# DSEN ABSTRACT

## Immunogenicity and Safety of Reduced-Dose Intradermal vs Intramuscular Influenza Vaccines: A Systematic Review and Meta-analysis


### Summary

- A systematic review and meta-analysis examined the immunogenicity and safety of intradermal and intramuscular influenza vaccines.
- Findings suggest that immunogenicity from 3-µg, 6-µg, 7.5-µg and 9-µg intradermal influenza vaccination doses was not significantly different from intramuscular full-dose (15-µg) for most viral strains, irrespective of patient age. The 15-µg intradermal dose showed significantly better immunogenicity for some of the outcomes and strains.
- Local adverse events were significantly reduced with intramuscular vaccination. Fever and chills were significantly higher with the 9-µg intradermal dose, but systemic adverse events were similar otherwise.


### Key messages

- A reduced-dose intradermal influenza vaccination could be a reasonable alternative to standard dose intramuscular vaccination.


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### What is the issue?

- Low-dose intradermal influenza vaccines could be a suitable alternative to full intramuscular dose during vaccine shortages.

### What was the aim of the study?

- To synthesize the literature comparing the immunogenicity and safety of the influenza vaccine at reduced or full intradermal doses with full intramuscular doses to inform policy design in the event of vaccine shortages.

### How was the study conducted?

- MEDLINE, Embase, and the Cochrane Central Register of Controlled Trials were searched for studies published from 2010 until June 5, 2020. All comparative studies across all ages assessing the immunogenicity or safety of intradermal and intramuscular influenza vaccinations were included.

### What did the study find?

- 30 relevant studies were included: 29 randomized clinical trials and 1 cohort study. Random-effects meta-analysis was conducted.
- There was no statistically significant difference in seroconversion rates between the 3-µg, 6-µg, 7.5-µg, and 9-µg intradermal vaccine doses and the 15-µg intramuscular vaccine dose for each of the H1N1, H3N2, and B strains, but rates were significantly higher with the 15-µg intradermal dose compared with the 15-µg intramuscular dose for the H1N1 strain (rate ratio [RR], 1.10; 95% CI, 1.01-1.20) and B strain (RR, 1.40; 95% CI, 1.13-1.73).
- There was no statistically significant difference in seroprotection rates for the 9-µg and 15-µg intradermal doses compared with the 15-µg intramuscular dose for all the 3 strains, except for the 15-µg intradermal dose for the H1N1 strain, for which rates were significantly higher (RR, 1.05; 95% CI, 1.01-1.09).
- Local adverse events were significantly higher with intradermal doses than with the 15-µg intramuscular dose, particularly erythema (3-µg dose: RR, 9.62; 95% CI, 1.07-86.56; 6-µg dose: RR, 23.79; 95% CI, 14.42-39.23; 9-µg dose: RR, 4.56; 95% CI, 3.05-6.82; 15-µg dose: RR, 3.68; 95% CI, 3.19-4.25) and swelling (3-µg dose: RR, 20.16; 95% CI, 4.68-86.82; 9-µg dose: RR, 5.23; 95% CI, 3.58-7.62; 15-µg dose: RR, 3.47 ; 95% CI, 2.21-5.45).
- Fever and chills were significantly more common with the 9-µg intradermal dose than the 15-µg intramuscular dose (RR, 1.36; 95% CI, 1.03-1.80 and RR, 1.24; 95% CI, 1.03-1.50, respectively). All other systemic adverse events were not statistically significant for all other doses.


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