The Public Health Need for iNTS Vaccines and Preferred Vaccine Characteristics

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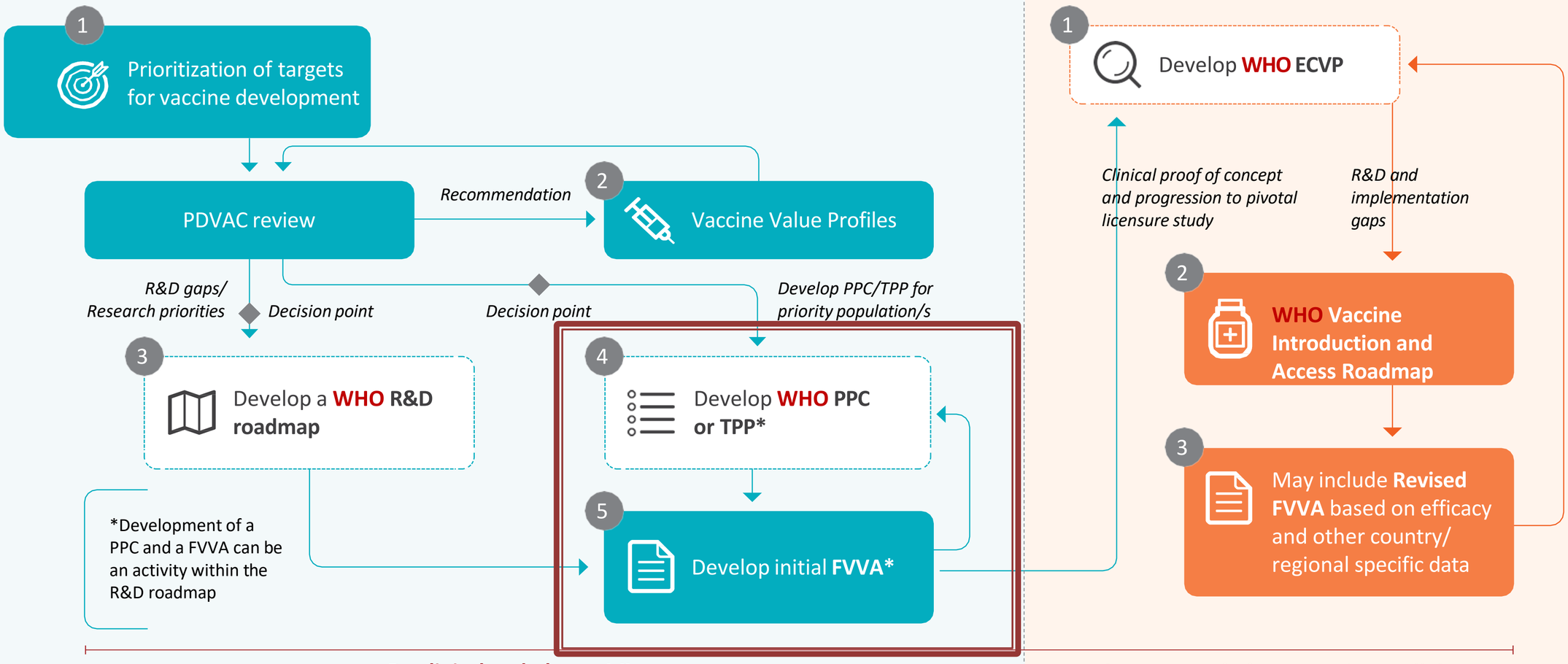
- What is the **public health need** that an iNTS vaccine would address?

- What is the **potential benefit** of the vaccine (in the target population)?

Overview of WHO guidance to facilitate vaccine development to regulatory approval, policy and use

