

# SARS-CoV-2 REINFECTION RATE IN VACCINATED HOSPITAL WORKERS: CORRESPONDENCE

Dear Editor,

We would like to share ideas on “Significant Rise in SARS-CoV-2 Reinfection Rate in Vaccinated Hospital Workers during the Omicron Wave: A Prospective and Cohort Study<sup>1</sup>.” Despite a high primary vaccine coverage rate, Ochoa-Hein *et al.* reported that the SARS-CoV-2 reinfection rate increased considerably during the Omicron wave<sup>1</sup>. Nearly one-third of the reinfected workers had a booster shot around 14 days before the most-recent COVID-19 event, according to Ochoa-Hein *et al.*<sup>1</sup>. We both believe that the rate of reinfection in workers who had received vaccinations during the Omicron wave may have

changed<sup>2</sup>. It would be interesting to discuss how vaccination rates are related. The high rates of vaccination and COVID-19 reinfection may or may not indicate that the vaccine is effective in preventing the disease<sup>2</sup>. There are many variables<sup>2</sup>. The type of vaccine and the administration route may be crucial topics to discuss<sup>3</sup>. In addition, as COVID is a common clinical entity, it is possible that some workers may have had the condition in the past asymptotically<sup>4</sup>. In some circumstances, the reaction to a booster shot and the risk of reinfection may change. The workers’ general state of health is still another crucial consideration. It is difficult to draw an exact conclusion without all the data.

## REFERENCES

1. Ochoa-Hein E, Leal-Morán PE, Nava-Guzmán KA, Vargas-Fernández AT, Vargas-Fernández JF, Díaz-Rodríguez F, *et al.* Significant rise in SARS-CoV-2 reinfection rate in vaccinated hospital workers during the Omicron wave: a prospective cohort study. *Rev Invest Clin.* 2022;74:175-80.
2. Araf Y, Akter F, Tang YD, Fatemi R, Parvez MS, Zheng C, *et al.* Omicron variant of SARS-CoV-2: genomics, transmissibility, and responses to current COVID-19 vaccines. *J Med Virol.* 2022; 94:1825-32.
3. Kashte S, Gulbake A, Iii SF, Gupta A. COVID-19 vaccines: rapid development, implications, challenges and future prospects. *Hum Cell.* 2021;34:711-33.
4. Joob B, Wiwanitkit V. Letter to the editor: coronavirus disease 2019 (COVID-19), infectivity, and the incubation period. *J Prev Med Public Health.* 2020;53:70.

RUJITTICA MUNGMUNPUNTIPANTIP<sup>1\*</sup> AND VIROJ WIWANITKIT<sup>2</sup>

<sup>1</sup>Department of Consultant Unit, Private Academic Consultant, Bangkok, Thailand; <sup>2</sup>Department of Community Medicine, Dr. DY Patil University, Pune, Maharashtra, India

\*Corresponding author:  
Rujittika Mungmunpantipantip  
E-mail: rujittika@gmail.com

Received for publication: 11-09-2022  
Approved for publication: 07-10-2022  
DOI: 10.24875/RIC.22000231

0034-8376 / © 2022 Revista de Investigación Clínica. Published by Permanyer. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).



## AUTHOR'S REPLY TO SARS-COV-2 REINFECTION RATE IN VACCINATED HOSPITAL WORKERS: CORRESPONDENCE

Dear Editor:

We thank Drs. Mungmunpuntipantip and Wiwanitkit for their thoughtful observations. Indeed, as stated in our report, we acknowledge some limitations in our study. Nonetheless, our conclusions generally agree with what has been reported recently by other authors. The ability to evade immunity (due to either previous infection or vaccination) is an important factor leading to infection with the Omicron variant<sup>1</sup>. Our data agree with those of others in that current vaccines have lower effectiveness for preventing both infection and disease by the Omicron variant of SARS-CoV-2<sup>2</sup>, irrespective of other variables. At the time of our study end date, booster shots were being given to the Mexican adult population, and it was acknowledged that additional study of their effects was warranted. On further analysis of our database, we found that 36.7% of healthcare workers with only one episode of infection had received a booster  $\geq 14$  days before the infection episode (not reported), as compared to 30.1% of those with a reinfection (non-significant difference). Thanks to recent studies, we now know that booster shots are able to restore immunity at least partially<sup>3</sup> and are currently recommended.

