

negative intrathoracic pressure, and sleep fragmentation (1). These components of OSA trigger sympathetic activation, blood pressure instability, augmented left ventricular afterload, inflammation, and other AF-related mechanisms. Most of the available data were focused on the impact of OSA on AF in the outpatient setting or in AF recurrence after ablation.

The available literature on PCAF is limited to observational studies with mixed populations and combined surgical procedures (2–4). The PAFOS trial is, to our knowledge, the first study to evaluate the impact of CPAP on PCAF. Despite the biological plausibility, OSA treatment was not able to decrease the rate of PCAF in the short-term follow-up, even in those with good CPAP compliance. As previously observed in other studies, such as SAVE (Continuous Positive Airway Pressure Treatment of Obstructive Sleep Apnea to Prevent Cardiovascular Disease) (5), our population was nonsleepy, which may have affected acceptance of CPAP in our study. Additional contributors to this low adherence in our study included the challenges of CPAP adaptation in the ICU, postoperative pain, and stress related to the CABG procedure. The low adherence to CPAP may be responsible for the lack of difference in the primary study endpoint. Preexposure to CPAP before surgery may be a crucial strategy to increase treatment adherence in future studies.

We need to acknowledge the following additional limitations: 1) our study has a short follow-up, several of the possible beneficial cardiovascular effects of CPAP are medium and long term, and there may not have been time for the reduction of events in the intervention group; and 2) as also observed in hundreds of other trials, our study was severely impacted by the COVID-19 pandemic, limiting the power of this analysis. Therefore, although the PCAF incidence was not different even when comparing good CPAP users with the control group, the sample size was too small to draw definitive conclusions in this research area.

In conclusion, in our exploratory study, short-term use of CPAP administered in the immediate postoperative CABG scenario did not reduce PCAF incidence in patients with OSA. Despite the neutral results, the PAFOS trial underscores the need for distinct strategies in future studies, including the selection of targeted patients (e.g., sleepy phenotypes) and preexposure or a run-in phase of CPAP treatment before the surgical procedure. ■

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References

1. Qaddoura A, Kabali C, Drew D, van Oosten EM, Michael KA, Redfeam DP, et al. Obstructive sleep apnea as a predictor of atrial fibrillation after coronary artery bypass grafting: a systematic review and meta-analysis. *Can J Cardiol* 2014;30:1516–1522.
2. Feng TR, White RS, Ma X, Askin G, Pryor KO. The effect of obstructive sleep apnea on readmissions and atrial fibrillation after cardiac surgery. *J Clin Anesth* 2019;56:17–23.
3. Nagappa M, Ho G, Patra J, Wong J, Singh M, Kaw R, et al. Postoperative outcomes in obstructive sleep apnea patients undergoing cardiac surgery: a systematic review and meta-analysis of comparative studies. *Anesth Analg* 2017;125:2030–2037.
4. Uchôa CHG, Danzi-Soares NJ, Nunes FS, de Souza AAL, Nerbass FB, Pedrosa RP, et al. Impact of OSA on cardiovascular events after coronary artery bypass surgery. *Chest* 2015;147:1352–1360.
5. McEvoy RD, Antic NA, Heeley E, Luo Y, Ou Q, Zhang X, et al.; SAVE Investigators and Coordinators. CPAP for prevention of cardiovascular events in obstructive sleep apnea. *N Engl J Med* 2016;375:919–931.

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CoronaVac or BNT162b2 Vaccine as a Third Dose



To the Editor:

We would like to share ideas on “A RCT Using CoronaVac or BNT162b2 Vaccine as a Third Dose in Adults Vaccinated with

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Reply to Mungmunpantipantip and Wiwanitkit

From the Authors:

We thank Mungmunpantipantip and Wiwanitkit for their interest in our recent work published in the *Journal* (1). In our randomized clinical trial (RCT) study, we concluded that both the CoronaVac and BNT162b2 vaccines boosted antibody responses in CoronaVac-immunized individuals, but BNT162B2 was markedly superior in immunogenicity. Although Mungmunpantipantip and Wiwanitkit commented that an inactivated vaccine should not be used as a booster or as a booster to standard two-dose regimens, we believe that inactivated vaccines such as CoronaVac are still playing an essential role in controlling the coronavirus disease (COVID-19) outbreak.

First, the supply of mRNA vaccines cannot meet global needs, and the ultralow (-80°C) “cold-chain” requirements may limit their use in many developing countries. Second, we observed that CoronaVac vaccines elicit T-cell responses at least as potent as RNA vaccines (2) and these should provide some protection against severe disease outcomes. Finally, there is a minority of individuals who develop adverse reactions to RNA vaccines, and alternatives are needed.

They also raised the question of whether age, sex, smoking, and history of previous COVID-19 illness may have confounded the outcomes in our study. Our study participants were recruited from a previous study of immunogenicity of the two vaccines 1 month after the second dose, and patient recruitment criteria included absence of prior severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection (2). Furthermore, all patients had blood collected at recruitment and were shown to be sero-negative. This cohort has been followed up since, and none of them had diagnosed SARS-CoV-2 infection. Given the low rates of SARS-CoV-2 transmission in Hong Kong during the period of the study, the likelihood of undiagnosed asymptomatic infection is low. We did in fact confirm that there were no significant differences in age, sex, smoking, and other demographic factors between the two groups, and the data was provided in the supplementary information to our manuscript (<https://www.mect.cuhk.edu.hk/paper/Supporting-Information.pdf>). ■

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Two Doses of CoronaVac” (1). Mok and colleagues concluded that “both CoronaVac and BNT162b2 vaccines boosted antibody responses in CoronaVac immunized individuals but BNT162B2 was markedly superior in immunogenicity” (1). We agree that any coronavirus disease (COVID-19) vaccine can induce protection against COVID-19. During the early phase of emerging COVID-19, the new inactivated COVID-19 vaccine was first developed and could provide hope for disease management (2). However, the situation changes as time passes. The classical inactivated vaccine might have a preventive role, but the decreased efficacy might be owing to emerging variants of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).

The current report gave new data indicating a limited role of the inactivated COVID-19 vaccine for use as a booster vaccine. On the basis of the present report, it might imply that the inactivated vaccine should not be used as a third dose as a booster, and it might further call for attention to reconsider its use as standard two-dose regimen. Nevertheless, it should be noted that there are still some factors that might affect the observations in the present report by Mok and colleagues. According to a recent report by Şenol Akar and colleagues (3), there are several factors that might affect response to the inactivated COVID-19 vaccine. Age, sex, smoking, and history of previous COVID-19 illness are important determinants for immune response to the vaccine (3). If there is an additional analysis on those possible confounding factors in the report by Mok and colleagues, it might give a clearer view on utility of the vaccine. ■

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References

1. Mok CKP, Chen C, Yiu K, Chan TO, Lai KC, Ling KC, *et al*. A randomized clinical trial using CoronaVac or BNT162b2 vaccine as a third dose in adults vaccinated with two doses of CoronaVac. *Am J Respir Crit Care Med* 2022;205:844–847.
2. Pavel STI, Yetiskin H, Uygut MA, Aslan AF, Aydın G, İnan Ö, *et al*. Development of an inactivated vaccine against SARS CoV-2. *Vaccines (Basel)* 2021;9:1266.
3. Şenol Akar Ş, Akçali S, Özkaya Y, Gezgin FM, Cengiz Özyurt B, Deniz G, *et al*. Factors affecting side effects, seroconversion rates and antibody response after inactivated SARS-CoV-2 vaccination in healthcare workers [in Turkish]. *Mikrobiyol Bul* 2021; 55:519–538.

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