Appendices

Appendix A: Guiding Questions

Section I: The Proposed Investment

I.1 The disease and its global health significance
- What are the host reservoirs and key aspects of transmission?
- What is the current health, social and economic burden of disease globally? Provide regional and national data when available.

I.2 Current state of control efforts
- What are the current methods used for disease control?
- What are the major issues interfering with greater success from current control efforts?
- What is the likelihood of resurgence if the current control efforts are sustained?

I.3 How can eradication be achieved?
- What are the proposed activities?
- How will the eradication effort be adapted to different implementation environments?
- How will success be defined? How will we know if we failed?
- What is the timeline for achieving eradication?

I.4 Post-eradication scenarios
- How will the world look post-eradication?
- What are the expected post-eradication activities?
- What is the likelihood that a pathogen could reemerge (e.g., due to genetic changes, deliberate reintroduction, etc.)?
- What is the projected rate at which a reintroduced pathogen could spread before detection and containment? To what extent to could a reintroduced pathogen be detected using existing surveillance methods and diagnostic tools?

Section II: Rationale for Investing

II.1 Biological and technical feasibility
- Is an effective, practical intervention available?
- Is there demonstrated feasibility of eradication?

II.2 Health, social, and economic burden of disease
- What assessments have been made about burden of disease?
- What are the limitations in existing estimates?
- What methods are used to adjust for under-reporting cases and deaths?

II.3 Assessment of total costs
- What is the incremental cost of the eradication plan and other options compared to current control efforts? Disaggregate by country income group (e.g., using World Bank income groups based on Gross National Income per capita as an indicator[1])
- What methodology is used to estimate the cost of covering the "last mile"?
- What is the total cost of the post-eradication plan?

II.4 Cost-effectiveness and cost-benefit analyses
- What discount rate for costs and effects is used and why?
- What threshold for interpreting the ICER is used and why?
- What variables and assumptions have been subjected to sensitivity analysis?

II.5 Public goods obtainable through eradication
- What public goods, including economic public goods, are already served by current control efforts?

[1] Details available at http://data.worldbank.org/about/country-classifications/country-and-lending-groups

- Are there unique public goods, including economic public goods, that arise from eradication that do not arise from current and projected control efforts? Are there incremental gains in public goods to which eradication will contribute?
- What are the anticipated intergenerational socio-economic benefits to be gained from eradication?

II.6 Strengthening health systems

- What will be the impact of the eradication effort on the health system (over and above current and projected control efforts)?
- Can these potential impacts on the health system be measured/forecast (using qualitative or quantitative data) ahead of the eradication effort to help inform decision makers on plan feasibility? (This is separate to the impact evaluation that will run throughout the entirety of the eradication effort).

Section III: Issues to Consider When Moving From Control to Eradication

III.1 Stakeholder involvement

- Who are the primary and secondary stakeholders (at the global, regional, national and community levels)? What is known about their level of support for the goal of eradication?
- Why and to what extent is cooperation among stakeholders necessary to achieve the efficiencies required to move from current control efforts to eradication?
- What forms of commitment and cooperation among the whole set of actors identified above will be necessary and sufficient to achieve eradication?

III.2 Challenges, risks, and constraints

Ethical, Social, and Political

- What is the proposed protocol for situations in which parents decline preventive interventions in such high numbers as to jeopardize the level of population coverage necessary to achieve eradication?
- What are the challenges associated with deploying the suggested method (e.g., cultural unacceptability of intervention)?
- What is the risk of withdrawal of support, including withdrawal of community, political, and financial support? What is the risk of rejection of the campaign for or methods of eradication?

Epidemiologic

- What are the challenges associated with surveillance?
- What is the risk of undermining the control of other important diseases by shifting resources and priorities?

Technical and Geopolitical

- How high is the risk of reintroduction?
- What is the likelihood that the risk mitigation strategies are inadequate? How relevant is the risk that perceptions of vaccine risks and benefits change as a function of changing burden of disease?

Market Dynamics

- What products are critical to the eradication effort? Describe the current products and/or the target product profiles. Who are the current and potential future suppliers? What products do/can they supply and at what capacities?
- Are there dynamics unique to an eradication effort such as market sustainability during the near-and post-eradication phases, as wide variations in supply and demand may occur during these phases?

III.3 Critical risks and risk management plan

- Which risks, if realized, could lead to the failure of the eradication effort?

- What are the probabilities and consequences of reintroduction of the pathogen at different points along the time horizon, including the post-eradication stage?
- What contingency plans are in place to manage potential unexpected events?