The question of whether vaccines were effective or not in preventing disease (particularly reinfection) in our setting is interesting and deserves further study, albeit this was beyond the scope of the present work.

However, we were able to show that the previous vaccination did not guarantee full protection against reinfection during the Omicron wave, in part because of waning of immunity<sup>4</sup> (a median of 323 days had elapsed between the reinfection episode and the last vaccine dose). It would have been interesting to study if different vaccine schemes were related to different reinfection rates. We were only able to inform that the great majority of our healthcare workers had a heterologous vaccination schedule with two doses of BNT162b2 followed by one dose of ChAdOx1-S, and that all healthcare workers were vaccinated through the parenteral route (no other routes of administration have been used in Mexico). A recent study showed that mRNA vaccines are apparently associated with the best immunogenic responses<sup>5</sup>, but to the best of our knowledge, we ignore if this particular vaccine platform performs clinically better against the Omicron variant and subvariants as compared to other vaccine platforms, since there are no head-to-head comparative studies<sup>6</sup>.

As Drs. Mungmunpuntipantip and Wiwanitkit pointed out, the lack of data regarding the state of health of our healthcare workers is a weakness. Thus, we were not able to relate the presence or absence of various comorbidities to the reinfection rate.

Our study does not inform the risk of reinfection after an asymptomatic past infection, and this must be studied further; however, failure to detect and record asymptomatic infections biases toward an even higher underestimation rate, was acknowledged appropriately.

## REFERENCES

1. Lyngse FP, Mortensen LH, Denwood MJ, Christiansen LE, Møller CH, Skov RL, et al. Household transmission of the SARS-CoV-2 Omicron variant in Denmark. *Nat Commun.* 2022;13:5573.
2. Buchan SA, Chung H, Brown KA, Austin PC, Fell DB, Gubbay JB, et al. Estimated effectiveness of COVID-19 vaccines against Omicron or Delta symptomatic infection and severe outcomes. *JAMA Netw Open.* 2022;5:e2232760.
3. Menni C, May A, Polidori L, Louca P, Wolf J, Capdevila J, et al. COVID-19 vaccine waning and effectiveness and side-effects of boosters: a prospective community study from the ZOE COVID study. *Lancet Infect Dis.* 2022;22:1002-10.
4. Ridgway JP, Tideman S, French T, Wright B, Parsons G, Diaz G, et al. Odds of Hospitalization for COVID-19 After 3 vs 2 Doses of mRNA COVID-19 Vaccine by Time Since Booster Dose. *JAMA.* 2022;328:1559-61.
5. Sablerolles RS, Rietdijk WJ, Goorhuis A, Postma DF, Visser LG, Geers D, et al. Immunogenicity and reactogenicity of vaccine boosters after Ad26.COV2.S priming. *N Engl J Med.* 2022;386:951-63.
6. Andrews N, Stowe J, Kirsebom F, Toffa S, Rickeard T, Gallagher E, et al. Covid-19 vaccine effectiveness against the Omicron (B.1.1.529) variant. *N Engl J Med.* 2022;386:1532-46.

ERIC OCHOA-HEIN, PATRICIA E. LEAL-MORÁN, KAREN A. NAVA-GUZMÁN, ABRIL T. VARGAS-FERNÁNDEZ, JOSÉ F. VARGAS-FERNÁNDEZ, FABRICIO DÍAZ-RODRÍGUEZ, JOEL ARMANDO RAYAS-BERNAL, RICARDO GONZÁLEZ-GONZÁLEZ, PAVEL VÁZQUEZ-GONZÁLEZ, MARTHA A. HUERTAS-JIMÉNEZ, SANDRA RAJME-LÓPEZ, PILAR RAMOS-CERVANTES, VIOLETA IBARRA-GONZÁLEZ, LUIS A. GARCÍA-ANDRADE, FERNANDO LEDESMA-BARRIENTOS, ALFREDO PONCE-DE-LEÓN, JOSÉ SIFUENTES-OSORNIO, AND ARTURO GALINDO-FRAGA

Instituto Nacional de Ciencias Médicas y Nutrición Salvador Zubirán, Mexico City, Mexico

**\*Corresponding author:**

Arturo Galindo-Fraga

E-mail: arturo.galindof@incmnsz.mx

Received for publication: 07-10-2022

Approved for publication: 07-10-2022

DOI: 10.24875/RIC.22000251