

Peer Review

Review of: "Oral Polio Vaccine Is Unsafe for the World and Should Be Replaced with Inactivated Poliovirus Vaccine Globally"

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1. Comprehensive Historical Context and Logical Framing

One of the strongest features of this article is its detailed recounting of the historical trajectory of oral polio vaccine (OPV) use in the United States and globally. The authors effectively lay out a logical foundation for their argument by revisiting the original assumptions made by Dr. Albert Sabin and by subsequent public health authorities. The contrast between theoretical expectations (such as community-level immunization through transmission) and empirical realities (such as vaccine-associated paralytic polio, or VAPP) is presented with clarity and depth. This provides a robust framework for understanding the current dilemmas faced in global polio eradication efforts.

2. Insightful Analysis of Vaccine Effectiveness in LMICs

The manuscript excels in explaining the differential vaccine effectiveness (VE) of OPV in low- and middle-income countries (LMICs) compared to high-income settings like the USA. It highlights key biological, environmental, and programmatic variables contributing to low VE in LMICs and the resulting failure to eliminate wild poliovirus (WPV). This section rightly challenges the assumption that the U.S. experience could be replicated globally and underscores the dangers of adopting uniform strategies without considering local epidemiological dynamics.

3. Ethical Critique of Public Health Decisions

A notable contribution of this work is its forthright ethical critique of global health policy decisions. The authors argue persuasively that the continued use of OPV, despite known risks and the availability of safer alternatives, represents a failure of duty by WHO and its partners. This critique gains strength

through historical examples such as the Hispaniola outbreak and the delayed policy response despite early warning signs. The article's moral appeal for equity, justice, and accountability is poignant and well-integrated into the scientific discussion.

4. Technical Rigor in Describing Viral Evolution

The explanation of how OPV-derived viruses mutate into circulating vaccine-derived polioviruses (cVDPVs) is technically rigorous and compelling. The authors describe the stepwise genetic reversion of vaccine strains with scientific precision, grounding their claims in molecular virology. The differentiation between Sabin-like viruses, VDPVs, and cVDPVs is clearly articulated using mutation thresholds, which demonstrates a deep understanding of poliovirus biology and the mechanisms underlying iatrogenic outbreaks.

5. Data Transparency and Surveillance Insights

The manuscript benefits from referencing GPEI surveillance data and molecular virology practices. It rightly praises GPEI's implementation of global sequencing surveillance but also critiques the lack of transparency in reporting VAPP and VDPV cases. This call for fuller data disclosure strengthens the argument for better accountability mechanisms in global eradication efforts and adds a critical layer to discussions on scientific transparency and public trust.

6. Missed Opportunities and Policy Lag

A central argument in the article is that WHO and GPEI failed to act on accumulated scientific evidence in a timely manner, particularly concerning the withdrawal of type 2 OPV following the eradication of WPV-2. The authors build this case using a mixture of logical deductions and empirical observations. However, while the critique is strong, the narrative could benefit from more balanced engagement with counterarguments or constraints—such as political, financial, or logistical barriers—that may have influenced policy inertia.

7. Lack of Nuanced Risk-Benefit Analysis in Current Times

While the historical benefit-risk balance of OPV is well addressed, the current analysis may appear overly deterministic. The article argues that the risk now clearly outweighs the benefit, which may be true, but fails to systematically weigh residual WPV transmission risk versus the logistical feasibility and cost of switching entirely to IPV, especially in conflict-affected or fragile health systems. Including more recent modeling data or transitional cost-effectiveness analyses would strengthen this section's scientific robustness.

8. Underdeveloped Operational Guidance

One notable limitation is the absence of operational recommendations. While the article makes a strong case for replacing OPV with IPV globally, it stops short of describing *how* this transition can be realistically achieved. For instance, addressing supply constraints, cold-chain requirements, workforce training, and IPV production capacity would offer a more actionable roadmap for stakeholders. What are the immediate steps WHO should take? What support do LMICs require? These gaps limit the paper's utility for policy implementation.

9. Tone and Rhetorical Strategy

The article employs a tone that is at times accusatory toward global health institutions, labeling past actions as “reckless” or “unjustified.” While the underlying concerns are valid and deserve visibility, the argumentative tone may alienate some readers or policymakers, potentially weakening the persuasive impact. A more diplomatic framing—while still maintaining the ethical urgency—might foster greater engagement from the very institutions the authors aim to influence.

10. Scientific and Public Health Significance

In conclusion, this article is a thought-provoking and critical contribution to the discourse on polio eradication. Its combination of historical reflection, virological analysis, and ethical advocacy is compelling and necessary. The central thesis—that polio eradication is unattainable without replacing OPV with IPV globally—is well-supported. However, the paper would be further strengthened by a more balanced discussion of implementation challenges, clearer operational pathways, and less polemical language. Despite these areas for improvement, it raises essential questions about accountability, scientific adaptability, and the ethics of public health policy.

Declarations

Potential competing interests: No potential competing interests to declare.