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PharmaJet supports polio eradication

Intradermal delivery saves money and extends stocks

The goal of the Global Polio Eradication Initiative (GPEI) is to complete the eradication and containment of all wild, vaccine-related and Sabin polioviruses, such that no child ever again suffers paralytic poliomyelitis.[1] The global incidence of polio has decreased by 99.9% since GPEI's foundation. An estimated 16 million people today are walking who would otherwise have been paralyzed by the disease, and more than 1.5 million people are alive, whose lives would otherwise have been lost. Now, the task remains to tackle polio in its last few strongholds and get rid of the final 0.1% of polio cases.

An increasing number of industrialized, polio-free countries are using inactivated polio virus (IPV) as the vaccine of choice. This is because the risk of paralytic polio associated with continued routine use of oral polio virus (OPV) is deemed greater than the risk of imported wild virus. Under the current Polio Endgame Strategy 2019-2023, oral polio vaccine (OPV) withdrawal remains one of the goals necessary for complete eradication of wild as well as vaccine-derived polioviruses.[2] To prepare towards complete OPV withdrawal, WHO recommended in 2013 that all countries should introduce at least 1 dose of IPV in their routine immunization schedule to provide an immunity base against paralysis caused by circulating vaccine-derived poliovirus type 2 (cVDPV2) and boost immunity against poliovirus types 1 and 3. By April 2019, this milestone was achieved by all 194 Member States. The introduction of a second dose of IPV (IPV2) is now recommended as the next step towards complete OPV withdrawal.[3] ***However, IPV is over five times more expensive than OPV. High prices and limited supplies threaten timely introduction of IPV2.***

Fractional IPV (fIPV) has been found to be safe, effective, and immunogenic.[3] Countries can achieve high levels of immunity against poliovirus types 1, 2, and 3 by providing two fractional intradermal IPV doses.[4] Given the uncertainty whether current global supply of IPV can support rapid scaling of IPV2, fIPV is a viable alternative to using full-dose IPV. Choosing fIPV instead of the full dose can stretch supplies and lower the cost of vaccination.[5]

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Tropis is the preferred intradermal delivery method for IPV.

fIPV is delivered intradermally. Until recently, the Mantoux method, using traditional needle and syringe, was the only intradermal (ID) option. This technique is relatively difficult and requires significant training of health care workers. A small number of countries have introduced ID delivery and fewer cessfully scaled fIPV using the Mantoux method.[6]

An alternative approach is needle-free ID delivery using Tropis (PharmaJet), a WHO prequalified, hand-held device that uses pressurized liquid stream without needles.[7] In a study in Cuba that compared different devices, ID delivery with Tropis was more effective than the Mantoux method.[8] Thus, barriers to intradermal administration can be eliminated using Tropis.

PATH models demonstrate significant cost savings using Tropis fIPV delivered intradermally as compared to full dose IM delivery using traditional needle and syringe.[9] TTropis is equal in cost in the first year when costs are front loaded. Tropis is then 60% less per year ongoing. Tropis is 50% less per year if the injector is amortized across 5 years. Countries can also benefit from increased compliance and increased vaccination coverage as demonstrated in Pakistan.[10] The WHO SAGE working group has stated "It is important to gain more implementation experience both in routine and campaign settings to guide future policy."[11]

Led by Nigeria, Uganda, and Pakistan, low-and middle-income countries are expressing strong interest in investing in cost-saving, easy to implement, delivery methods for fractional dosing of vaccines.

1. Global Polio Eradication Initiative Mission
2. Polio Endgame Strategy 2019-2023
3. GPEI Use of fractional dose IPV in routine immunization programs (2017)
4. Considerations for the introduction of a second dose of Inactivated polio vaccine (IPV2) in routine immunization programmes from 2021
5. Mashunye, et al (2021)
6. Saleeml, et al (2017)
7. WHO prequalification, Tropis
8. Resik, et al (2015)
9. The analysis did does not factor in training and other introduction costs. (PATH unpublished)
10. Daly, et al 2019
11. 16th Meeting of the SAGE Polio Working Group (2018)