The impact of the technology revolution on global health

Translational: New Concepts in Vaccine Delivery and Scale-Up

Darin Zehrung
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Product Development 101: Beginning with the goal in mind

Target Disc. & Evaluation
Feasibility & Planning

Discovery & Translational Research

Preclinical
IND
Ph 1/2a
Ph 2b
Ph 3
Filing

Translational Development

Proof-of-principle
Proof-of-concept
Proof-of-efficacy

Late Stage Development

Approval & WHO Rec

Target Product Profile as Driver

Optimal formulation – dose – schedule identified

Learn
Proof-of-Principle

Confirm
Proof-of-efficacy

Sheiner, 1997
Vaccine safety, efficacy and quality are often the major focus of translational vaccine development and introduction efforts.
Line of sight to application and public health impact

Optimal formulation – dose – schedule identified

Proof-of-Principle

Proof-of-Concept

Learn

Proof-of-efficacy

Confirm

Apply

Introduce & Optimize

Scale-up & Sustain

Approval

Sheiner, 1997
Key factors in public health impact

**Public Health Impact Cascade Factors**

- Supply
- Demand (including cost)
- Uptake
- Adherence

**Programmatic suitability of vaccines:**

- Formulation
- Presentation
- Packaging
- Storage temperature
- Number of doses per vial
- Wastage rates
- Storage volume
- Volume of waste for disposal
- Acceptability by health staff, ease of use (preparation and administration)
- Volume of dose administered
- And more...

**Take-home:** Vaccines designed with more programmatically suitable formulations, presentations and packaging enable greater coverage and equity, but these downstream design features must be considered early in development.
Agenda

Objective:
- Provide an overview of new vaccine delivery technologies that are in development
- Describe how delivery and scale-up innovations are improving global vaccine delivery

New vaccine delivery technologies: Delivery devices; Formulation; and Packaging
Darin Zehrung, Portfolio Leader, Delivery Technologies, PATH

Vaccines don’t deliver themselves: field experience in vaccine delivery and scale-up
Robert Steinglass, Director, Immunization Center, John Snow, Inc. (JSI)

A facilitated discussion on translation research on vaccine delivery and scale-up