



ELSEVIER

Available online at www.sciencedirect.com

Public Health

journal homepage: www.elsevier.com/puhe

Original Research

Budget impact of polio immunization strategy for India: introduction of one dose of inactivated poliomyelitis vaccine and reductions in supplemental polio immunization

M.M. Khan ^{a,*}, S. Sharma ^b, B. Tripathi ^c, F.P. Alvarez ^d

^a Department of Health Services Policy and Management, University of South Carolina, 915 Greene Street, Suite 357, Columbia, SC, 29208, USA

^b Sanofi Pasteur India Private Limited, DDA Commercial Centre, Saket, D-2, Fourth Floor, New Delhi, 110017, India

^c 204, D-96, Munirka, New Delhi, India

^d Sanofi Pasteur 2, Av Pont Pasteur, 69007, Lyon, France

ARTICLE INFO

Article history:

Received 6 January 2016

Received in revised form

16 October 2016

Accepted 17 October 2016

Available online 17 November 2016

Keywords:

Polio immunization

Budget impact

Polio eradication

OPV

IPV

ABSTRACT

Objectives: To conduct a budget impact analysis (BIA) of introducing the immunization recommendations of India Expert Advisory Group (IEAG) for the years 2015–2017. The recommendations include introduction of one inactivated poliomyelitis vaccine (IPV) dose in the regular child immunization programme along with reductions in oral polio vaccine (OPV) doses in supplemental programmes.

Study design: This is a national level analysis of budget impact of new polio immunization recommendations. Since the states of India vary widely in terms of size, vaccine coverage and supplemental vaccine needs, the study estimated the budget impact for each of the states of India separately to derive the national level budget impact.

Methods: Based on the recommendations of IEAG, the BIA assumes that all children in India will get an IPV dose at 14 weeks of age in addition to the OPV and DPT (or Pentavalent-3) doses. Cost of introducing the IPV dose was estimated by considering vaccine price and vaccine delivery and administration costs. The cost savings associated with the reduction in number of doses of OPV in supplemental immunization were also estimated. The analysis used India-specific or international cost parameters to estimate the budget impact.

Results: Introduction of one IPV dose will increase the cost of vaccines in the regular immunization programme from \$20 million to \$47 million. Since IEAG recommends lower intensity of supplemental OPV vaccination, polio vaccine cost of supplemental programme is expected to decline from \$72 million to \$53 million. Cost of administering polio vaccines will also decline from \$124 million to \$105 million mainly due to the significantly lower intensity of supplemental polio vaccination. The net effect of adopting IEAG's recommendations on polio immunization turns out to be cost saving for India, reducing total polio immunization

* Corresponding author.

E-mail addresses: mkhan@mailbox.sc.edu (M.M. Khan), Saurabh.Sharma@sanofipasteur.com (S. Sharma), docbtripathi@gmail.com (B. Tripathi), Fabian.Alvarez@sanofipasteur.com (F.P. Alvarez).

<http://dx.doi.org/10.1016/j.puhe.2016.10.016>

0033-3506/© 2016 The Royal Society for Public Health. Published by Elsevier Ltd. All rights reserved.

cost by \$6 million. Additional savings could be achieved if India adopts the new policy regarding the handling of multi-dose vials after opening. Introduction of three doses of IPV with the existing polio immunization schedule will increase the budget requirement by \$102 million but replacing OPV doses with IPV will increase the budget by about \$59 million. Discontinuation of supplemental OPV immunization with replacement of OPV by IPV will reduce the Government of India's (GOI) polio immunization budget by \$99 million.

Conclusion: Although the overall cost of polio programme will decline with the adoption of IEAG's recommendations, state-level costs will vary widely. In states like Kerala, Karnataka, Uttar Pradesh and Andhra Pradesh, cost of polio immunization will increase while in Punjab and Jharkhand the costs will remain more or less constant. Significant cost reductions will happen in states with high intensity of supplemental polio immunizations (Bihar, Haryana and Delhi). The cost of procuring polio vaccines will more than double from \$20 million to about \$47 million requiring allocation of additional foreign exchanges. In some states (like Bihar), the decline in polio-related employment will be very high requiring reallocation of personnel from polio to other programmes.

