VAX-ID®: an easy-to use cost-saving and dose-sparing device supporting Yellow Fever vaccination

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Yellow Fever Control Through Vaccination

Yellow Fever is an arboviral disease transmitted by mosquitoes, with clinical manifestations ranging from asymptomatic infection to severe disease involving haemorrhage, jaundice, and ultimately death. More than 90% of reported cases and fatalities occur in sub-Saharan Africa, where the disease remains a significant public health concern and is associated with recurrent epidemics.
Vaccination remains the most effective strategy for preventing yellow fever and reducing its associated morbidity and mortality.

Intradermal vaccination: A cost- and dose-sparing approach

Recurrent Yellow Fever outbreaks and frequent vaccine stock shortages have increased the need for dose-sparing strategies, prompting WHO to recommend the use of fractional vaccine doses to help manage vaccine shortages. Intradermal (ID) prophylactic vaccination uses equivalent to 1/5th of the dose typically given intramuscularly (IM) or subcutaneously (SC).
Fractional doses given ID with 1/5th of the SC dose of the live attenuated 17D yellow fever vaccine was found non-inferior to the standard dose in inducing protective seroimmunity after vaccination, with no major safety concerns (PMID: 18431480). Furthermore, a follow-up study of a randomized, controlled, noninferiority trial has demonstrated that ID administration of a one-fifth dose of yellow fever vaccine induced a protective immune response that lasted for 10 years after vaccination (PMID: 30476963).

Challenges associated with the Mantoux technique

The Mantoux technique, the current standard of care for intradermal injections, relies on a conventional syringe and needle. To achieve correct intradermal delivery, the needle must be inserted bevel-up at a shallow angle of 5 to 15 degrees, almost parallel to the skin surface. This procedure is technically demanding, requires substantial training and experience, and is often perceived as painful by vaccine recipients. In addition, the technique can be difficult to perform consistently. If the needle is inserted too deeply, the injected fluid may be deposited in the subcutaneous tissue, whereas overly superficial insertion can result in leakage from the injection site.



VAX-ID®: a solution for easy & standardized intradermal delivery

VAX-ID® has been designed to address the technical challenges associated with the Mantoux technique for intradermal injections. The device is a single-use adaptor that facilitates accurate and reproducible delivery into the dermis. By employing a short, thin microneedle and a perpendicular application to the skin surface, VAX-ID® ensures a controlled injection depth and simplifies the administration procedure.



EASY TO USE
Healthcare professionals gave VAX-ID® high scores for usability.
(PMID: 37330370)

LOW IN PAIN
Acceptability studies show that healthy volunteers do not perceive intradermal injection using VAX-ID® as painful.
(PMID: 30587432)

NO NEEDLE-STICK
VAX-ID® is configured with a safety pin which needs to be removed prior to use and placed back after use to avoid needle-stick injuries

COST SAVING
For prophylactic vaccines there is a clear dose-sparing potential as only 1/5th of the dose is needed in a 2-dose schedule compared to intramuscular administration as per WHO recommendation (PMID: 29939243).

TIME SAVING
Performing an ID injection using VAX-ID® takes a maximum of 8 seconds compared to around 20 seconds for the Mantoux technique.