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Reflections on dengue vaccination: Parallels, challenges, and lessons from Indonesia and the Philippines experiences

To the Editor: Salam *et al*. found that more than half (54.2%) of Indonesian parents surveyed were willing to pay for a dengue vaccination[1]. Using the Health Belief Model, the study identified four constructs that significantly influenced willingness to pay, including Perceived Susceptibility, Perceived Severity, Perceived Benefits, and Cues to Action[1]. Interestingly, Perceived Barriers, including cost and potential side effects, did not show a significant effect[1]. These findings suggest that in dengue-endemic communities, the decision to vaccinate is influenced more by how parents interpret disease risk and vaccine effectiveness than by cost concerns[1]. The implication is that behavioral and perceptual factors, especially how families understand risk, can be key to vaccine acceptance in low- and middle-income countries (LMICs), where public information, cultural trust, and lived experience with disease shape decision-making as much as economic ability.

These findings strongly resonate across Southeast Asia, especially when viewed through the lens of the Philippine Dengvaxia controversy, which remains one of the region's most significant public health communication crises[2–5]. Therefore, this perspective paper explores the parallels, challenges, and lessons that emerge when the Indonesian findings are compared with the Philippine experience, to help other LMICs balance vaccine demand creation with maintaining public trust and safety.

1. The Philippine Dengvaxia rollout

The Philippines' experience with Dengvaxia offers additional insights into dengue vaccination. Launched in 2016 as a school-based immunization program, it aimed to vaccinate over 800 000 children in high-incidence areas[2–4]. Similar to the Indonesian context, Filipino families had high awareness of dengue's danger, and many parents initially saw the vaccine as a long-awaited solution. Public officials, supported by the World Health Organization recommendations at the time, presented vaccination as a national victory against dengue[2,3].

Nevertheless, in late 2017, Sanofi Pasteur announced new findings indicating that Dengvaxia could increase the risk of severe dengue among children who had never been previously infected[4,6]. The revelation sparked intense political debate, media sensationalism, and widespread public panic. Within months, the program was suspended, vaccine confidence plummeted, and broader childhood immunization rates, including for measles, dropped significantly[2,3], leading to outbreaks in the following years[5].

The Indonesian study and the Philippine case share a key similarity. Both show that perception influences behavior[1,2]. In Indonesia, positive perceptions increased willingness[1]. In the Philippines, shattered perceptions led not only to rejecting one vaccine but also to rejecting vaccination altogether[2–4]. Therefore, the line between high uptake and deep mistrust proved alarmingly thin.

2. Challenges revealed by the Philippine crisis

The Dengvaxia experience highlights three persistent challenges for LMICs trying to introduce dengue vaccines. First, the main scientific issue in the Philippine rollout was risk stratification. Dengvaxia was later found suitable only for individuals with prior dengue infection[4,6], but the initial campaign might have lacked serological screening. This shows that demand creation must never outshine the strength of scientific evidence and safety monitoring. The Indonesian finding that Perceived Barriers did not predict willingness could become risky if safety issues later emerge, as a highly motivated public can quickly lose trust if post-rollout

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revelations contradict earlier assurances[1]. Second, the Philippine crisis showed that once public confidence collapses, rebuilding it can be very difficult. Misinformation spread quickly, fueled by political polarization and sensationalized reporting[7]. For LMICs, where there may already be mistrust of government or pharmaceutical actors, transparency about vaccine safety, limitations, and side effects is crucial[5-7]. Trust is, therefore, the currency of immunization, and once lost, it takes a long time to regain. Third, Salam *et al*. noted that many parents remained unwilling or unable to pay for a dengue vaccine, even if they valued it[1]. In contrast, the Philippine campaign offered free vaccines through public funding but failed on safety and trust[2-4,6]. These experiences teach a key health policy lesson that while affordability and accessibility are necessary, they are not enough. A sustainable vaccination strategy must also be based on solid evidence, clear eligibility criteria, and consistent, credible public health messaging.

3. Lessons for other LMICs

From these interconnected experiences, several guiding principles emerge for LMICs considering dengue vaccine implementation. First, demand creation should accompany, not precede, thorough scientific validation. Baseline seroprevalence studies and pre-vaccination screening are crucial to reduce risks and maintain public trust. Behavioral willingness, as seen in Indonesia, is valuable only when combined with biological suitability and transparent safety measures[1]. Second, the Health Belief Model highlights susceptibility and severity, but overreliance on fear-based messaging can backfire when safety concerns emerge, as observed in the Philippines[2-7]. Therefore, public health communication strategies should balance urgency with reassurance, offering consistent, evidence-based updates and community-level dialogue both before and after rollout. Third, if half of Indonesian parents are unwilling to pay, government or donor support will become essential[1]. LMICs should incorporate dengue vaccination into universal immunization programs rather than depend on market-driven uptake. Equitable access builds trust and demonstrates institutional commitment to public welfare. Lastly, the fallout from Dengvaxia extended well beyond dengue. The Philippine experience led to declines in other vaccine coverage, which may have caused measles and polio outbreaks in subsequent years[5,8,9]. Therefore, LMIC policymakers must anticipate and address these spillover effects by integrating dengue vaccination into existing, trusted health infrastructures instead of treating it as a standalone campaign.

In conclusion, Salam *et al*. provide valuable evidence that parental perceptions of risk, disease severity, and vaccine benefits strongly influence willingness to vaccinate[1]. However, the Philippine Dengvaxia experience warns that perceptions can also be fragile, vulnerable to disruption by incomplete information, political noise, or safety lapses[2-6]. For LMICs, the key lesson is balance, where the same psychological triggers that create demand can, if mismanaged, undermine public confidence. Effective dengue vaccination, therefore, requires both behavioral insights and institutional integrity that align with science, effective communication, and public trust. As the global health community advances toward broader deployment of dengue vaccines, the twin stories of Indonesia and the Philippines remind us that technology alone cannot immunize societies; trust must be built alongside it.

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