Section IV: Management and governance

IV.1 Partnerships and governance

- Who are the partners expected to participate in the eradication effort, and what are their specific roles? A table listing each of the partners and providing a summary by type of organization, location, responsible contact, specific role in this project, and past project experience should be provided.
- What management structures are in place?
- Are all relevant ministerial departments and key partners represented, to ensure continued leadership and financing of the program?

IV.2 Critical milestones and monitoring

- How will success be defined? What marks failure?
- What are the milestones by which progress can be measured?
- Who will perform quality assurance and control to confirm that appropriate standards are being met?

IV.3 Operational Research Plan

Does the OR plan include:

- Targeted and researched communication for information, education and communication (IEC) and social mobilization in relation to disease prevention and intervention adoption?
- Longer term research relating to behavior change and preventive behaviors;
- Social research to identify groups that are not reached and to identify equitable access and mechanisms to reach vulnerable groups?
- Social research on sustaining quality services on a large scale (e.g. campaign fatigue, worker motivation and quality of care or service)?

IV.4 Evaluating impacts on health systems

Does the evaluation plan include a description of:

- The scope of the evaluation?
- A broad specification of the types of data and methods required?
- The time frame for evaluation?
- The evaluation process?

Appendix B: Acronyms and Definition of Terms

CDC: Centers for Disease Control and Prevention

Cost-benefit analysis: An analytic tool for estimating the net social benefit of a program or intervention as the incremental benefit of the program less the incremental cost, with all benefits and costs measured in dollars (Gold et al. 1996).

Cost-effectiveness analysis: An analytical tool in which costs and effects of a program and at least one alternative are calculated and presented in a ratio of incremental cost to incremental effect. Effects are health outcomes, such as cases of a disease prevented, years of life gained, or quality-adjusted life years, rather than monetary measures as in cost-benefit analysis (Gold et al. 1996).

Disability-adjusted life-year (DALY): An indicator developed to assess the global burden of disease. DALYs are computed by adjusting age-specific life expectancy for loss of healthy life due to disability. The value of a year of life at each age is weighted, as are decrements to health from disability from specified diseases and injuries (Gold et al. 1996).

Discount rate: The rate used to compute present value, or the interest rate used in discounting future sums (Gold et al. 1996).

Disease control: Reduction of disease morbidity/mortality to a locally acceptable level (Cochi and Dowdle 2011).

EIC: eradication investment case

Elimination: The absence of a disease caused by a specific agent in a defined geographic area as a result of deliberate control efforts that must be continued in perpetuity to prevent reemergence of disease (e.g., neonatal tetanus) (Cochi and Dowdle 2011).

Eradication:

Global eradication: The worldwide absence of a specific disease agent in nature as a result of deliberate control efforts that may be discontinued where the agent is judged no longer to present a significant risk from extrinsic sources (e.g., smallpox) (Cochi and Dowdle 2011).

Regional or national eradication: The absence of a specific disease agent in a defined geographic area as a result of deliberate control efforts that must be continued to prevent reestablished endemic transmission (e.g., polio, measles, rubella, guinea worm) (Cochi and Dowdle 2011).

Externality: A cost or benefit that occurs when the activity of one entity directly affects the welfare of another in a way that is outside the market mechanism (Rosen and Gayer 2010).

Free-rider: The incentive to let other people pay for a public good while you enjoy the benefits (Rosen and Gayer 2010).

GPEI: Global Polio Eradication Initiative

NGO: non-governmental organization

Operational research (OR): A set of scientific methods for providing a decision maker with a quantitative basis for decisions regarding the operations under his or her control. Encompasses optimization models, simulation models and includes such techniques as inventory models, linear programming, queuing theory, Program Evaluation and Review Technique (PERT), and Monte Carlo simulation (Gold et al. 1996).

RoI: return on investment

Stakeholder: Primary Stakeholder: People and groups most affected by the outcomes (positive and negative) of an initiative. They are often divided into groups based upon certain demographic factors such as gender, socioeconomic status, age and ethnicity.

Secondary Stakeholders: Individuals or groups not directly affected by the outcome of an initiative, but who still have an interest in it. They often provide aid to the primary stakeholders and may include government agencies, money-lending institutions, or monitoring agencies.

WHO: World Health Organization

Cited References

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Rosen, H. S., and T. Gayer. 2010. Public Finance, 9th edition. New York: McGraw-Hill.