Intradermal Adapter

Health need
Approximately 20,000 people die of rabies each year in India, often because they are unable to access treatment. Although highly efficacious, rabies vaccine is expensive and frequently in short supply. To stretch valuable supplies and provide care for more patients, the same or better protection can be achieved by delivering smaller amounts of the vaccine intradermally (within the top layers of the skin). Intradermal (ID) regimens for rabies vaccine have been adopted in many regions, reducing costs and expanding protection to more people who have been exposed to rabid animals.

Despite clear benefits, this approach is not yet universal due in part to the difficulty of giving an ID injection correctly. The Mantoux technique, which uses a traditional needle and syringe, has historically been recognized as a difficult and inconsistently used method for delivering vaccines intradermally. In many countries, only certain health care workers are able to perform ID injections for rabies vaccine and Bacillus Calmette-Guérin (BCG), a vaccine that is administered at birth to prevent tuberculosis. Smaller ID doses of vaccines for other diseases, such as polio, could also be effective. By potentially reducing the amount of vaccine needed per patient, helping to cut costs and overcome supply shortages, such dose-sparing strategies could be particularly meaningful to immunization programs in low- and middle-income countries. However, concerns regarding the difficulty and a lack of reliability in delivering conventional ID injections have limited research in this field and the broad introduction of dose sparing into immunization programs.

Technology solution
An adapter that standardizes injection depth and angle could serve to expand the pool of health care workers capable of performing ID injections with a needle and syringe, and have a particularly high impact in remote or underserved communities with limited access to health care specialists.

Current status and results
PATH developed an ID adapter in partnership with SID Technologies LLC of Newtown, Pennsylvania, advancing it forward from the initial concept stage through to the manufacture of clinic-ready devices. As part of this effort, we modified and tested successive design prototypes, incorporating feedback from health care workers in the United States and India. The design has now been transferred to a commercial partner, West Pharmaceuticals Services, Inc., of Lionville, Pennsylvania, for manufacturing and distribution. Performance of the current model has been demonstrated in a clinical trial with saline and ultrasound imaging. PATH has also conducted a clinical study evaluating an autodisable version of the ID adapter, which may improve safety by preventing reuse. The study showed the autodisable version had similar injection performance and safety.

Availability
For more information regarding this project, contact Darin Zehrung at dzehrung@path.org.

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