

Full Public Health Value Propositions for Vaccines: Executive summary

The remit of the Initiative of Vaccine Research (IVR) includes facilitating development of vaccines against priority pathogens, and supporting countries with introduction, once those vaccines become available. The over-arching principle of these efforts is to incentivize investment and sustained commitment to the development of vaccines for which there is the greatest public health need, to ensure that the development of vaccines that are suitable for use in low- and middle-income country (LMIC) contexts, and to ensure the concomitant generation of robust evidence that will enable efficient and effective policy decisions.

Historical vaccines have been developed for the expanded programme of immunization (EPI), where there has been a global mortality burden that supports a well characterized market and a clear target product profile. Vaccines were typically recommended on the basis of safety and efficacy against etiologically-confirmed clinical outcomes, in randomized and controlled conditions. Many of the infectious disease vaccine candidates currently in development are unlikely to be universally implemented; rather they are expected to be seasonal, regional or sub-national vaccines, targeted towards certain age groups depending on the burden of disease and context-specific epidemiology. In resource-poor settings, an increasingly convincing rationale will be needed to justify the inclusion of these new vaccines, in addition to other established vaccines within national immunization programs, over and above many other health priorities that are competing for scarce resources. As such, the ability to determine the global market demand, and the willingness to procure at the end of a costly product development pathway is uncertain, and vaccine manufacturers often prioritize high income markets that offer a more immediate and certain return on investment. The result is often a delay between vaccine licensure, and accessibility and availability to these vaccines by LMICs where there is the greatest public health need.

Recently, there have been appeals from several key stakeholders and subject matter experts to broaden the evaluation of vaccine value beyond the demonstration of individual, direct health benefits and related costs that are required to support licensure, to evaluation of the broader economic, societal and indirect impact of vaccination at the population level. A conceptual framework of pathways between immunisation and its proposed broader economic benefits has been developed (Jit et al, 2015), and this informed the Fondation Merieux conference in 2016, resulting in a publication on 'Estimating the full public health value of vaccination' (Gessner et al, 2017). This new public health paradigm considers the population impact of vaccination and encompasses measures of community benefits against a range of outcomes, such as improvements in health inequity, financial risk protection, reduction in long-term/on-going disability and a decrease in the development of antibiotic resistance. Wilder-Smith and colleagues further developed this framework and proposed methods, measures and outcomes to evaluate the broader public health impact of vaccines, to be considered for evidence-informed policy making both pre- and post-licensure (Wilder-Smith et al, 2017).

IVR, under the auspices of its Product Development for Vaccines Advisory Committee (PDVAC) and its Immunization and Vaccine related Implementation Research Advisory Committee (IVIR-AC), is building on these efforts, to develop an approach for developing Full Public Health Value Propositions (FPHVP) for vaccines where there is a clear public health need for, but a lack of interest and/or investment in, developing vaccines for LMIC markets. As such, we are in the process of deriving an annotated template (table of contents included in background materials) for a generic FPHVP that incorporates all elements of a comprehensive framework that will inform both early stage (prior to clinical proof-of-concept) and late stage (as the product transitions to phase III clinical studies) as well as policy decision making. In addition to serving as a roadmap to advance the vaccine through development, these living documents will provide an inventory of available evidence, and identify and prioritize gaps that need to be addressed to incentivize development and facilitate

evidence-informed policy making. Early socialization of this framework has been favorably received by a broad set of stakeholders; however, more work is needed to articulate the priority data needs along the product development and vaccine introduction continuum, as well as to understand how the content should be customized to specific groups of stakeholders.

The rationale for FPHVP approach is to consider, as robustly as possible from the early stages of product development, the global value of vaccines. Defining, measuring, and ultimately confirming the FPHVP of vaccines should increase political will and allow for more accurate prioritization of available resources to avoid unnecessary delays in the uptake of new vaccines in LMICs where there is the greatest public health needs.

References

- Jit et al. The broader economic impact of vaccination: reviewing and appraising the strength of evidence. BMC Med. 2015 Sep 3;13:209.
- Gessner et al. Estimating the full public health value of vaccination. Vaccine. 2017 Nov 1;35(46):6255-6263.
- Wilder-Smith et al. The public health value of vaccines beyond efficacy: methods, measures and outcomes. BMC Med. 2017 Jul 26;15(1):138.