanente may have certain characteristics [6], and Kaiser Permanente also provides health care with good quality [7]. Therefore, selection bias may exist. We suggest that the authors use a population-based study design to improve external validity of the results.

Lastly, the definition of COVID-19 hospitalization was severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) positive test during or  $\leq 7$  days before hospitalization, or a COVID-19 diagnosis code during hospitalization. However, according to Pei et al, national ascertainment rates of COVID-19 in the United States increased from 11.3% in March 2020 to 24.5% during December 2020 [8]. Thus, patients with scheduled hospitalization or surgery could also have a SARS-CoV-2 positive test during or  $\leq 7$  days before

hospitalization under such a high prevalence of COVID-19 during the period. Therefore, classification bias may occur. We suggest that the authors perform a sensitivity analysis regarding different definitions of COVID-19 hospitalization.

#### Notes

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#### References

1. Bruxvoort KJ, Ackerson B, Sy LS, et al. Recombinant adjuvanted zoster vaccine and reduced risk of coronavirus disease 2019 diagnosis and hospitalization in older adults. *J Infect Dis* **2022**; 225:1915–22.
2. Roller-Wirnsberger R, Lindner S, Kolosovski L, et al. The role of health determinants in the influenza vaccination uptake among older adults (65+): A scope review. *Aging Clin Exp Res* **2021**; 33:2123–32.

3. Galvin AM, Garg A, Griner SB, Moore JD, Thompson EL. Health literacy correlates to HPV vaccination among US adults ages 27–45 [published online ahead of print 13 January 2022]. *J Cancer Educ*
4. Patanavanich R, Glantz SA. Smoking is associated with COVID-19 progression: a meta-analysis. *Nicotine Tob Res* **2020**; 22:1653–6.
5. Fernández-Lázaro D, González-Bernal JJ, Sánchez-Serrano N, Navascués LJ, Ascaso-Del-Río A, Mielgo-Ayuso J. Physical exercise as a multimodal tool for COVID-19: could it be used as a preventive strategy? *Int J Environ Res Public Health* **2020**; 17:8496.
6. Gordon N, Lin T. The Kaiser Permanente Northern California adult member health survey. *Perm J* **2016**; 20:15–225.
7. Martin JP, Aboubechara N. Process-based treatment of diabetes in Kaiser Permanente Southern California: how to make diabetes care “complete”. *Curr Diab Rep* **2017**; 17:79.
8. Pei S, Yamana TK, Kandula S, Galanti M, Shaman J. Burden and characteristics of COVID-19 in the United States during 2020. *Nature* **2021**; 598:338–41.

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