Improving Access to Maternal Vaccines in Low-Resource Settings with Novel Packaging and Delivery Technologies

Summary of Project Results

Devices and Tools

Vaccine and Pharmaceutical Delivery Technologies Team

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PATH
A catalyst for global health

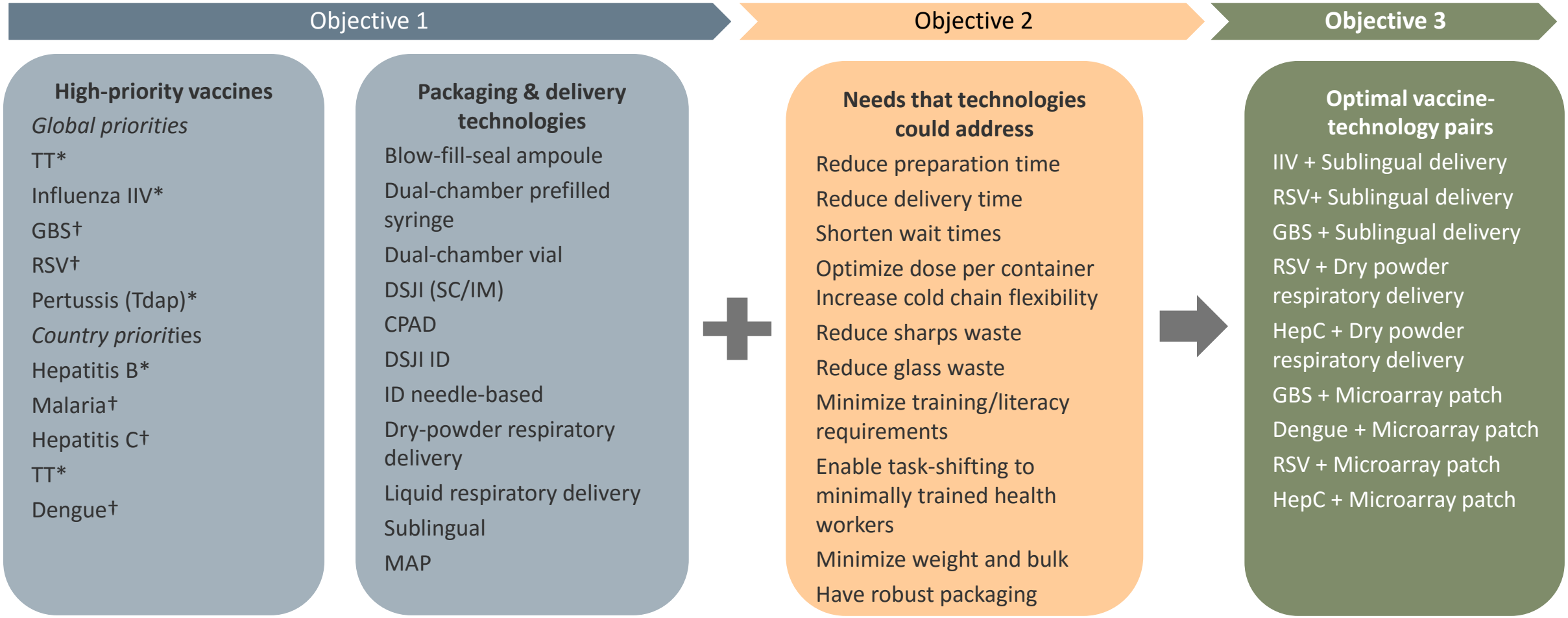
Photo: PATH

Project Objectives

PATH worked to identify possible opportunities to optimize vaccine presentation and packaging for maternal immunization scenarios. This work was structured around three project Objectives:

1. Determine current state of the market for maternal immunizations and assess stakeholder requirements (including priority vaccines).
2. Characterize maternal immunization delivery scenarios and identify constraints to increased coverage in two countries.
3. Map packaging and delivery technologies to address requirements and constraints identified under Objectives 1 and 2.

Overview of results under each Objective



*Currently approved for use in pregnancy; †Investigational vaccines where presentations are not yet finalized.

Abbreviations: CPAD, compact, prefilled, autodisable device; DSJI, ; disposable-syringe jet injector; GBS, Group B *Streptococcus*; HepC, hepatitis C; ID, intradermal; IIV, inactivated influenza vaccine; IM, intramuscular; MAP, microarray patch; RSV, respiratory syncytial virus; SC, subcutaneous; Tdap, tetanus, diphtheria, acellular pertussis; TT, tetanus toxoid.

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Conclusions

- Dry-powder respiratory delivery, sublingual delivery, and MAPs offer the greatest promise for reducing barriers to delivery of priority maternal vaccines.
- In many cases, the most promising pairings are the furthest upstream in development. These could be the most technically challenging to develop and manufacture. In-depth review and research are needed to assess technical feasibility of the selected pairings.
- Introducing a new vaccine and delivery technology combined product for pregnant women has particular challenges. Extensive population-specific clinical data will be required, which could slow down introduction.
- Further evaluation would be needed to characterize the potential total cost and health impact a particular technology pairing could have on country-level maternal immunization.

Abbreviations: BFS, blow-fill-seal; CPAD, compact, prefilled, autodisable device; DSJI, disposable-syringe jet injector; ID, intradermal; IM, intramuscular; MAP, microarray patch; SC, subcutaneous.

Project Impact

- Maternal immunization has the potential to protect both the mother and the infant during the vulnerable neonatal period.
- Novel packaging and delivery technologies have the potential to address requirements and constraints identified through the needs assessment to improve vaccine coverage as well as equitable access to vaccination.
- Understanding the impact of presentation and packaging formats will be critical to preemptively optimizing vaccine products for the program and user requirements of ANC delivery scenarios in order to achieve global goals for maternal and newborn health.

Abbreviation: ANC, antenatal care.