Economic analysis of the Global Polio Eradication Initiative

Interpretation and significance

Summary

A study published online in November 2010 in the leading medical journal *Vaccine* estimates the economic benefits of the Global Polio Eradication Initiative (GPEI) at between US$40-50 billion based on activities from 1988 through 2035 (assuming eradication of wild polioviruses in 2012 or shortly thereafter). . The study, "Economic Analysis of the GPEI", states that low-income countries will benefit most, accounting for approximately 85% of the net benefits.

AT A GLANCE

Humanitarian and economic benefits of polio eradication

- ✓ More than 8 million cases of life-long polio paralysis prevented
- ✓ Net benefits between US$ 40-50 billion through 2035; low-income countries account for 85% of savings
- ✓ Polio eradication is cost-effective
- ✓ Between US $17-90 billion in additional savings from add-ons such as Vitamin A

The study takes into consideration the investments and progress achieved since the GPEI was launched in 1988, with post-eradication policies extended out to 2035. In total, more than 8 million cases of paralytic polio in children will have been prevented, translating into real savings from reduced treatment costs and gains in economic productivity.

The study also reported health benefits of 'add-on' interventions of the GPEI, such as the systematic administration of Vitamin A and other life-saving interventions, which result in an additional US$17-90 billion in benefits.

Interpretation and significance

This study clearly underscores the benefits of completing the job of polio eradication, both in terms of humanitarian and economic benefits. Global commitment to the eradication of polio was made with an expectation of large potential benefits of eradication. At the end-stages, a disproportionate focus on the high costs for polio eradication may inappropriately influence this global commitment to the goal of eradication.

Methodology

The study estimated the GPEI costs and cases from 1988-2035 based on actual and projected expenditures, reported polio incidence, and model projections. Incremental cost-effectiveness ratios and net benefits estimates were evaluated by comparing the GPEI with routine vaccination only.

Polio cases result in treatment costs and loss in productivity due to disability. Given the recommended value of one year in average annual per-capita gross national income per disability-adjusted life year (DALY), the economic benefit per prevented case of paralytic polio includes the

savings per DALY for each prevented case, as well as the avoided direct medical treatment costs. The analysis focuses on 104 mostly lower income countries that directly benefited from the GPEI since 1988. It does not include the very substantial net benefits still accruing in the rest of the world (including the Americas and high income countries) as a result of their national polio elimination efforts. A 2006 study by Thompson and Duintjer Tebbens estimated that the historical investment in polio vaccination in the US led to more than US$180 billion dollars in net benefits for the US alone.

Previous economic analyses of polio eradication

This latest analysis expands the body of literature that underscores the economic benefits of polio eradication. In a study published in 2007 by Drs Thompson and Duintjer Tebbens, polio eradication was found to be a much better deal than 'control' of polio in low income countries, both from a humanitarian and economic perspective. The 2007 analysis estimated that if the goal of polio eradication were abandoned, the outcome would be worse. Either hundreds of thousands of children would again be paralysed by polio over the coming years, or a very high level of investment would have to be maintained forever to keep a polio incidence at the current low levels, or high costs and cases would continue to occur forever. Other studies previously also suggested significant economic benefits and/or cost-effectiveness of regional polio elimination or global polio eradication (Musgrove (1988), Bart et al. (1996), Kahn and Ehreth (2003), Aylward et al. (2003), and Thompson and Duintjer Tebbens (2006 and 2007), but did not focus specifically on the economics of the GPEI.

The broader benefits of eradicating polio go beyond those captured in the study

Financing of the GPEI has significant and broad public health benefits over and above polio eradication. While approximately 55% of the annual GPEI budget constitutes one-off costs associated with polio supplementary immunization activities (e.g. purchase of polio vaccine, transport of vaccinators), the remaining estimated 45% is allocated for training of health staff, district-level microplanning, refurbishment of vaccine cold-chain systems, and the scaling up of technical capacity for vaccine-preventable surveillance and monitoring networks.

These activities, along with the broader assets of the polio infrastructure (such as the expertise of human resources) are being used in many countries to implement the Global Immunization Vision and Strategy launched in 2006, which includes the introduction of new and under-used vaccines. The implementation of the 'Reaching Every District' (RED) approach, based on the polio eradication model for reaching entire populations with routine immunization services through a district-based approach, has resulted in significant gains in routine immunization levels across Africa and Southeast Asia, as the proportion of districts attaining 80% DTP3 coverage has more than doubled and the number of children immunized increased from 4.8 million to 7.3 million between 2003 and 2007. GPEI-funded staff proved instrumental in the implementation of RED in many areas, working in close coordination with national immunization authorities and key partners such as the GAVI Alliance.

More than 3,300 polio-funded surveillance and response staff currently operate in 70 countries worldwide. In many areas of the world, polio staff constitute the single-largest resource of technical assistance to low-income countries. For example, the GPEI funds 91% of all immunization staff in the WHO African Region (914/999). A survey of these technical staff

showed that 85%, on average, gave half their time to work related to immunization, surveillance and outbreak response for other diseases. Polio staff contributed significantly to achieving the 60% reduction in measles deaths since 2000, which represents a concrete contribution towards achieving Millennium Development Goal 4 for child survival. The polio surveillance network continues to help identify and track other diseases of public health importance, including measles, SARS, yellow fever and neonatal tetanus.

References:

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