© 2016 The Royal Society for Public Health. Published by Elsevier Ltd. All rights reserved.

Introduction

The year 2014 will probably be remembered as the turning point in the global fight against polio. Indian experience with polio and polio vaccination over the last decade perplexed many policy makers—the stubborn persistence of polio despite high intensity and coverage of polio vaccination. In some parts of India, children received more than thirty doses of oral polio vaccine (OPV) over the first five years of life, an intensity of vaccination that the world has never seen before. India celebrated its three years of wild poliovirus free status in January of 2014, an accomplishment that will help accelerate polio eradication efforts in remaining hotspots of the world.¹ Eradication of polio from India and progress achieved in Nigeria (with no cases found in 2014) demonstrate that with consistent and sustained efforts, polio can be eradicated from the last few hard-to-handle endemic areas of the world.

Worldwide polio vaccination has been very successful in reducing the polio cases. Fig. 1 shows the decline in the

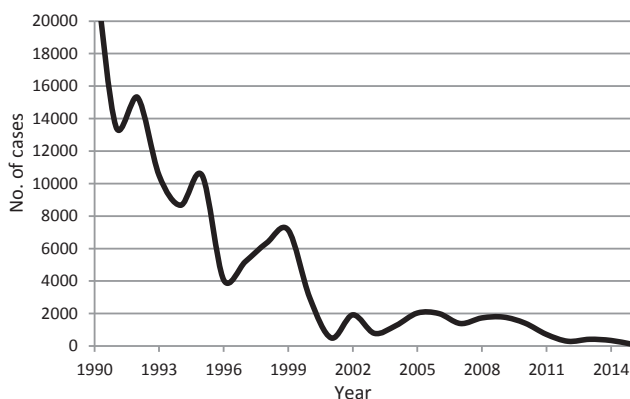


Fig. 1 – Number of wild poliovirus cases globally from 1990 to 2015. Source: www.polioeradication.org/Dataandmonitoring/Poliothisweek/Poliocasesworldwide.aspx.

number of polio cases over the last few decades. Low incidence of polio since 2000 and further reduction in endemic areas have significantly improved the prospect for final eradication but systematic and sustained push for eradication must be maintained. Unfortunately, the world has again missed the most recent target date (end of 2014) for the interruption of wild poliovirus transmission² but eradication of polio will likely happen within the next few years.

A recent WHO position paper³ suggested that countries should switch from OPV-only vaccination schedule to a new schedule with at least one inactivated poliomyelitis vaccine (IPV) dose. The recommendation is to administer the IPV dose at 14 weeks of age. Note that the new polio vaccination strategy is being proposed by expert committees and this paper is simply using the recommendations of expert groups to calculate the budget impact. In pursuance of polio endgame strategy of Global Polio Eradication Initiative, the India Expert Advisory Group (IEAG) on polio eradication recommended the new approach to ensure a risk-free withdrawal of OPV to minimize the risks associated with use of OPV in the post eradication phase. One dose of IPV has been introduced along with diphtheria-tetanus-pertussis (DPT3) to build immunity against poliovirus 2, six months prior to the trivalent OPV (tOPV) to bivalent OPV (bOPV) switch-over.

One negative aspect of this recommendation is that current risk of Vaccine Associated Paralytic Polio (VAPP) will remain similar due to continued use of OPV, although VAPP cases may decline slightly due to lower utilization of supplemental vaccinations, if any. IPV administration at 14 weeks rather than 10 weeks will also imply lower coverage of the vaccine but WHO considers this as providing the 'optimal balance' among vaccine efficacy, coverage and early protection.⁴ This proposal calls for administration of the IPV dose along with the OPV dose normally given at 14 weeks of age.⁵ Since IPV will be administered at the same time as DPT3, it is unlikely that the coverage rate of IPV will be any lower than the coverage of DPT3.

To plan the switch from the current OPV-based schedule to a new strategy with OPV–IPV mix plus changes in supplemental

Download English Version:

<https://daneshyari.com/en/article/5122759>

Download Persian Version:

<https://daneshyari.com/article/5122759>

[Daneshyari.com](https://daneshyari.com)