



Bangladesh Journal of Pharmacology

Volume: 17; Number 1; Year 2022



Cite this article as: Sookaromdee P, Wiwanitkit V. Cost-effectiveness analysis of intradermal versus classical intramuscular COVID-19 vaccine administration. Bangladesh J Pharmacol. 2022; 17: 9-10.



Letter to the Editor

Cost-effectiveness analysis of intradermal versus classical intramuscular COVID-19 vaccine administration

Sir,

COVID-19 remains a global crisis with no effective disease control (Hsia, 2020). The best chance for catastrophe management is vaccination (Karim, 2020). Immunization against COVID-19 is now widely recognized as an effective primary COVID-19 prevention method. COVID-19 immunization has been proven to be effective in the prevention of COVID-19 (Karim, 2020; Wang et al., 2020).

Typically, two vaccination doses are administered via intramuscular injection. By administering COVID-19 differently, many scientists suggest techniques for decreasing the risk and resolving the problem of insufficient COVID-19 immunization supply (Schweiger, 2021 ; Schnyder et al., 2022).

Intradermal administration was therefore offered as a good technique to provide reciprocal doses while reducing vaccine cost and quantity necessary (Intapiboon et al., 2021). Indeed, the immunogenicity and efficacy of fractional intradermal vaccination in comparison to full dose immunisation has been explored and validated for several pathogens, including influenza virus, rabies virus, poliovirus, hepatitis B virus, and hepatitis A virus (Intapiboon et al., 2021).

Alternative vaccination administration's cost and effectiveness are both important considerations to consider. In this study, the authors compare the cost-effectiveness of alternate intradermal COVID-19 vaccine administration to regular intramuscular COVID-19 vaccine administration.

Only mRNA COVID-19 vaccine delivery is the subject of this study. The traditional two-dose vaccine is mostly conditioned. Intramuscular injection and intradermal injection were the two vaccine administration routes evaluated by the authors. According to a recent publication (Intapiboon et al., 2021), one-fifth of the usual intramuscular mRNA vaccine dosage is administered intradermally for intradermal vaccine administration. In this work cost is the unit cost of vaccine administration in our scenario (referencing to local

data, <https://covid-19.kapook.com/view241253.html>). According to publicly available information, the cost of one dose of COVID-19 provided by intramuscular injection is 34.32 Euro. A direct overall cost comparison for intradermal versus standard intramuscular COVID-19 vaccination is undertaken for a cost comparison.

The authors used a cost-effectiveness analysis to examine the cost and effectiveness of the new COVID19 vaccinations, which will be available to the public soon. As previously stated, the cost is derived directly from public data. In terms of effectiveness, the prior comparison study's claimed vaccine effectiveness is referred to. At 1 month following COVID-19 vaccination, the effectiveness is assigned as SARS-CoV-2 Anti-RBD antibody response compared to no immunization and is displayed in times. The effectiveness of intradermal versus standard intramuscular COVID-19 vaccine administration is equal to 38 and 75 times, respectively, according to the referencing study (Intapiboon et al., 2021).

The primary data for investigation is publicly available data, which has already been described. For analysis, the reported proposed vaccination price is assigned to cost, while the indicated vaccine efficacy is assigned to effectiveness. The cost per effectiveness of each COVID19 vaccine administration is calculated, and the cost-effectiveness value of vaccine administration is compared.

The cost per unit effectiveness of employing intradermal COVID-19 vaccine injection is lower than that of intramuscular immunization, according to cost-effectiveness analysis (Table I).

| Vaccination methods | Cost (Euro) | Times | Cost-effectiveness value (Euro) |
|---------------------|-------------|-------|---------------------------------|
| Intramuscular | 34.32 | 75 | 0.458 |
| Intradermal | 6.86 | 38 | 0.181 |

Instead of intramuscular immunization, intradermal COVID-19 vaccine injection resulted in a 2.5-fold reduction in necessary cost per unit effectiveness. Intradermal immunization is a viable alternative to the usual intramuscular COVID-19 vaccine, according to



current research, and may even be superior in terms of cost-effectiveness.

Pathum Sookaromdee¹ and Viroj Wiwanitkit²

¹Private Academic Consultant Center, Bangkok, Thailand; ²Department of Community Medicine, Dr. D. Y. Patil University, Pune, India.

Corresponding author:

Email: pathumsook@gmail.com

References

Hsia W. Emerging new coronavirus infection in Wuhan, China: Situation in early 2020. *Case Study Case Rep.* 2020; 10: 8-9.

Intapiboon P, Seepathomnarong P, Ongarj J, Surasombattana S, Uppanisakorn S, Mahasirimongkol S, Sawaeng-

dee W, Phumiamorn S, Sapsutthipas S, Sangsupawanich P, Chusri S, Pinpathomrat N. Immunogenicity and safety of an intradermal BNT162b2 mRNA vaccine booster after two doses of inactivated SARS-CoV-2 vaccine in healthy population. *Vaccines (Basel)* 2021. 9: 1375.

Karim SA. COVID-19 vaccine affordability and accessibility. *Lancet* 2020; 396: 238.

Schnyder JL, de Jong HK, Grobusch MP. Intradermal immunization: A dose-sparing strategy to combat global shortages of severe acute respiratory syndrome coronavirus 2 vaccines? *Clin Microbiol Infect.* 2022; 28: 6-8.

Schweiger M. Intradermal covid-19 vaccination could solve supply problems. *BMJ.* 2021; 374: 1980.

Wang J, Peng Y, Xu H, Cui Z, Williams RO 3rd. The COVID-19 vaccine race: Challenges and opportunities in vaccine formulation. *AAPS Pharm Sci Tech.* 2020; 21: 225.