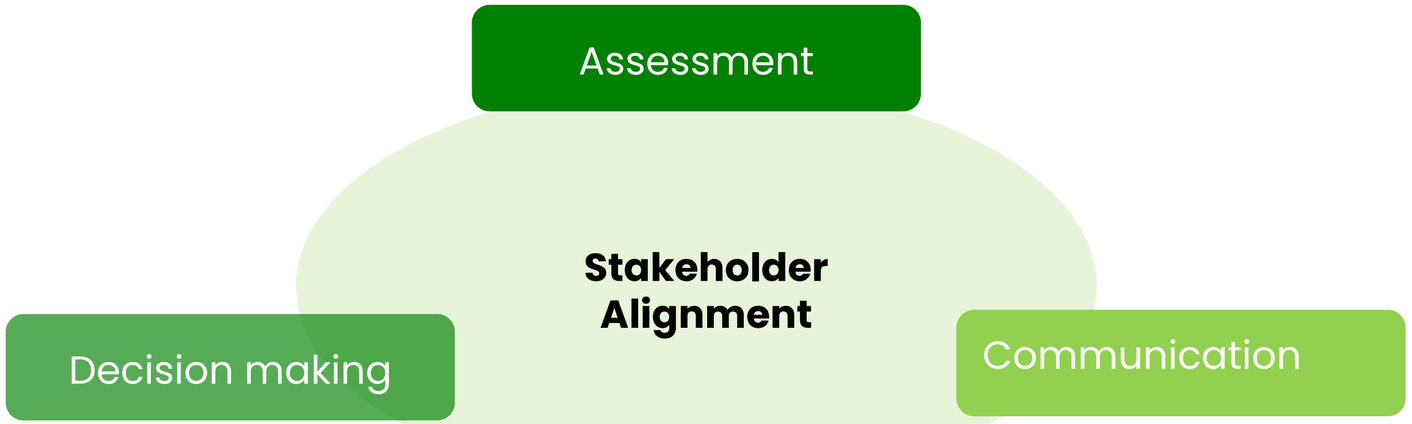


Abbreviations:
ECVP: Evidence Considerations for Vaccine Policy
FVVA: Full Value of Vaccines Assessment **IVB**: Immunization, Vaccines & Biologicals
IVIRAC: Immunization and vaccines related implementation research advisory committee
PDVAC: Product Development Vaccine Advisory Committee
PDR: Vaccine Product & Delivery Research
PPC: Preferred Product Characteristics
TPP: Target Product Profile

Slide credit: Birgitte Giersing, WHO/PDR

Full Value of Vaccines Assessment (FVVA)

Facilitates alignment across key stakeholders and enhances decision-making around investment in vaccine development, policy-making, procurement, and introduction, particularly for vaccines intended for use in LMICs.



- E.g., What are the benefits of a vaccine?

- E.g., Should we invest in developing a vaccine?
- Should we recommend/fund the vaccine?
- Should we introduce the vaccine?

- E.g., What information is important for the target audiences to invest in vaccines and immunization programs?

Adapted from: Hutubessy R et al. The Full Value of Vaccine Assessments (FVVA): a framework for assessing and communicating the value of vaccines for investment and introduction decision-making. BMC Med. 2023 Jul 4;21(1):229.

Overview of iNTS FVVA (an IVI-WHO joint project)

- Aim 1 - **Landscape analysis** of iNTS (epidemiology, diagnostics, knowledge gaps to accelerate development, licensure and use)
- Aim 2 – **LMIC Stakeholder Consultation** on vaccine use and demand
- Aim 3 – **R&D Roadmap and Preferred Product Characteristics**
- Aim 4 – Determine the **Clinical Development Plan and Regulatory Pathway** to bring iNTS vaccines to licensure and WHO prequalification
- Aim 5 - Develop **rationale for the development of an iNTS vaccine**
  - Business case
  - Investment case
  - Broader societal benefit analysis

Development of WHO Preferred Product Characteristics for NTS vaccines against invasive disease (in draft)

- WHO PPCs define preferred attributes for vaccines to be used in LMICs
- They are pathogen-specific rather than product-specific
- Typically, produced early in product development; aim to inform candidate-specific target product profiles (TPPs) as the vaccine development pipeline matures

Landscape analysis and LMIC Stakeholder Consultation (Nov/Dec 2021)

Iterative reviews of draft PPC by FVVA and selected experts

Expert consultation on R&D Roadmap and PPCs (15-16 Nov 2023)

Public consultation (by Jan 2024)

PDVAC review and inputs (Feb 2022)

PDVAC review and inputs (13 Dec 2023)

Finalize → WHO publication

Key PPC parameters (DRAFT)

Indication	Prevention of invasive disease (infection in a normally sterile site for example, blood) caused by Salmonella serovars • Trivalent vaccine: S. Typhi/S. Typhimurium/S. Enteritidis • Bivalent vaccine: S. Typhimurium/S. Enteritidis.
Target population	Infants and young children 6 to 36 months of age.

Target age of vaccination	• Trivalent: 6 months is proposed (new data on duration of protection of TCV needs to be taken into account)
	• Alternative of early EPI schedule (e.g., 6 to 14-week timepoints).
	  ○ May not be feasible due to congested EPI schedule
	  ○ Confirmation of safety, immunogenicity, and efficacy of TCV in infants <6 months would be required
	• Bivalent: early EPI schedule should be considered.

Key PPC parameters (DRAFT)

Dose regimen and schedule	Trivalent: primary regimen may or may not require >1 dose to provide protection. The main required window of protection for iNTS disease is until 3 years of age. Bivalent: may be given to younger infants and therefore dosing schedule may differ from the trivalent. Doses should coincide wherever possible with existing vaccine schedules, or align with visits for other new vaccine introductions e.g., malaria.

Draft PPC - scope

- Follows WHO standard guide for Preferred Product Characteristics and includes the following parameters:

  - Indication
  - Target population
  - Dose regimen and schedule
  - Safety
  - Clinical endpoints/efficacy
  - Duration of protection
  - Immunogenicity
  - Non-interference
  - Administration
  - Vaccine delivery strategy
  - Product stability and storage
  - Vaccine presentation
  - Registration, prequalification, programmatic suitability
  - Access and affordability

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