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Peer Review

Review of: "Novel Technologies for Intradermal Delivery of Fractional-Dose Inactivated Poliomyelitis Vaccine: A Review of Implementation Research and Implications for Equitable Vaccine Access"

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This review offers a timely and comprehensive synthesis of implementation research on novel intradermal (ID) delivery technologies for fractional-dose inactivated poliovirus vaccine (fIPV), a topic of high relevance in the current polio endgame and in broader discussions on equitable vaccine access. By focusing explicitly on implementation outcomes—such as acceptability, training requirements, coverage, feasibility, and vaccine wastage—the authors go beyond immunogenicity-focused reviews and address critical programmatic considerations that often determine real-world adoption.

A major strength of the manuscript is its clear articulation of the limitations of the Mantoux intradermal technique when used at scale, particularly in campaign and house-to-house settings. The synthesis of evidence showing improved vaccinator and caregiver acceptability, reduced child distress, and higher coverage with novel ID delivery technologies—especially needle-free systems—is convincing and highly relevant for policymakers and implementers. The emphasis on operational feasibility and campaign performance strengthens the manuscript's contribution to implementation science.

The review is also transparent about the limitations of the available evidence base. The heterogeneity of study designs, outcome definitions, and measurement approaches across the included studies limits cross-technology comparability and precludes pooled quantitative analysis. This limitation is appropriately acknowledged. Future work would benefit from more standardized implementation

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research frameworks, including harmonized indicators for coverage, training adequacy, vaccine wastage, and time-to-vaccinate, as well as mixed-methods approaches that better capture contextual and behavioral determinants of performance.

An additional area that could be further developed is the interaction between delivery technologies and health system context. While the review highlights the potential of needle-free ID delivery in high-risk and hard-to-reach settings, more evidence on long-term sustainability, integration into routine immunization systems, and comparative cost-effectiveness (including device procurement, maintenance, supervision, and training cascades) would further strengthen the policy relevance of the findings.

Overall, this manuscript makes a strong and valuable contribution by framing novel ID delivery technologies not merely as technical innovations, but as potential enablers of equity, reach, and feasibility in polio vaccination strategies. The conclusions are well aligned with current WHO and SAGE guidance and have clear implications for both polio eradication efforts and the evaluation of intradermal delivery for other supply-constrained or outbreak-prone vaccines. I consider this work suitable for peer approval, with minor clarifications rather than substantive revisions.

Declarations

Potential competing interests: No potential competing interests to declare.